



---

# **Sullivan County, NY**

## **Radio Design Review**

**Blue Wing Services, Inc.**

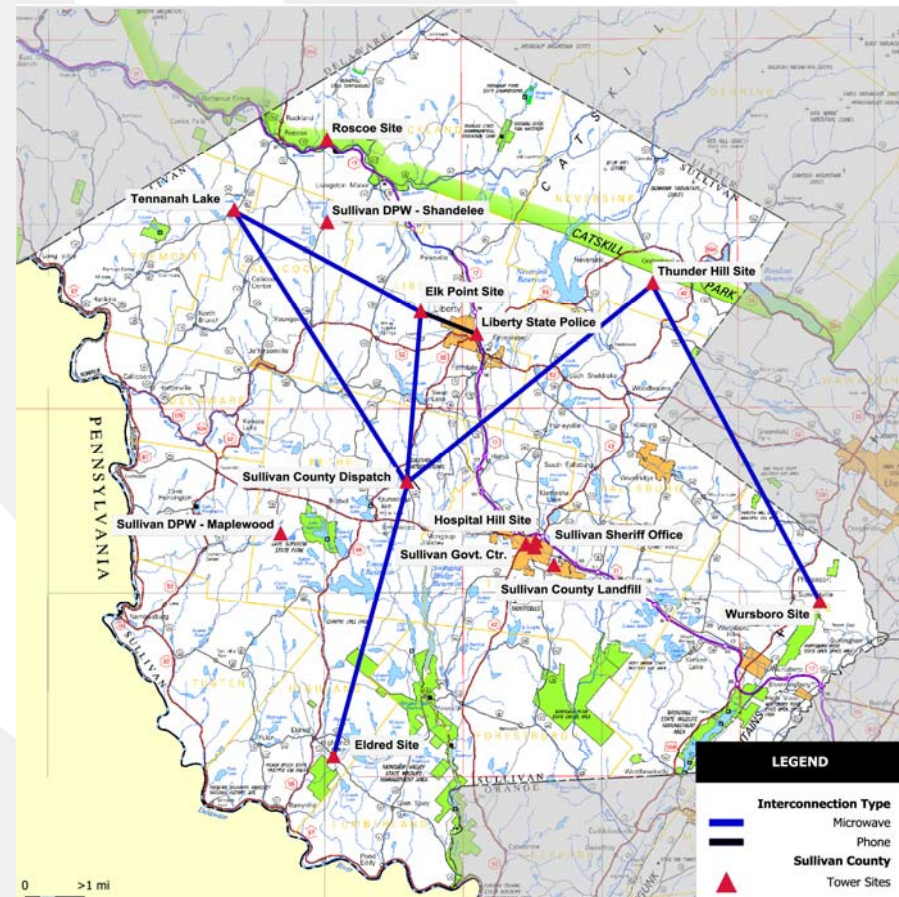
**May 4, 2010**

# Existing System



## Current System Layout

- 5 Primary RF Sites
- Main and Backup Dispatch Center
- Primary RF Transmitters - 4T/4R
- MW Interconnects
- Pagers - 1,600
- Radios - 1,750



# Existing System

---



- Spectrum
  - » Law Enforcement - VHF-High Band
    - Sheriff
    - State Police
    - Local PD
  - » EMS - VHF-High Band
  - » Fire - VHF-Low Band
  - » DPW - VHF-High Band/VHF-Low Band
    - County - Low-Band
    - Local - High-Band

# Existing System



## Interoperability

	Police/Sherriff		Fire		EMS		Highway	
<u>County</u>	<u>Band</u>	<u>Protocol</u>	<u>Band</u>	<u>Protocol</u>	<u>Band</u>	<u>Protocol</u>	<u>Band</u>	<u>Protocol</u>
Delaware, NY	VHF HB	Conv	VHF LB	Conv	VHF LB	Conv		
Orange, NY	VHF HB 800 MHz	Conv EDAC	VHF LB, VHF HB, UHF	Conv Conv	VHF HB	Conv		
Pike, PA	VHF HB	Conv	VHF HB/LB	Conv	VHF HB	Conv		
Ulster, NY	VHF HB	Conv	VHF LB	Conv	VHF HB	Conv		
Wayne, PA	VHF HB	Conv	VHF HB/LB	Conv	VHF HB	Conv		
<u>Mutual Aid</u>	<u>Band</u>	<u>Protocol</u>	<u>Band</u>	<u>Protocol</u>	<u>Band</u>	<u>Protocol</u>	<u>Band</u>	<u>Protocol</u>
VHF - Low Band			VHF LB	Conv				
VHF - High Band	VHF HB	Simplex			VHF HB	Conv.	VHF HB	Conv.
UHF								
800 MHz								

# Existing System

---



## Survey Comments

- Operations
  - » Similar to other County's of this age
  - » Significant overlap of volunteer fire departments and EMS volunteer operations
  - » Significant Fire and EMS mutual-aid operations with border County's
- System Coverage
  - » VHF-Low Band Coverage affected by ambient and localized noise
  - » Pager and Radio - Poor in many areas especially Catskills and Delaware River Valley

# Existing System

---



## Survey Comments

- System and Radio Performance
  - » Fire interleaving of dispatching and paging
  - » Interference from areas out of the County
  - » Training of radio users in basic operations
- Future System and Radio Performance
  - » Better coverage
  - » Cost of the radio equipment
  - » Addition channels on fire dispatch frequency
  - » Additional features such as radio ID, emergency, GPS and the ability to interoperate between fire, EMS and law enforcement

# Operational Enhancements

---



## Operational Methods

- Dispatcher controller of radio spectrum
- Four types of channels
  - » Alerting/Paging - Channel used for paging/alerting
  - » Communications - Communications with dispatch Center
  - » Tactical - Communication at incident
    - Allocate tactical channels on as needed basic from pool of tactical channels
  - » Interop - Communications with outside resources providing aid
- Intra-county Interoperations
  - » 1st - Communications Channel
    - Fire, EMS operate on same band and potentially Law Enforcement
  - » 2nd - Patching at Console - Dissimilar bands

# Operational Enhancements

---



- Channels

- » Paging

- Dedicated Paging Channel for Fire and EMS
    - Separate Alerting/Dispatching Channel - Simulcast Transmit
    - Upgrade to Digital Paging

- » Communications

- Dedicated channel for each EMS and Fire
    - Overflow Communications Channel

- » Tactical

- 3-8 Tactical Channels, preferably some wide-area channels

- » Interop

- Maintain current Fire, EMS and LE interop channels
    - Add National Calling/Tactical at each of the 3 bands - VHF,UHF and 800 MHz

- Talk Paths

- » Wide-Area

- 4 -6

- » On-Scene

- 3-8



# Operational Enhancements

---



- Coverage
  - » Radio
    - Mobile coverage, additional sites in Monticello area and along the Delaware River
  - » Paging
    - Portable on-hip

# Operational Enhancements

---



## System Features

- Caller Recognition
  - » UID
  - » Emergency
- Messaging
  - » Status Messages (SMU)
  - » Text Messaging
- Security
  - » System Access
  - » Scrambling/Encryption

# Operational Enhancements

---



- Expandability
  - » Providing Additional Coverage
  - » Ease of adding additional talk paths
- Funding
  - » Interoperability
  - » Project 25 Capable/Compliant

# Operational Enhancements

---



## Sites

- Tower
  - » Towers shall meet EIA/TIA loading tower standards
- Building
  - » HVAC Controlled
- Site
  - » Drainage
  - » Security Fencing
- Grounding
  - » Grounded to meet industry-approved grounding standards
- Backup Power
  - » 48 hours for backup generator
  - » 2-4 hour battery backup

# Resource Research

---



- **Spectrum**
  - » 4-6 Wide Area Channels
  - » 3-8 Simplex Channels
- **Bands**
  - » 1st - VHF-High Band
  - » 2nd - UHF

# Resource Research

---



## Process

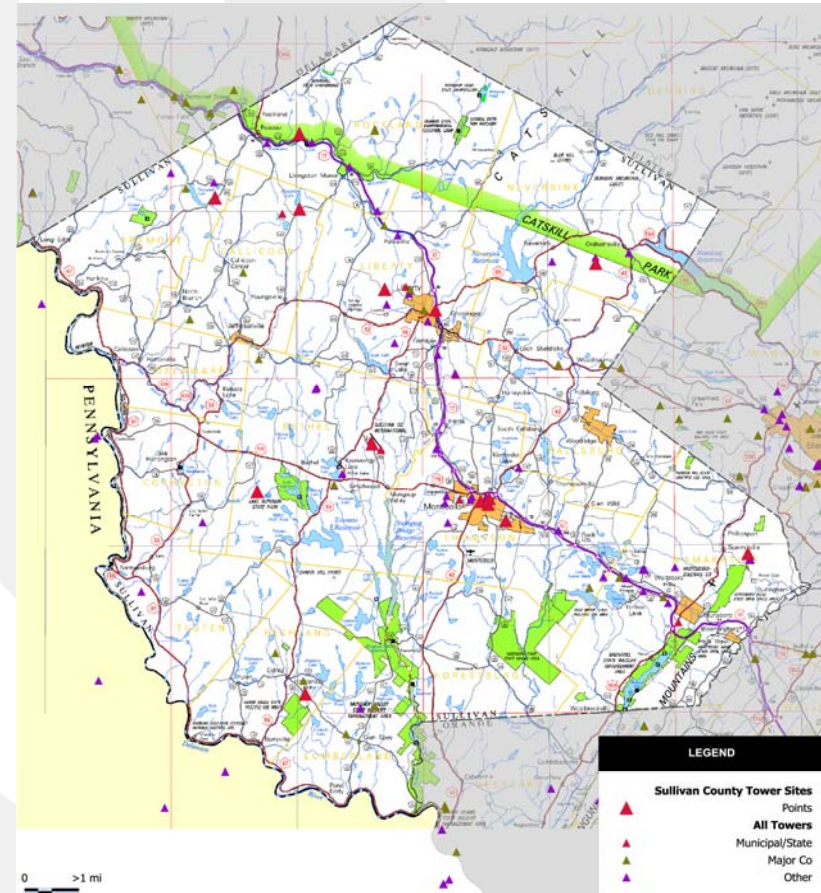
- Frequency Coordinator Search
- Blue Wing Search
  - » 4-6 UHF Pair Identified
- County Frequency Review
- Non-County Public Safety Review
- Extraordinary Measures
  - » Review of commercially frequencies available
  - » Review other industry segment frequencies available
  - » Review potential sharing with Federal government on frequencies

# Resource Research



## Sites

- Existing County Tower Sites
- Existing Economically Feasible Tower Sites
- New Tower Construction on County Property
- New Tower Construction on Government Owned Property
- New Tower Construction



# Design Alternatives

---



- Option 1 - Upgrade Current System
  - » Paging - digital alphanumeric paging - VHF or UHF
  - » Install all fixed T1/R1 base stations for all stations
  - » Voice communications use same frequency band as current system
  - » Voted receive communications
    - Fire (vhf-low band)
  - » Use simulcast transmit and voted receive communications
    - Ems
    - Law enforcement
  - » Similar main and backup dispatch environment
  - » Add additional site at Monticello



# Design Alternatives

---



- Option 2 - New Analog Conventional System
  - » Separate paging channel - - digital alphanumeric paging
  - » Fire and EMS move to similar band - VHF-high preferred or UHF
  - » Use simulcast transmit and voted receive communications
    - Fire
    - Ems
    - Law enforcement
  - » Similar main and backup dispatch environment
  - » Sites - 5 current site, Monticello, 3 river sites and two additional if UHF

# Design Alternatives

---



- Option 3 - New Digital P25 Trunked System
  - » Separate paging channel - - digital alphanumeric paging
  - » Fire and EMS move to similar band - VHF-high preferred or UHF
  - » Use simulcast transmit and voted receive communications
    - Fire
    - Ems
    - Law enforcement
  - » Similar main and backup dispatch environment
  - » Sites - 5 current site, Monticello, 3 river sites and two additional if UHF

## Next Phase

---



- Solve Spectrum Requirements
- Refine Site Locations
- Decide on System Upgrade/Enhancement Direction

# Thank You

---



- Questions?