



Benton County Communications System Upgrade

Needs For New Radio/RMS System

- Guaranteed Coverage for Benton County/State wide operations
- Interoperability with Other Agencies
- P25 System Standardization
- Reliable communications and GPS Tracking During Emergency Operations

Benton County Communications System Upgrade

- Replace 15+ Year Old Radio System
- Replace 15+ Year Old Radios
- Replace Current RMS System
 - Computer Aided Dispatch
 - Records Management System (Law Records)
 - Mobile (In vehicle access)
 - Jail Management System
 - Quartermaster System
 - Narcotics Module
 - Evidence Module

Differences In Radio Systems

- Analog

- Been in existence in commercial/business operations since 1933
- Ceiling of innovation has been reached
- Devices can be upgraded, but the technology cannot be
- Can only have one (1) two-way conversation at a time per channel

Differences In Radio Systems

- Digital

- Several conversations can take place on one channel
- Unit ID's are transmitted and received for positive identification
- Background noise greatly reduced
- New software updates are available often, improving operability



Current Configuration

- All dispatch console radios (CENCOM) are programmed UHF analog but are capable of being programmed Digital. CENCOM has two AWIN Radios. One is programmed to State Emergency Management and the other to all other dispatch centers within Benton County.

Current BCSO Tower Sites

- South- Callahan Mountain (South of Lowell)
- East- Whitney Mountain (East of Garfield)
- West- Y City and HWY 59 (North of Gentry)
- Central- Hwy 72 between (Pea Ridge and Bentonville) All Cities- Hwy 102 (Between Centerton and Decatur)
- Judicial- Admin Building

Current BC Fire Towers

- Southeast- Dodd Mountain (SE of Lowell)
- Northeast- Whitney Mountain (East of Garfield)
- Northwest- Hwy 72 (West of Gravette)
- Southwest- Hwy 102 (East of Gentry)
- Fire NE is programmed UHF Analog but is capable of being programmed Digital

Other Tower Sites

- BC Emergency Management Tower
 - Hwy 102 Between Centerton and Decatur
 - BC Emergency Management is programmed UHF
- BC Road Department
 - Exact Locations unknown, they operate on a 4 site leased UHF conventional trucked system.

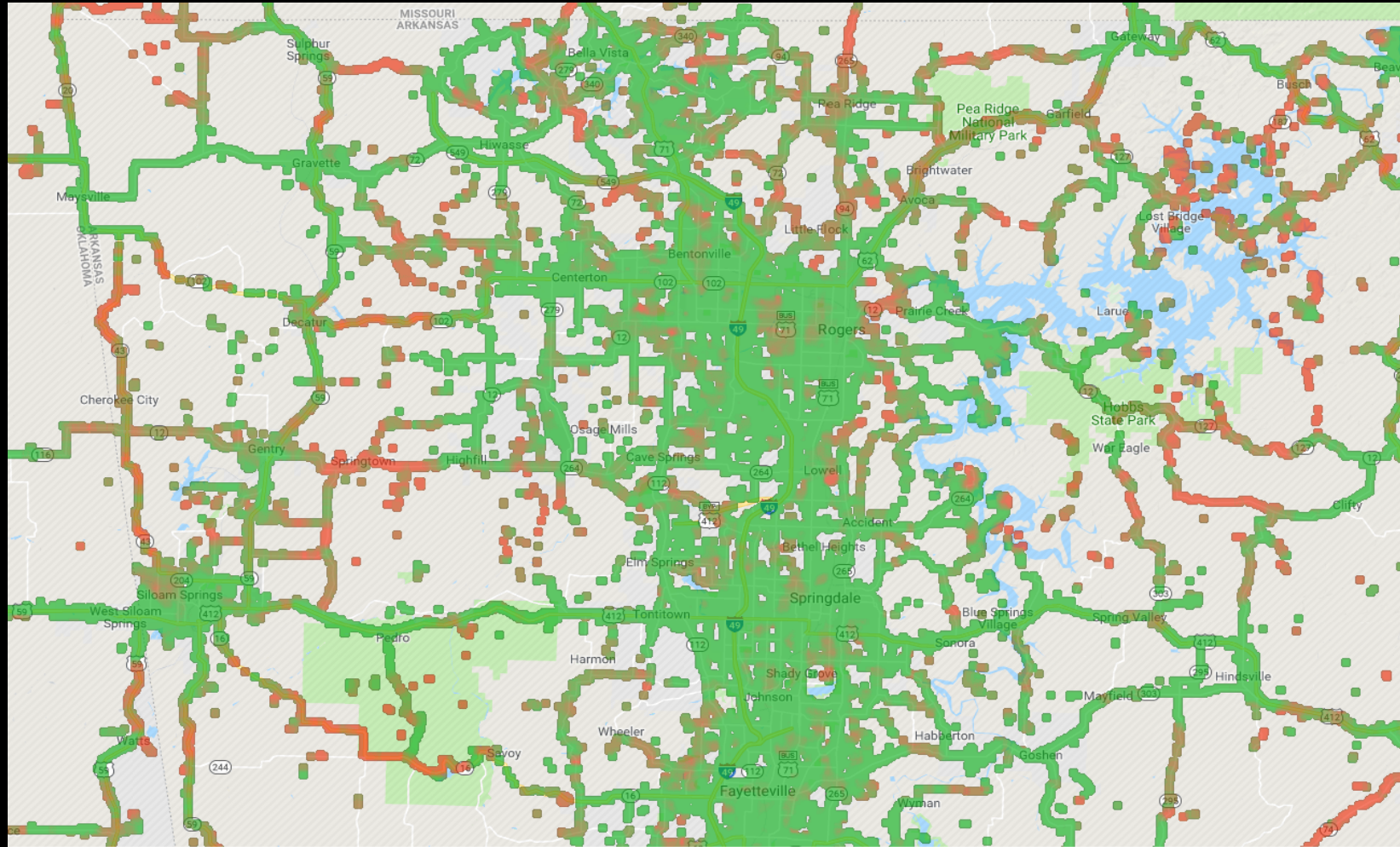
Other Information Regarding Current System

- All other towers (repeaters) are a mixed variety of 10-15 year old or more UHF analog equipment.
- The actual number of radios currently on the BC Radio system is unknown, but estimated at approximately 1500. Approximately 200+ are programmed UHF Analog and are capable of UHF Digital the remainder are UHF Analog only.
- Benton County has approximately 20 AWIN radios capable of operating on the current AWIN system

Current Radio System Deficiencies

- UHF Analog system
- Lacks portable radio coverage
- Lacks mobile radio coverage
- Deputies have to manually switch towers during emergency operations
- Dead spots (numerous all across county)
- County has to pay for maintenance and upgrades
- County has to pay for parts replacement
- 15+ years old
- We or State agencies must provide separate radio to access our current radio system. (State Police, Game and Fish, etc.)

Cellular GPS Coverage Map for Tablets/Officer Location



Project 25

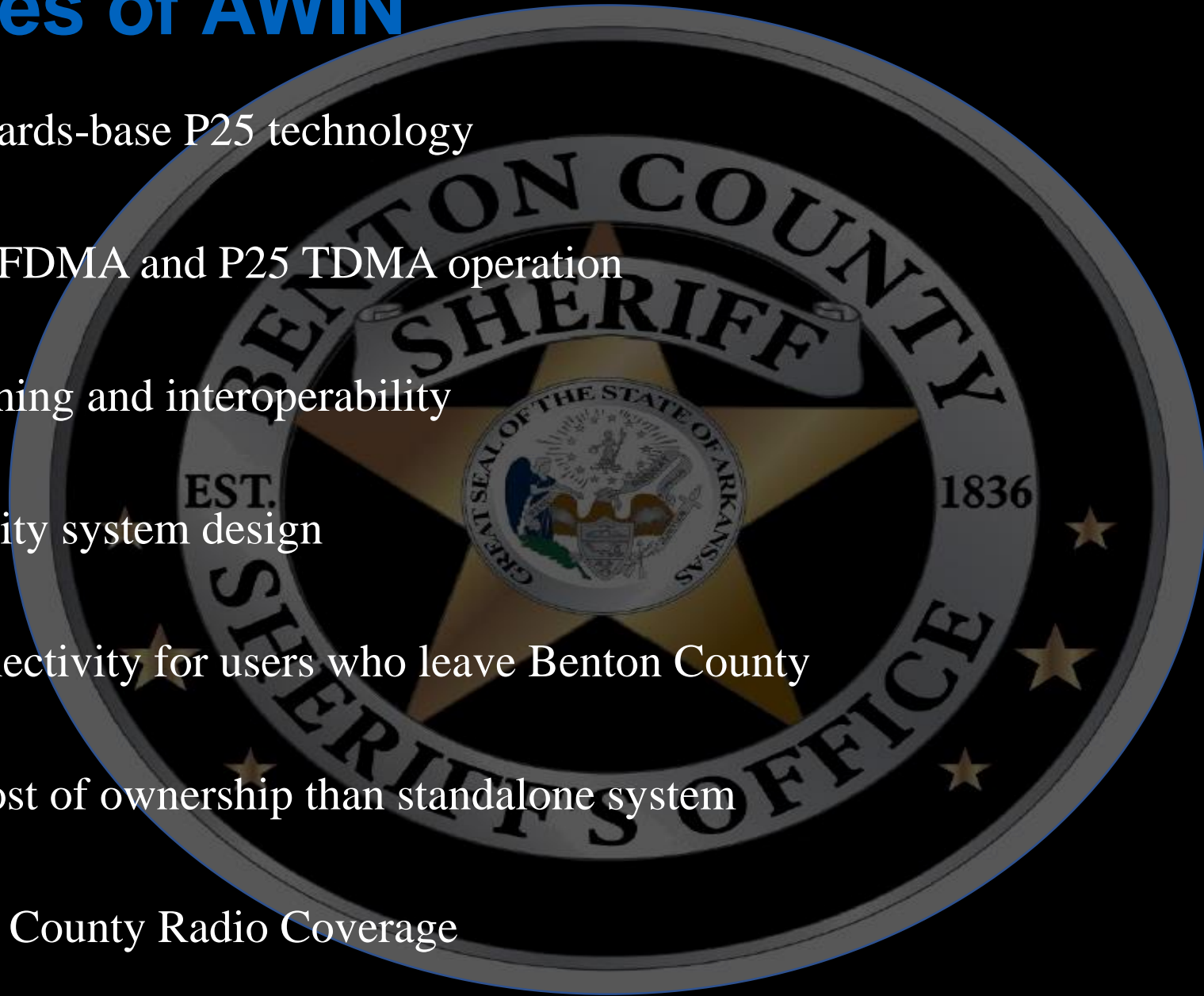
Standard for Public Safety Radio Communications

- Developed by APCO (Association of Public-Safety Communications Officials) and other national associations
- Multi-Vendor Interoperability Standard
- Multi-Frequency Standard
- Stable Technology in the Industry
- Supports Voice and Data Operation
- Required for Government Grant Programs



Advantages of AWIN

- Built on standards-base P25 technology
- Supports P25 FDMA and P25 TDMA operation
- Seamless roaming and interoperability
- High availability system design
- Constant connectivity for users who leave Benton County
- Lower total cost of ownership than standalone system
- Guaranteed in County Radio Coverage





LEADING MARKET PRESENCE



WORLDWIDE LEADER
IN MISSION CRITICAL
COMMUNICATIONS



61 COUNTRIES



34 STATEWIDE
SYSTEMS



3M+ P25 RADIOS
SHIPPED



900 N.A. SERVICE
PROVIDER
LOCATIONS

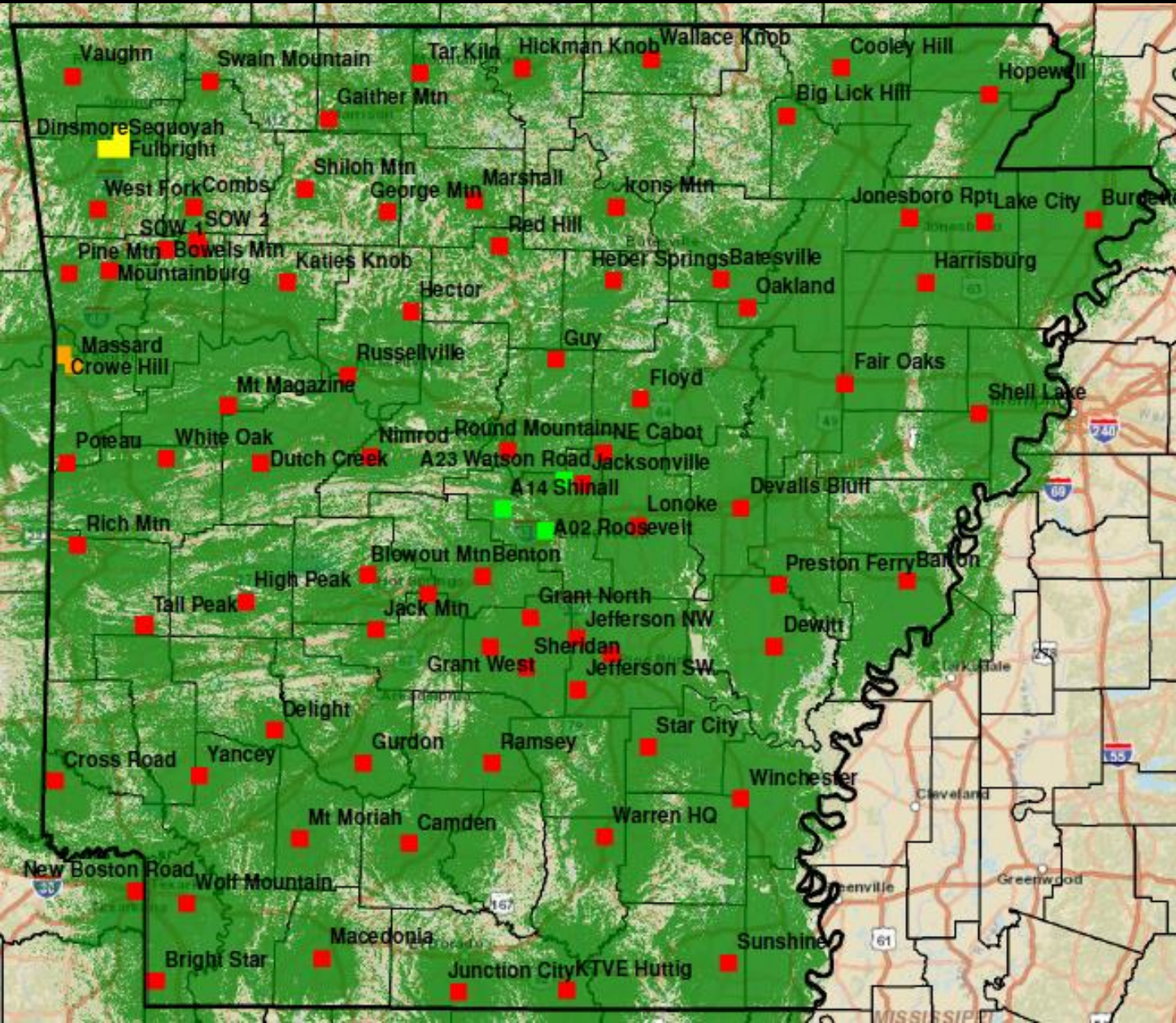


6.1K SERVICE
TECHNICIANS



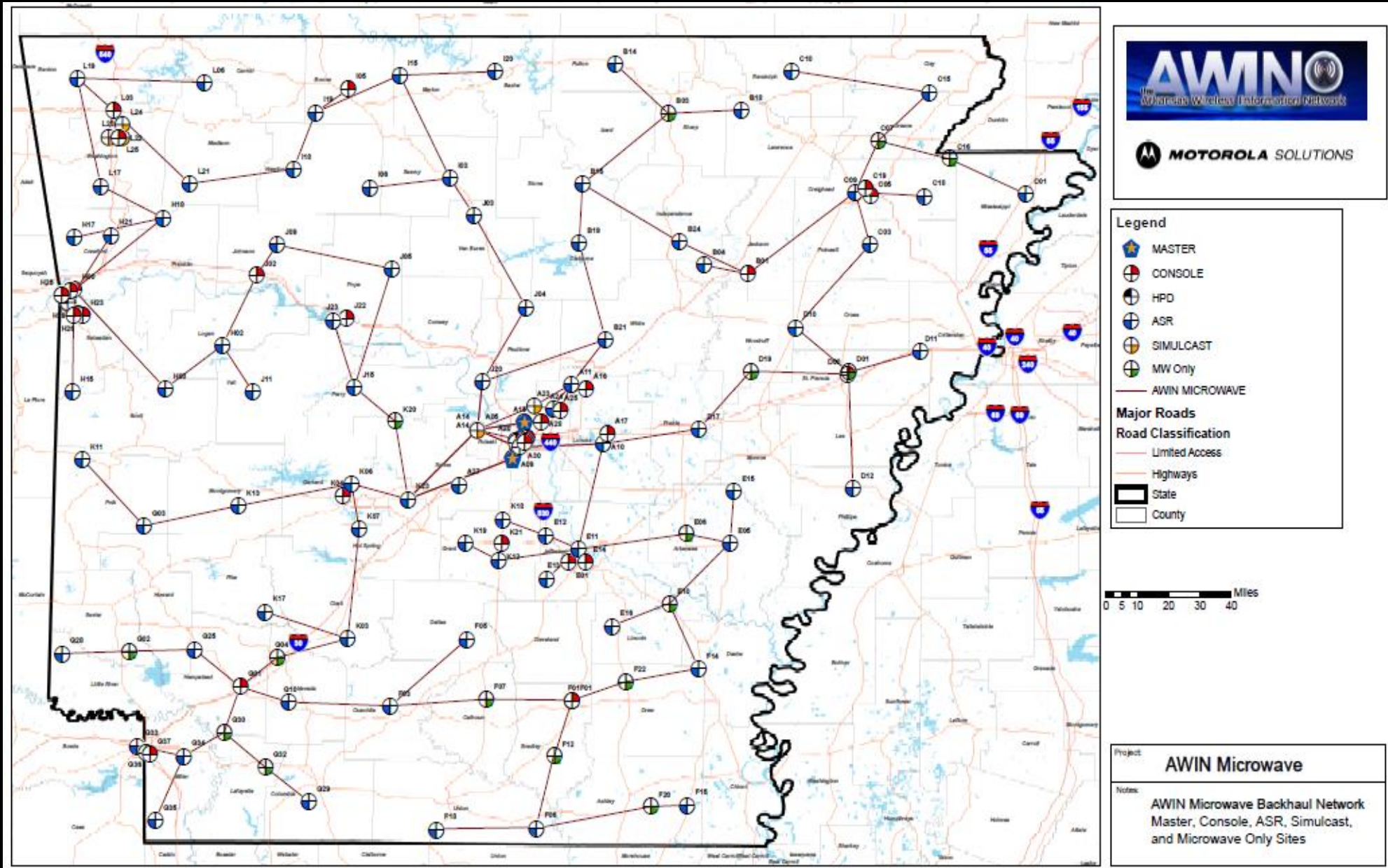
25K WORLD-CLASS
CHANNEL
PARTNERS

Interoperability with AWIN Users



- 23,000+ Users on AWIN today
- Arkansas State Police
- Arkansas Game and Fish
- City of Fayetteville
- City of Ft. Smith
- City of Little Rock
- City of Hot Springs
- City of Rogers
- City of Springdale (near future)
- City of Siloam Springs (near future)

AWIN Microwave Network



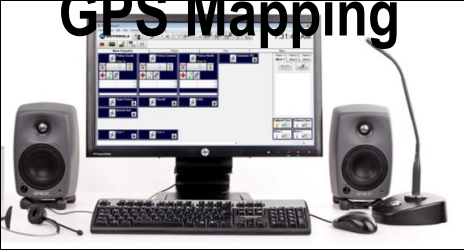
P25 Phase 2 TDMA System Components



**Redundant
AWIN Core**



GPS Mapping




Sites




AWIN Shared System Components



**AWIN
Redundant
Core**



**Network Management
GPS Mapping**



Sites

**P25 Simulcast System
or ASTRO Repeater
Sites**



Motorola Radio/RMS User Safety

- Allows users to roam county without switching channels or towers
- GPS tracking for radios
- Man Down Feature for First Responders
- Emergency Button Feature
- Redundant Microwave Link between all towers (Loop)

Kenwood

- No ISSI (Inter subsystem Interface) switch with AWIN
 - Allows different manufacturers to be connected together into wide area networks so that users on different networks can talk with each other.
- No interoperability without patching systems together
- Benton County will have to pay maintenance and upgrades on system
- Kenwood would charge \$50,000.00 for three year warranty
- BC employees would not have state wide coverage
- Only utilizing 4 tower sites - Will not guarantee coverage

Kenwood P-25 Quote

<u>Kenwood P-25 Radio System Costs</u>			
<u>Quantity</u>	<u>Description</u>	<u>Unit Price</u>	<u>Total Price</u>
1	Atlas 700/800 mhz P25 Phase 2	\$1,447,578.28	\$1,447,578.28
1	Nexedge 450 mhz Gen 2	\$494,400.16	\$494,400.16
1	Licensed Microwave	\$600,000.00	\$600,000.00
1	P25 ISSI	\$75,000.00	\$75,000.00
1	Nexedge ISSI	\$75,000.00	\$75,000.00
1	Dispatch Upgrades	\$125,000.00	\$125,000.00
1	GPS tracking	\$48,500.00	\$48,500.00
1	Nexedge System Monitor	\$48,757.72	\$48,757.72
1	BDA in Jail	\$17,500.00	\$17,500.00
175	SO Mobiles	\$3,407.92	\$596,386.00
170	SO Portables	\$2,464.00	\$418,880.00
100	SO Jail Portables	\$2,464.00	\$246,400.00
115	Fire, OEM, Road Mobiles	\$755.00	\$86,825.00
310	Fire, OEM, Road Portables	\$547.80	\$169,818.00
			\$4,450,045.16
	Sales Tax	9.50%	\$422,754.29
	Total radio system cost		\$4,872,799.45

Kenwood Nexedge System Quote(Not P25)

<u>Kenwood</u>			
<u>Description</u>	<u>Quantity</u>	<u>Price Each</u>	<u>Total Cost</u>
Nexedge System	1	\$ 603,723.38	\$ 603,723.38
Microwave Connectivity	1	\$ 136,782.98	\$ 136,782.98
System Monitoring	1	\$ 44,779.15	\$ 44,779.15
Interoperability	1	\$ 41,448.20	\$ 41,448.20
CENCOM Upgrade	1	\$ 50,300.00	\$ 50,300.00
3 Years Parts & Labor	1	\$ 50,307.49	\$ 50,307.49
** Mobile Radio's	225	\$ 845.30	\$ 190,192.50
Radio Connectivity Lic	1	\$ 7,069.80	\$ 7,069.80
Portable Radio's	520	\$ 932.09	\$ 484,686.80
Bidirectional Antenna (jail)	1	\$ 50,000.00	\$ 50,000.00
Software for interop	1	\$ 20,000.00	\$ 20,000.00
Mobile repeater	1	\$ 60,000.00	\$ 60,000.00
Recorder upgrade	1	\$ 10,000.00	\$ 10,000.00
*Additional site if needed	1	\$ 140,710.00	\$ 140,710.00
Tracking portables software	1	\$ 3,500.00	\$ 3,500.00
Sales Tax	0.095	\$ 1,893,500.30	\$ 179,882.53
Total Cost			\$ 2,073,382.83
** Includes \$90.00 per radio installation			
*Only needed if any area has weak signal after install. w/tax \$154,077.45			

Southern Software

- Has 5 modules that require different passwords
 - 1200 user accounts for SO alone
- System does not communicate between modules
- Employees have to enter redundant information
- Will not track GPS locations from radios
- Requires a user license for every user
- The Sheriff's Office cannot provide other municipal agencies authorization to see active calls

Motorola

- Has ISSI switch with AWIN
- State wide coverage
- Interoperable with state agencies
- Guaranteed 95% portable radio coverage
- Guaranteed 95% + for mobile radios
- Will be utilizing 7 tower locations, 4 from BC, 2 from Rogers, 1 existing AWIN site (microwave loop, no loss of coverage)
- Hardwired at Cen Com through DIS switch
- Possibility of 12 total towers in NWA alone
- 5 Year warranty on all components

Spillman RMS

- Single database/module for all users
 - No redundant entries
- Will track GPS locations from radios
- Provides analytical data for crime statistics
- Link Analysis for investigations.
- Sheriff's Office can provide other municipal agencies the ability to see active calls on CAD
- One license per site, not per user
- Designed to support larger agencies

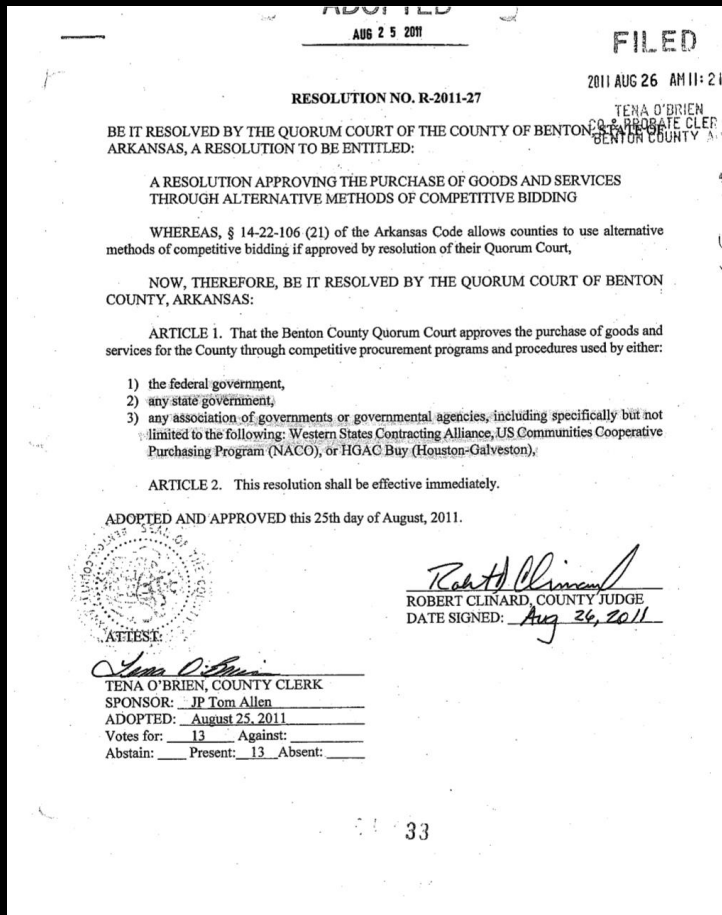
Motorola/Spillman Quote

Qty	Description		Unit	Extended
4	6 Channel Simulcast Site		192,201.00	768,804.00
	GTR 8000 Repeaters			
	(3) 7 1/2 ft Racks			
	Antenna System			
	UPS and Surge Protection Systems			
	RCM Management Terminal			
1	AWIN Master Site License	47,200.00	47,200.00	47,200.00
7	MCC7500 Dispatch Console System	45,168.00	45,168.00	316,176.00
	Computer Hardware			
	Monitors			
	4 Port Conventional Channel Gateways			
	Headsets and Mics			
	Dispatch Network Equipment		29,046.00	29,046.00
1	AIS Server for Logging Recorder		No Charge	No Charge
1	5 Hop MNI Microwave System		285,000.00	285,000.00
1	JAIL BDA		50,000.00	50,000.00
64	APX 4000 2.5 Portable Radio	4,304.00	3,692.00	236,288.00
	APX 4000 7/800 MHZ MODEL 2 PORTABLE			
	ADD: TWO KNOB CONFIGURATION			
	P25 9600 BAUD TRUNKING			
	ADAPTIVE NOISE SUPPRESSION			
	5 YEAR WARRANTY			
	CHARGER, SINGLE-UNIT			
	RSM, NOISE CANC. EMERGENCY BUTTON			
112	APX 4500 Mobile -Dash Mount		3,015.00	337,680.00
	ASTRO DIGITAL CAI OPERATION			
	SMARTZONE OPERATION			
	P25 9600 BAUD TRUNKING			
	5 YEAR WARRANTY			
	EMERGENCY BUTTON			
	INSTALLATION KIT			
	ANTENNA			
106	APX 1000 Portable		1,996.00	211,576.00
	APX 4000 7/800 MHZ MODEL 2 PORTABLE			

Motorola/Spillman Quote

Qty	Description		Unit	Extended
	ADD: TWO KNOB CONFIGURATION			
	P25 9600 BAUD TRUNKING			
	ADAPTIVE NOISE SUPPRESSION			
	5 Year Warranty			
	CHARGER, SINGLE-UNIT			
	RSM, NOISE CANC. EMERGENCY BUTTON			
244	APX 1500 Mobile		995.00	242,780.00
	APX 4000 7/800 MHZ MODEL 2 PORTABLE			
	ADD: TWO KNOB CONFIGURATION			
	P25 9600 BAUD TRUNKING			
	ADAPTIVE NOISE SUPPRESSION			
	5 YEAR Warranty			
	CHARGER, SINGLE-UNIT			
431	APX 900 Portable		995.00	428,845.00
	TWO KNOB CONFIGURATION			
	P25 9600 TRUNKING BAUD			
	5 Year Warranty			
	CHARGER, SINGLE-UNIT			
431	RSM, NOISE CANC. EMERGENCY BUTTON		118.00	50,858.00
lot	TDMA Licenses		300,000.00	300,000.00
1	Spillman CAD System as Proposed		1,424,083.00	1,424,083.00
Lot	Project Services	1,118,588.00	1,118,588.00	1,118,588.00
	Project Management			
	System Engineering			
	System Technologist			
	System Installation			
	Subscriber Programming			
	Training			
	System Sub-Total			5,846,924.00
	Trade In			-500,000.00
	2018 Order Incentive			-396,501.00
	Large System 2018 Ship Incentive			-531,340.00
	Spillman Bundle Incentive			-213,612.00
	System Total			4,205,471.00

RMS Procurement/Texas Department of Information Resources

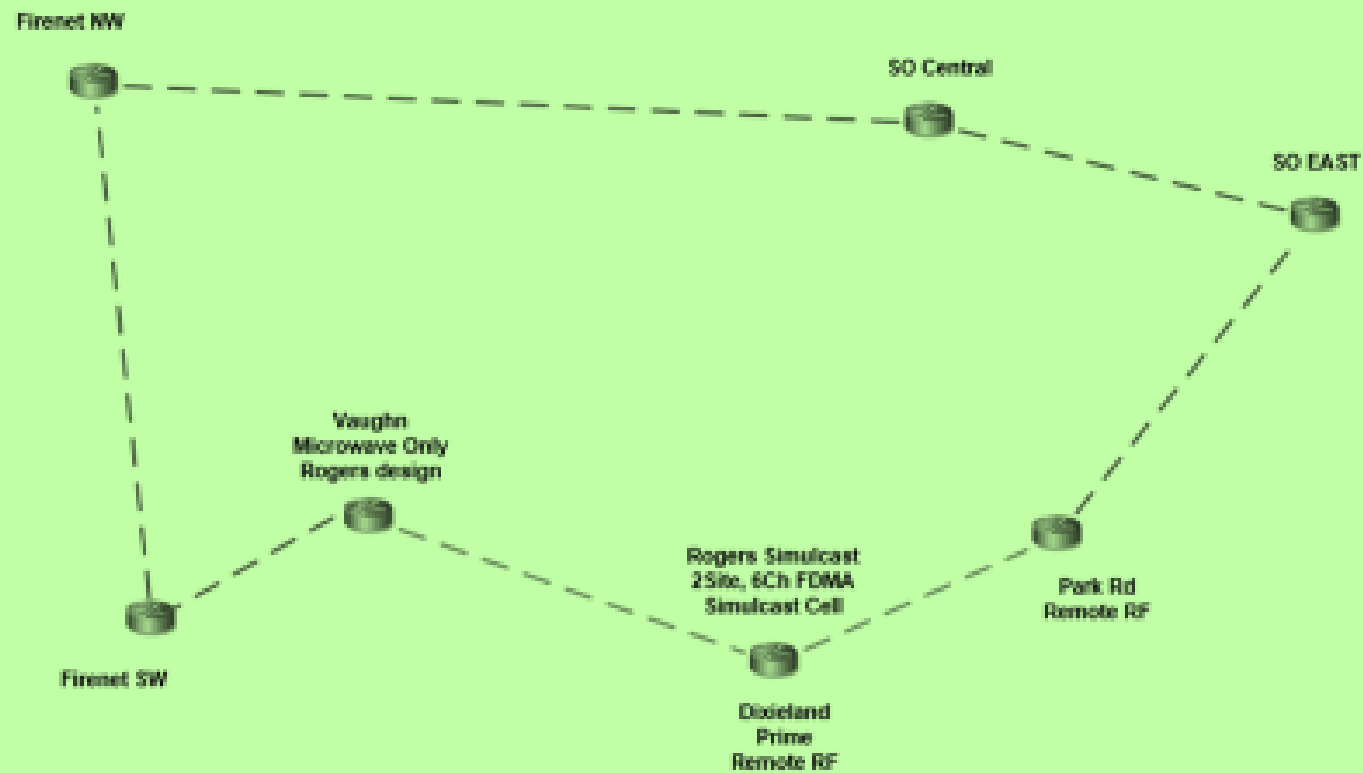


Spillman Technologies, Inc.

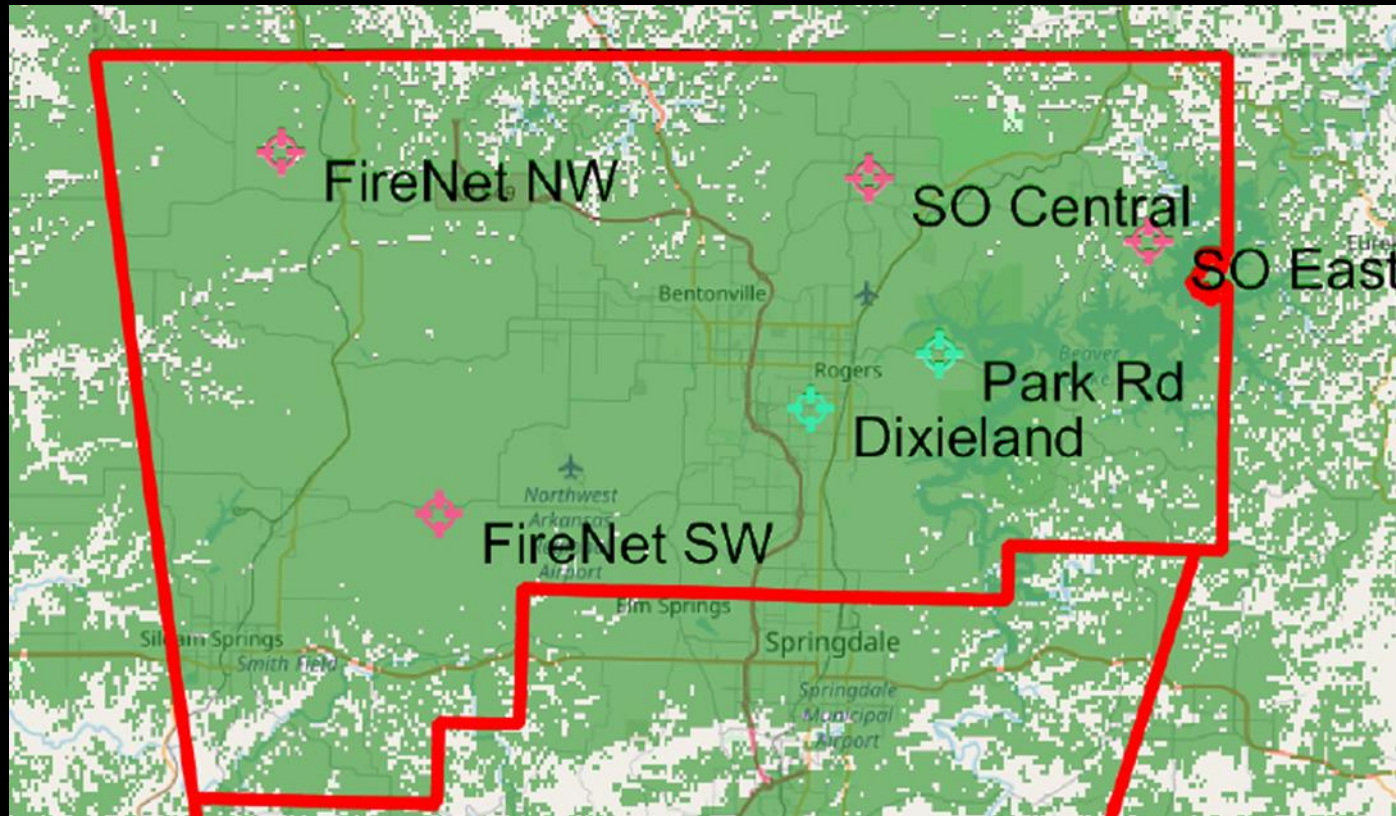
Vendor ID	18703886186	DIR Contract Number	DIR-TSO-3370
URL	Vendor Website	Contract Term End Date	11/19/2018
HUB Type	Non HUB	Contract Exp Date	11/19/2019

Contact Spillman Technologies, Inc.	Contact DIR
Contact	Todd Jorgensen
Phone	(801) 902-1501
Fax	(801) 902-1210
Contact	Vania Ramaekers
Phone	(512) 475-4624
Fax	(512) 475-4759

Rogers/Benton County Simulcast Design



Portable Radio Coverage @ 95%



Mobile Radio Coverage



Grid Test Coverage Map (95% Guarantee)



Figure 3. CATP Map 1 - Benton County Covered Area Voyager Testing Grid Outbound Portable On-Street

Benton County Communications System Upgrade

- \$5,846,924 (Total Before Incentives)
 - \$1,530,908 Infrastructure
 - \$1,424,083 RMS
 - \$1,773,345 Subscriber Units (Radios and Consoles)
 - 356 Mobiles
 - 601 Portables
 - 7 Consoles for Cen Com
 - \$1,118,588 Project Services

Project Incentives

- \$500,000 Trade In
- \$927,841 2018 Radio Incentives
- \$213,612 CAD Bundle Incentive
- \$4,205,471.00 (Total After Incentives)

Additional Equipment/Costs

- \$61,500.00 IMW Server and Software (For GPS to work)
- \$9,750 GPS (130 Users x \$75 per user)
- \$122,325.00 Pagers-Fire
- \$76,725.91 for county server update (RMS hardware)
- \$15,672 Performance Bond
- Total -\$4,491,443
- Total with 6.5% state tax - \$4,783,387.00 (However, we will not be taxed on software, only hardware)
- **\$250,000 Contingency Fund**
- **\$437,000 of total cost is for county/municipal volunteer fire services.**

Yearly Sustainment Costs

- RMS Maintenance - \$ 126,636 Per Year (\$50,000.00 currently) \$74,000.00 Yearly Increase
- Tower Rent- \$72,000 Per Year (\$2,000 month/3 sites) \$43,000 Yearly Increase (BC owns 4th site) (Working with City of Gentry to place a tower on their new water tower (could decrease this amount).
- Dispatch Console Maintenance \$47,700.00 (Yearly after 5 years)
- Broadband connection to Little Rock \$6,084 per year (Currently Spend \$3,900.00 for ACIC Connection)
- No Maintenance costs on radios for 5 years (warranty)
- Guaranteed radio costs for 3 years (During build out, and 2 years after activating)

Breakdown of Radios to be Purchased

The background of the slide features a large, semi-transparent seal of the Benton County Sheriff's Office. The seal is circular with a five-pointed star in the center. The text "BENTON COUNTY" is arched across the top, and "SHERIFF'S OFFICE" is arched across the bottom. The year "1836" is on the right side. The star contains a smaller seal with the text "EST. 1836" and "GREAT SEAL OF THE STATE OF ARKANSAS".

BCSO-	175 Mobiles	170 Portables	
BCSO Jail-	100 Portables		
BC Fire-	110 Mobiles	206 Portables	175 Pagers
BC Public Safety-	31 Mobiles	62 Portables	
BC Road-	32 Mobiles	50 Portables	
BC Coroner-	3 Mobiles	3 Portables	
Supply Cache-	5 Mobiles	10 Portables	
Total	356 Mobiles	601 Portables	175 Pagers

Number of Radios Purchased by County

Fire Department	Mobile Radios	Portable Radios	Pagers
Avoca VFD	8	18	24
Beaver Lake VFD	8	18	12
Gallatin VFD	5	15	15
Hickory Creek VFD	10	20	20
Hwy 94 East VFD	3	13	18
Maysville VFD	4	14	14
Nebco VFD	21	31	27
Piney Point VFD	13	23	20
Pleasure Heights VFD	3	9	6
Rocky Branch VFD	8	18	17
Volunteer FD Total	83	179	175
Bethel Heights FD	0	0	
Cave Springs FD	1	1	
Centerton FD	3	3	
Decatur FD	4	4	
Gentry FD	6	6	
Gravette FD	2	2	
Highfill FD	4	4	
Little Flock FD	1	1	
Lowell FD	1	1	
XNA FD	0	0	
Pea Ridge FD	3	3	
Sulphur Springs FD	2	2	
Municipality FD Total	27	27	
Total FD radios to be purchase by Benton County	110	206	175

VFD's will receive a mobile and portable for each apparatus + 10 portables for responders and pagers for their responders.

City FD's will receive a mobile and portable for each county owned apparatus.

Number of Radios Purchased by PD's

Cities Law Enforcement Subscriber Unit Needs	Mobile Radios needed	Portable Radios Needed			Estimated cost for Mobile Radio \$1295*	Estimated cost for Portable Radio \$995*	Estimated total cost for Radios
Bethel Heights PD	9	9			\$11,655.00	\$8,955.00	\$20,610
Cave Springs PD	14	14			\$18,130.00	\$13,930.00	\$32,060
Centerton PD	30	30			\$38,850.00	\$29,850.00	\$68,700
Decatur PD	12	12			\$15,540.00	\$11,940.00	\$27,480
Gentry PD	12	12			\$15,540.00	\$11,940.00	\$27,480
Gravette PD	12	12			\$15,540.00	\$11,940.00	\$27,480
Highfill PD	14	14			\$18,130.00	\$13,930.00	\$32,060
Little Flock PD	9	9			\$11,655.00	\$8,955.00	\$20,610
Pea Ridge PD	18	18			\$23,310.00	\$17,910.00	\$41,220
Sulphur Springs PD	3	3			\$3,885.00	\$2,985.00	\$6,870
Law Total	133	133			\$172,235.00	\$132,335.00	\$304,570
Number of radios for PD's was determined by the number of officers listed in the CAD.							
1:1 ratio was used for portables to mobiles							
Sales Tax not included.							

Number of Radios Purchased by FD's

Cities Fire Department Subscriber Unit Needs	Mobile Radios needed	Portable Radios Needed	Pagers Needed	Estimated cost for Mobile Radio \$995*	Estimated cost for Portable Radio \$995*	Estimated cost for Pagers \$695	Estimated total cost
Bethel Heights FD	1	2	2	\$995.00	\$1,990.00	\$1,390.00	\$4,375.00
Cave Springs FD	6	24	18	\$5,970.00	\$23,880.00	\$12,510.00	\$42,360.00
Centerton FD	14	32	18	\$13,930.00	\$31,840.00	\$12,510.00	\$58,280.00
Decatur FD	6	21	15	\$5,970.00	\$20,895.00	\$10,425.00	\$37,290.00
Gentry FD	12	32	20	\$11,940.00	\$31,840.00	\$13,900.00	\$57,680.00
Gravette FD	8	20	12	\$7,960.00	\$19,900.00	\$8,340.00	\$36,200.00
Highfill FD	6	26	20	\$5,970.00	\$25,870.00	\$13,900.00	\$45,740.00
Little Flock FD	4	19	15	\$3,980.00	\$18,905.00	\$10,425.00	\$33,310.00
Lowell FD	8	24	24	\$7,960.00	\$23,880.00	\$16,680.00	\$48,520.00
Pea Ridge FD	7	34	28	\$6,965.00	\$33,830.00	\$19,460.00	\$60,255.00
Sulphur Springs FD	4	16	12	\$3,980.00	\$2,985.00	\$8,340.00	\$15,305.00
XNA FD	4	4	4	\$3,980.00	\$3,980.00	\$2,780.00	\$10,740.00
Fire Total	72	230	164	\$79,600.00	\$239,795.00	\$130,660.00	\$450,055.00

Number of radios for FD's was determined by the number of apparatus listed in the CAD and Number of personnel supplied by the FD.

Sales Tax not included.

Benton County Communications System Upgrade

Benton County Communication Upgrade			
Population served by CENCOM Dispatch and Benton Counties Communication System 64,371			
Total Investment by Benton County (radio cost not included)			\$3,056,444 or \$47.48 per resident
Location	Population	Cost vs City Population	Agency
Bethel Heights	2535	\$120,361.80	Fire and Law Enforcement
Cave Springs	3624	\$172,067.52	Fire and Law Enforcement
Centerton	12861	\$610,640.28	Fire and Law Enforcement
Decatur	1788	\$84,894.24	Fire and Law Enforcement
Gentry	3726	\$176,910.48	Fire and Law Enforcement
Gravette	3271	\$155,307.08	Fire and Law Enforcement
Highfill	649	\$30,814.52	Fire and Law Enforcement
Little Flock	2806	\$133,228.88	Fire and Law Enforcement
Lowell	8922	\$423,616.56	Fire Only
Pea Ridge	5401	\$256,439.48	Fire and Law Enforcement
Sulphur Springs	531	\$25,211.88	Fire and Law Enforcement
		Total \$2,189,492.30	
*2016 population numbers used.			
\$3,056,444 Communication and CAD system			
Population x \$47.48 = City cost that is being paid by Benton County.			

Funds Provided by Sheriff Holloway

- Sheriff Holloway has authorized the use of up to **\$200,000.00** from funds generated by the Sheriff's Office to assist municipal LE/FD personnel utilizing the new system with acquiring the minimal number of mobile/portable radios, or pagers, to ensure they remain operational during this transition.
- The Sheriff's Office will own the units, and issue the assets to agencies for an indefinite amount of time.