REGIONAL RADIO INTEROPERABILITY

BOARD OF SUPERVISORS UPDATE

JANUARY 2022

Welcome and Background

- Much of the current VHF analog system was built out over 20 years ago. Some of the equipment was refreshed with a Homeland Security Grant in 2008/2009. However much of the core equipment is no longer available or supported by manufacturers.

- Agencies are beginning to independently pursue grants to improve reliability and coverage which threatens interoperability during multi-agency response.

- Radio Interoperability Task Force
  - Sheriff Kemp, Sheriff Vaughan, Chief Cooper, Charles Edwards, Gary Bergeron, James Cox, Gary Hash, Paul Hoyle, Brenda Marrah, Jolena Young

- Virginia Department of Emergency Management (VDEM) SHSP Grant used to fund Strategic Regional Radio Plan

Needs Assessment and Strategic Plan

- Aging land mobile radio equipment (LMR), with much of it at end of product lifecycle, puts Jurisdictions at risk for potential system failures that cannot be repaired
- Radio users experiencing insufficient radio coverage
- Some channel congestion due to an inadequate number of frequencies to accommodate paging and operational traffic
- The backhaul system, connecting most of the LMR sites to dispatch, lacks path redundancies to provide alternate routes for connectivity to key LMR sites in the event of a primary path failure
- No centralized Network Management System (NMS) to enable maintenance staff to remotely monitor and troubleshoot the LMR and microwave radio networks

Alternatives

- Alternative 1 – Upgrading the Carroll County, City of Galax, and Grayson County LMR systems to VHF P25 Conventional Digital Simulcast Systems
    - Alternative 1 is Federal Engineering's recommendation however, the procurement documents are being written to request vendors' provide a primary proposal for a P25 system and an optional alternate proposal for a DMR system.
- Alternative 2 – Upgrading the Carroll County, City of Galax, and Grayson County LMR systems to VHF DMR Conventional Digital Simulcast Systems

Weighing how to make short-term repairs in a way to minimize short-term, interim expenses

Benefits

Each alternative addresses existing system vulnerabilities by providing:

- New, current production LMR and microwave equipment for increased reliability and redundancy
- Improved radio coverage to meet stakeholder requirements
- Reduced manual intervention by radio user for site selection for increased operational efficiencies
- An IP-based backhaul system connecting all sites with increased capacity and path redundancy
- A network management system to remotely monitor/troubleshoot equipment and monitor site alarms

COSTS CAN BE LOWERED BY LOWERING BENEFITS
DEPENDING ON SOLUTION USE OF EXISTING EQUIPMENT MAY REDUCE COSTS
TASK FORCE IS USING THE RFP PROCESS TO GET FACTUAL DATA TO PROVIDE ALTERNATIVES
DECICION WILL LIKELY IMPACT COMMUNICATIONS FOR 25-30 YEARS

Cost Estimates

P25	Grayson	Galax	Carroll
Equipment	2,034,000	934,000	2,339,000
Backhaul	1,526,000	325,000	1,568,000
Network	267,000	240,000	280,000
Site Improvement	656,000	212,000	619,000
Subscriber Units	1,062,000	911,000	1,182,000
P25 Capital	**5,545,000**	**2,622,000**	**5,988,000**
Dispatch	490,000	654,000	569,000
10 Year Maint	1,639,000	961,000	1,814,000

DMR	Grayson	Galax	Carroll
Equipment	987,000	390,000	1,224,000
Backhaul	1,526,000	325,000	1,568,000
Network	250,000	223,000	263,000
Site Improvement	656,000	212,000	619,000
Subscriber Units	622,000	533,000	700,000
DMR Capital	**4,041,000**	**1,683,000**	**4,374,000**
Dispatch	440,000	556,000	498,000
10 Year Maint	1,180,000	644,000	1,306,000

- ***FE***'s budgetary estimates are intentionally conservative. Typically, vendor proposal pricing is unlikely to exceed ***FE***'s estimate, based on a comparable design as outlined in our assumptions.
- Capital and Maintenance estimates include subscriber units

Coverage Matrix – P25

Table 29 - Existing LMR System and Alternative 1 Coverage Percentages

System Description	System Technology	Number of Sites	DAQ Evaluated	Geographic Coverage %s of Carroll County			Geographic Coverage %s of Grayson County			Geographic Coverage %s of City of Galax		
				Mobile	Portable On-Street	Portable In-Building	Mobile	Portable On-Street	Portable In-Building	Mobile	Portable On-Street	Portable In-Building
Existing Carroll County Sheriff's Office	VHF Analog	2 Transmit Sites	3.4	90	38	12						
		9 Receive Sites	3.4	97	43	10						
Existing Grayson County Fire	VHF Analog	4 Transmit Sites	3.4				98	63	33			
		6 Receive Sites	3.4				97	38	8			
Existing Galax Fire	VHF NEXEDGE	1 Transmit Site	3.4							>99	>99	98
		2 Receive Sites	3.4							>99	97	75
Potential Alternatives (Carroll)	VHF P25 (Alt 1)	7 Transmit Sites	3.4	>99	90	63						
		11 Receive Sites	3.4	>99	73	41						
Potential Alternatives (Grayson)	VHF P25 (Alt 1)	7 Transmit Sites	3.4				>99	94	72			
		8 Receive Sites	3.4				>99	75	41			
Potential Alternatives (Galax)	VHF P25 (Alt 1)	2 Transmit Sites	3.4							>99	>99	>99
		2 Receive Sites	3.4							>99	>99	93

Coverage Matrix – DMR

Table 53 - Comparison of Existing LMR and Alternative 2 System Coverage Percentages

System Description	System Technology	Number of Sites	DAQ Evaluated	Geographic Coverage %s of Carroll County			Geographic Coverage %s of Grayson County			Geographic Coverage %s of City of Galax		
				Mobile	Portable On-Street	Portable In-Building	Mobile	Portable On-Street	Portable In-Building	Mobile	Portable On-Street	Portable In-Building
Existing Carroll County Sheriff's Office	VHF Analog	2 Transmit Sites	3.4	90	38	12						
		9 Receive Sites	3.4	97	43	10						
Existing Grayson County Fire	VHF Analog	4 Transmit Sites	3.4				98	63	33			
		6 Receive Sites	3.4				97	38	8			
Existing Galax Fire	VHF NEXEDGE	1 Transmit Site	3.4							>99	>99	98
		2 Receive Sites	3.4							>99	97	75
Potential Alternatives (Carroll)	VHF DMR (Alt 2)	7 Transmit Sites	3.4	>99	90	63						
		11 Receive Sites	3.4	>99	67	32						
Potential Alternatives (Grayson)	VHF DMR (Alt 2)	7 Transmit Sites	3.4				>99	94	72			
		8 Receive Sites	3.4				>99	68	30			
Potential Alternatives (Galax)	VHF DMR (Alt 2)	2 Transmit Sites	3.4							>99	>99	>99
		2 Receive Sites	3.4							>99	>99	89

AGREEMENTS FROM JOINT SESSION

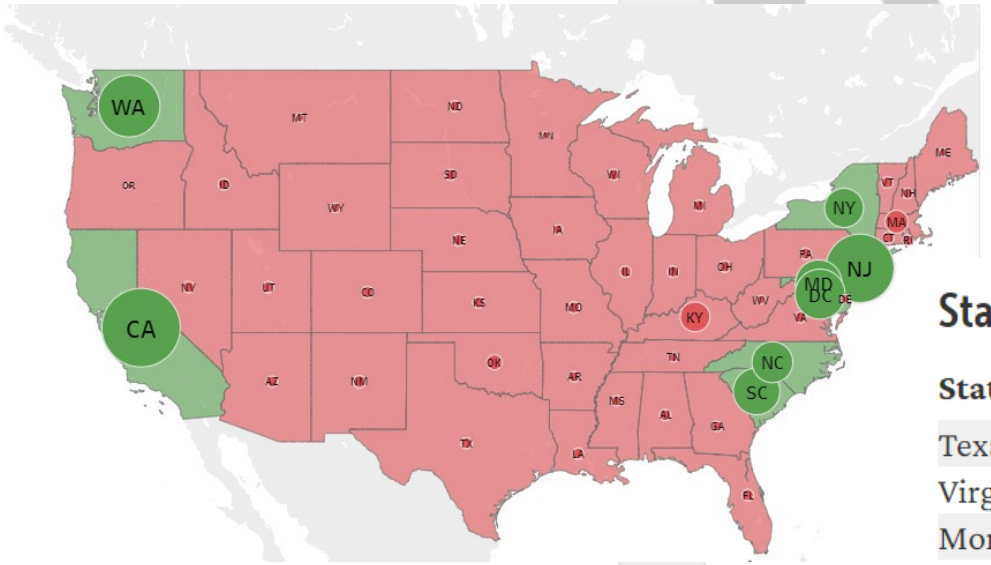
- Agree on importance of continued interoperability to public safety
- Commit to finding funding for a digital interoperable radio system
  - Grants (may only be available for P25)
  - ARP
  - Opioid Law Suit Settlement
  - Low interest loans
  - Vendor leasing
  - Legislation
  - Public Safety Tax
- Approve for the Task Force, under guidance of Twin County 911 Commission, to issue procurement documents early next year
- Acknowledge we can no longer solely rely on volunteer agencies to purchase and maintain communication equipment

PROGRESS AND NEXT STEPS

- SUBMITTED BRIC GRANT - $12.7M/$5.9M
  - Regional W/10 Years Maintenance)
  - Low Probability; Highly Competitive
  - January 26, 2022 is next milestone; FEMA funding last half of 2022
- ISSUED RFP
  - PROPOSALS DUE MARCH 31, 2022
- AFG GRANTS IN PROGRESS – Current Equipment Needs
- RSAF GRANTS IN PROGRESS – 50/50
- JOINT SESSION TO BE SCHEDULED FOR APRIL 2022

BACK-UP

2020 BRIC AWARDS



States with the lowest application success for FY 2020 BRIC funding

State	BRIC Funds Requested	Selected for Further Review	Percent Selected
Texas	$322,288,011	$643,570	0.20%
Virginia	$220,328,261	$677,466	0.31%
Montana	$59,383,371	$242,742	0.41%
Florida	$145,241,161	$702,168	0.48%
Louisiana	$119,339,602	$634,950	0.53%
Hawaii	$117,425,894	$680,000	0.58%
Illinois	$115,683,800	$680,000	0.59%
Tennessee	$57,455,487	$340,000	0.59%
Connecticut	$104,406,012	$632,643	0.61%
Colorado	$102,565,827	$716,992	0.70%