

Town of Norwich Capital Facilities Planning and Budgeting Committee

Radio Communications Plan
Public Forum
June 20, 2012

Topics

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

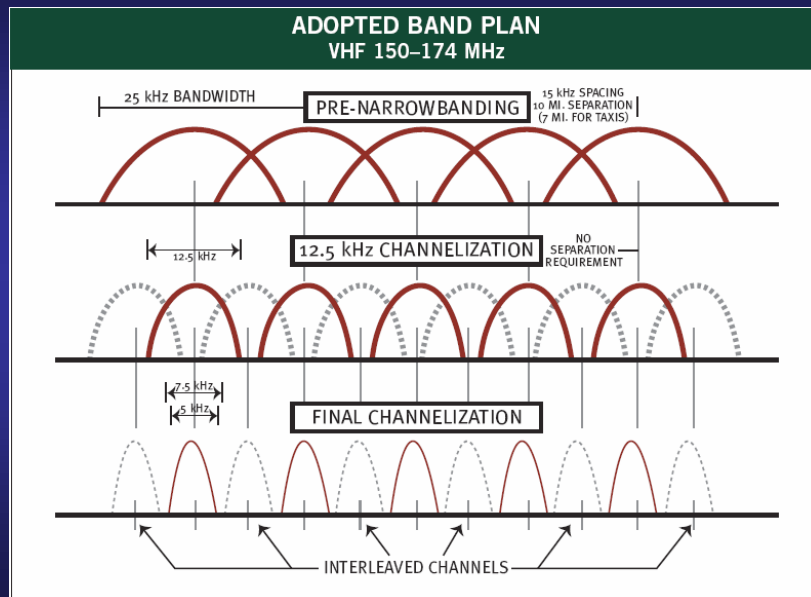
Overview

- Fire and Public Works 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 digital dispatch services
- 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.
- Changing from 25 kHz to 12.5 kHz significantly reduces coverage
- Our pagers, most portables and mobiles and three base stations are narrowband capable. We have just received a grant for 11 Public Works mobiles and 5 portables to complete the change for all field units.

Narrowband Impacts



Coverage Problems

- Police – Chief Robinson
- Fire – Chief Leinoff
- Public Works – Director Hodgdon

Existing System

- Police – Transmitter/Receiver on Hurricane Hill in Hartford
- Fire/EMS – Transmitter/Receiver on Hayes Hill in Etna
- PW – Transmitter/Receiver on building at PW Facility on New Boston Road

Locations Studied

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

Proposed System (Fire/EMS)

- Fire/EMS on 7 tower Simulcast System
 - Locations being studied
 - Norwich PW
 - Hanover Town Hall
 - Hanover Public Safety Building
 - Hayes Hill in Etna
 - Lyme Fire Station
 - Rogers Hill in Bradford
 - Moose Mountain in Hanover
 - Hurricane Hill in Harford
 - Location in Thetford or Fairlee Area

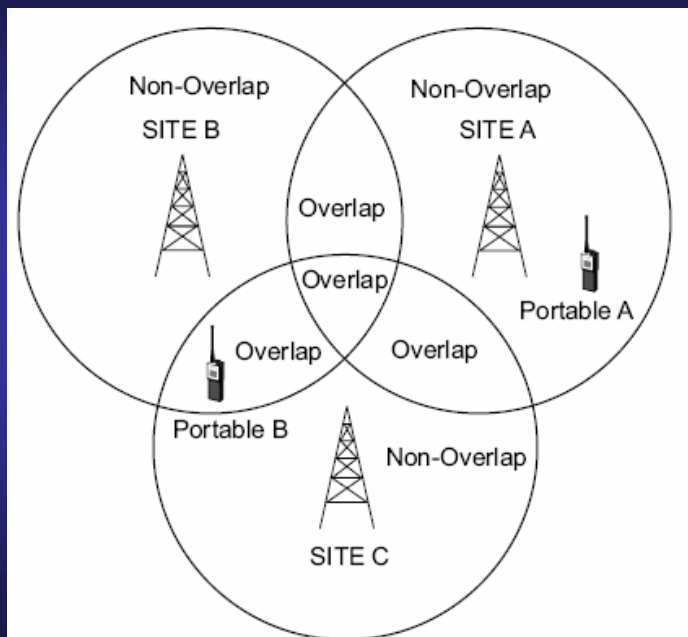
Fire/EMS System

- Communities Served
 - Hanover
 - Plainfield
 - Enfield
 - Canaan
 - Lyme
 - Orford
 - Thetford
 - Strafford
 - West Fairlee
 - Vershire
 - Fairlee
 - Bradford
 - Norwich

Proposed System (Police/PW)

- Police on 2-tower Simulcast System on Hayes Hill and new 180' tower at PW facility.
- PW on new 180' tower at PW facility.
- Ground Elevation – 745'

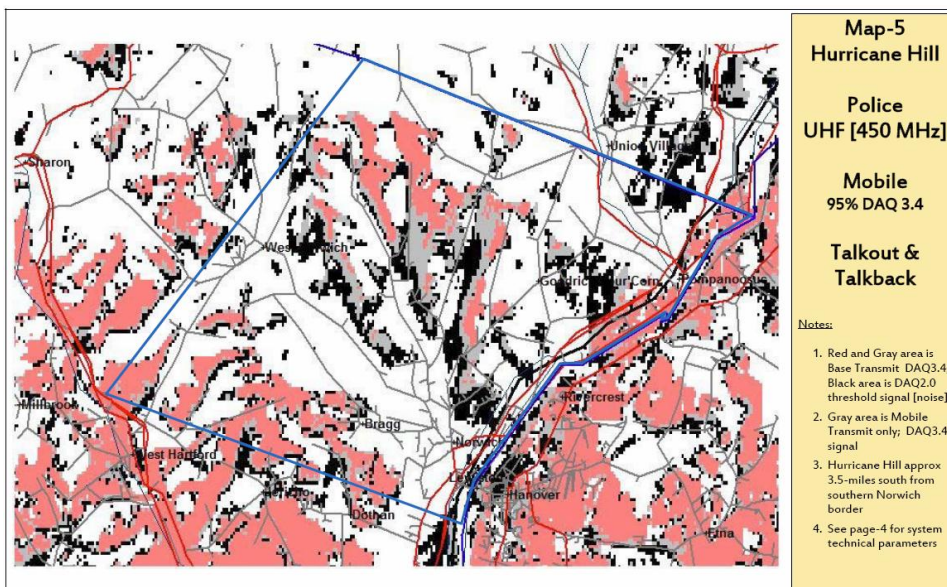
Simulcast



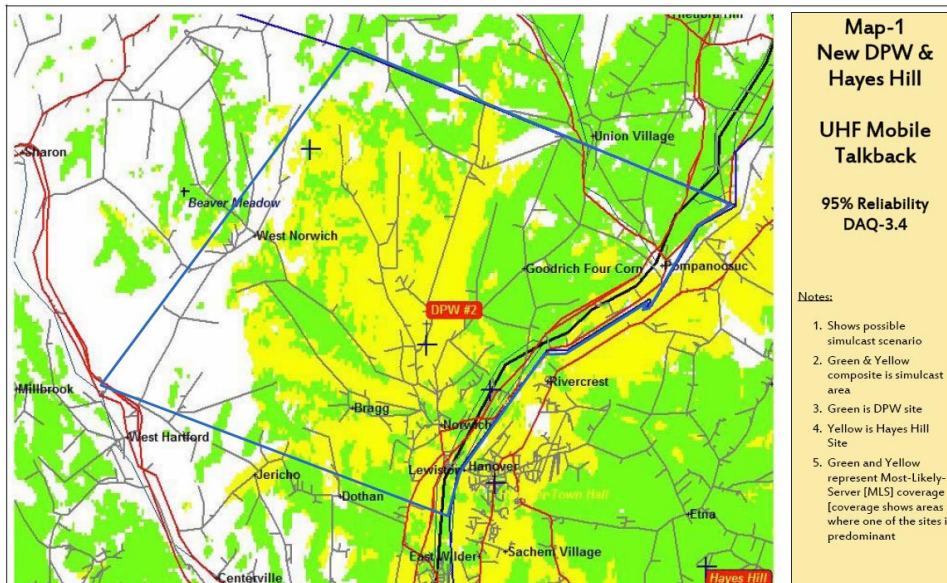
Delivered Audio Quality (DAQ)

- 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.

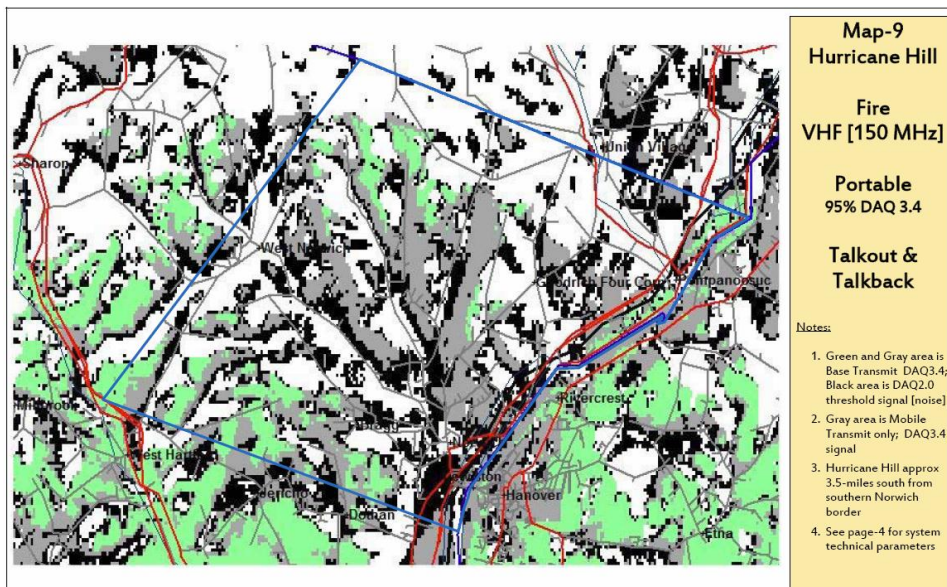
Existing UHF Police NB Coverage

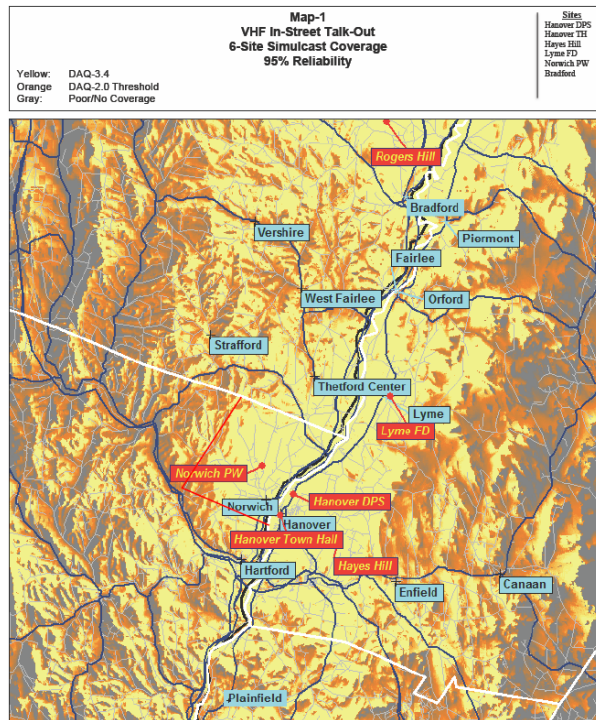


Proposed UHF NB Police Coverage

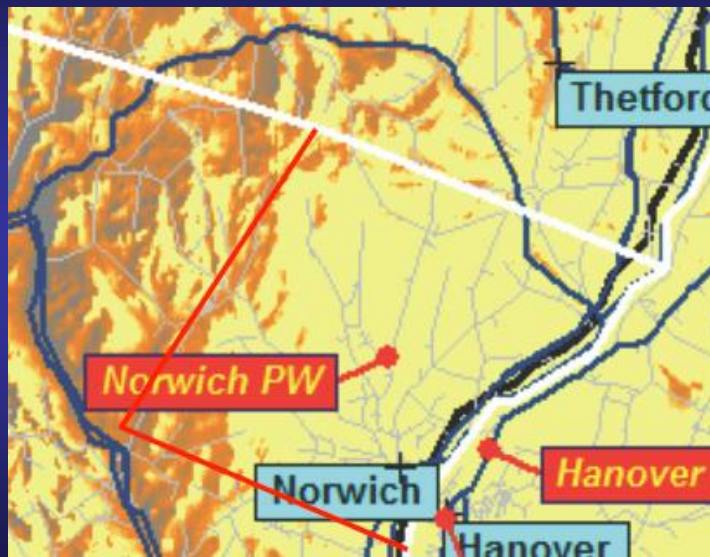


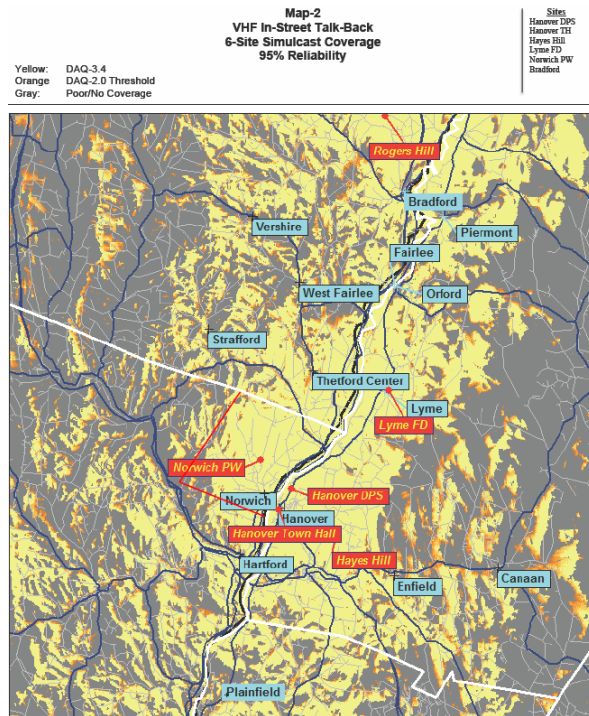
Existing NB Fire Portable Coverage



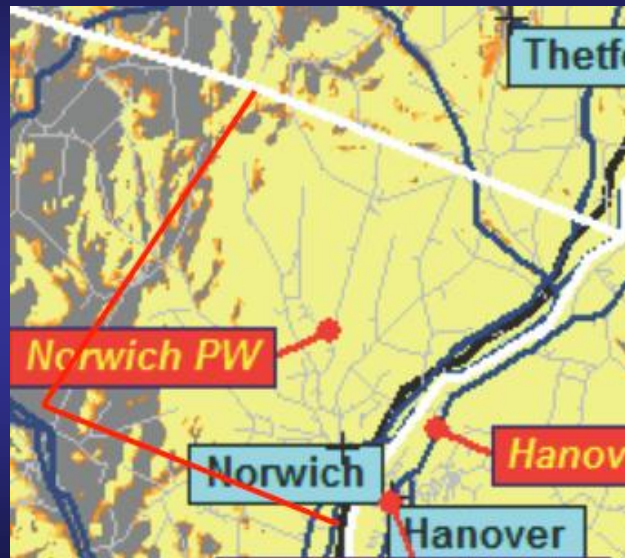


Talk-Out

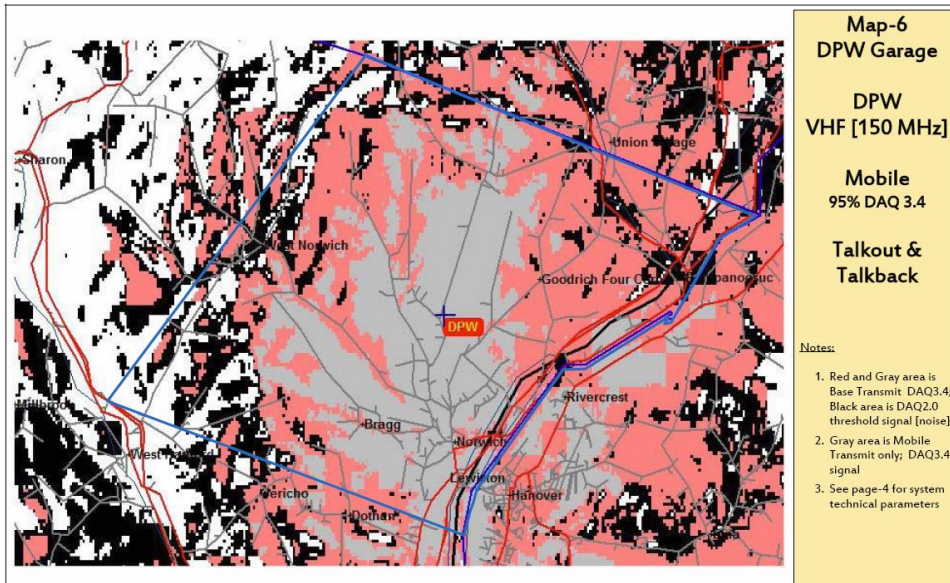




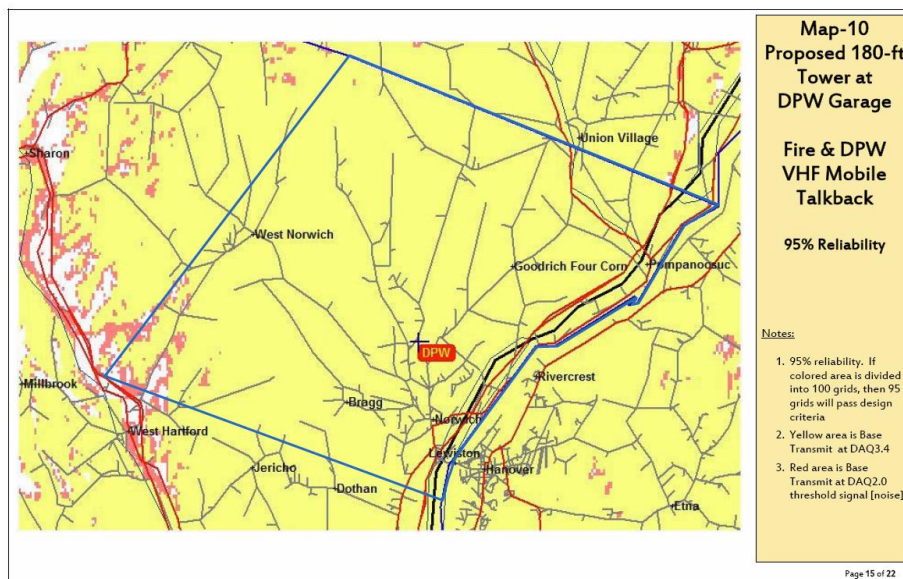
Talk-Back



Existing PW NB Coverage



Proposed PW Coverage



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- DAQ 5: Perfect. No distortion or noise discernible.

Coverage

- With the current communications system, once the frequency switch to narrowband (12.5 kHz) takes effect, 36% of Norwich's land area will be at DAQ 2 or better.
- With the proposed new system, 84% of the town's land area would be at DAQ 3.4 or better.
- With the proposed Fire/EMS simulcast system, more than 90% of the town's land area would be at DAQ 3.4 or better.

Estimated Costs

Item Description	Item Cost	Fire/EMS		Police (UHF)		Public Works (VHF)		Total
Non-Tower Costs		Units	Cost	Units	Cost	Units	Cost	Cost
Base Station Repeaters	\$ 25,000			2	\$ 50,000	1	\$ 25,000	\$ 75,000
Microwave and Site Connectivity	\$ 25,000			2	\$ 50,000	0	\$ -	\$ 50,000
Multiplexer	\$ 30,000			1	\$ 30,000	0	\$ -	\$ 30,000
Voting Comparator	\$ 10,000			1	\$ 10,000	0	\$ -	\$ 10,000
RF Control Station	\$ 6,000			1	\$ 6,000	1	\$ 2,500	\$ 8,500
Console Equipment	\$ 6,000			1	\$ 6,000	0	\$ -	\$ 6,000
Microwave Path Survey	\$ 3,000			1	\$ 3,000	0	\$ -	\$ 3,000
Project Engineering	\$ 10,500			1	\$ 10,500	0	\$ -	\$ 10,500
Contingency - 20%	\$ 21,000			1	\$ -	1	\$ -	\$ -
SubTotal					\$ 165,500		\$ 27,500	\$ 182,500
Tower Costs								
180' SS Tower								\$ 140,000
Equipment Shelter								\$ 45,000
LP Generator								\$ 30,000
Subtotal								\$ 215,000
Total								\$ 397,500

December 12, 2011 Estimate \$762,511

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)
- Local Funds – Norwich

Bond Costs

Bond Amount	Term	Total P&I	Delta	Annual P&I	Tax Rate Impact/\$100	FY12 Tax Rate	% Increase	\$/100,000 AV	\$/400,000 AV
250,000	10	283,126		28,313	0.0040	0.4588	0.872%	4.00	15.99
250,000	15	308,986	25,860	20,599	0.0029	0.4588	0.634%	2.91	11.64
250,000	20	337,129	54,003	16,856	0.0024	0.4588	0.519%	2.38	9.52
400,000	10	453,002		45,300	0.0064	0.4588	1.394%	6.40	25.59
400,000	15	494,378	41,376	32,959	0.0047	0.4588	1.015%	4.65	18.62
400,000	20	539,407	86,405	26,970	0.0038	0.4588	0.830%	3.81	15.24

The End