

June 10, 2014

Federal Communications Commission
Public Safety and Homeland Security Bureau
445 12th Street SW
Washington, DC 20554

To Whom It May Concern

In accordance with the Rule 90.529 (b) (1) and FCC Public Notice DA 14-467 dated April 7, 2014, the Missouri State Highway Patrol respectfully submits the following information documenting existing use of 700 MHz State Geographic License Spectrum between 769-775/799-805 MHz and proposed sites where funding approval exists for the implementation of 700 MHz sites into the Missouri Statewide Interoperability Network (MOSWIN) using 700 MHz State License Spectrum, under FCC authorization WPTZ785.

Authority and Authorization

FCC Docket 96-86 per the 3rd MO&O and 3rd R&O, adopted September 18, 2000 and released October 10, 2000, permitted 'State' governments to receive 2.4 MHz of spectrum in the form of a geographic 'State' License. Per DA-01-406, released February 15, 2001 this designation consisted of a total of 192 channel pairs (at 6.25 KHz bandwidth operation) or 96 channel pairs (at 12.5 KHz bandwidth) or 48 channel pairs (at 25 KHz bandwidth) operation. At the time of issuance, all state channels ranged in the 764-776 MHz / 794-806 MHz (TV Channels 63/64 & 68/69).

On January 18, 2002, The State of Missouri (Communications Division-Missouri State Highway Patrol-Communications Division) was issued callsign WPTZ785 by the Federal Communications Commission. On December 11, 2007 the license was modified to reflect the change in the band plan of the 700 MHz Public Safety Band. That reconfiguration, which converted previously assigned Wide Band data to a nationwide 700 MHz broadband data allocation, resulted in all 700 MHz State License Geographic Channels being moved to the 769-775 MHz/799-805 MHz band.

Consistent with the Digital Transition (DTV) Transition, FCC guidelines required 700 MHz operations in Missouri to not operate co-channel to any primary analog TV stations assignment except as allowed by applicable contour separation and other pertinent rules. Upon thorough examination of the FCC rules and existing analog primary TV stations at the time, the State of Missouri chose to implement 700 MHz spectrum as permitted and required during the DTV transition.

Buildout Overview

In this filing, the State of Missouri presents multiple methods of 700 MHz State License use that contribute to meet the FCC's Substantial Service requirement (or provide Substantial Service) benchmark of coverage of 1/3 Missouri's population. MOSWIN utilizes State License Spectrum under authorization WPTZ785 in a number of ways under 90.529 (b) (1). These methods include:

Digital Vehicular Repeater System (DVRS) operation *statewide* in conjunction with MOSWIN VHF High Band mobile system operation.

Site on Wheels (SOW) 700 MHz trunked deployable solutions for *statewide* MOSWIN operations.

Tactical operations on identified 700 MHz State License Spectrum for *statewide* itinerant use by the Missouri State Highway Patrol for security detail, tactical

Fixed 700 MHz site implementation of five (5) 700 MHz trunked sites utilizing Geographic State License spectrum integrated into the MOSWIN network by June 13, 2014 with an additional eight (8) 700 MHz sites integrated into the network no later than January 1, 2015.

It is our belief that the usage identified within the elements below, in conjunction with the continued implementation of the MOSWIN network, do collectively meet the Commission's build-out requirements of 90.529 (b) (1), based on the guidance provided. The Missouri Department of Public Safety, in its expansion of the MOSWIN network over the coming years, will continue to expand the network by implementing 700 MHz State License Spectrum at identified future sites, as needed.

Elements of 700 MHz State License utilization within the MOSWIN network under authorization WPTZ785

ELEMENT 1 The first major component of Missouri's filing will outline the use of 700 MHz Digital Vehicular Repeater System (DVRS) as utilized by a number of Missouri Statewide Agencies. The Missouri State Highway Patrol utilizes over 1300 700 MHz DVRS that connect to the multi-band VHF/700 MHz mobile radios in their vehicles to achieve portable radio coverage in the mobile coverage designed MOSWIN network. An additional 93 DVRS units are utilized in the MOSWIN network by other Missouri State Agencies for statewide operation. Other statewide agencies utilizing 700 MHz State License Spectrum for vehicular repeaters are the Missouri Department of Natural Resources and the Missouri Capital Police. For statewide DVRS operations by Missouri State Agencies, the following two (2) 700 MHz Geographic State License channels are used as DVRS frequencies in conjunction with the MOSWIN network:

927-928 774/804.79375 MHz

935-936 774/804.84375 MHz

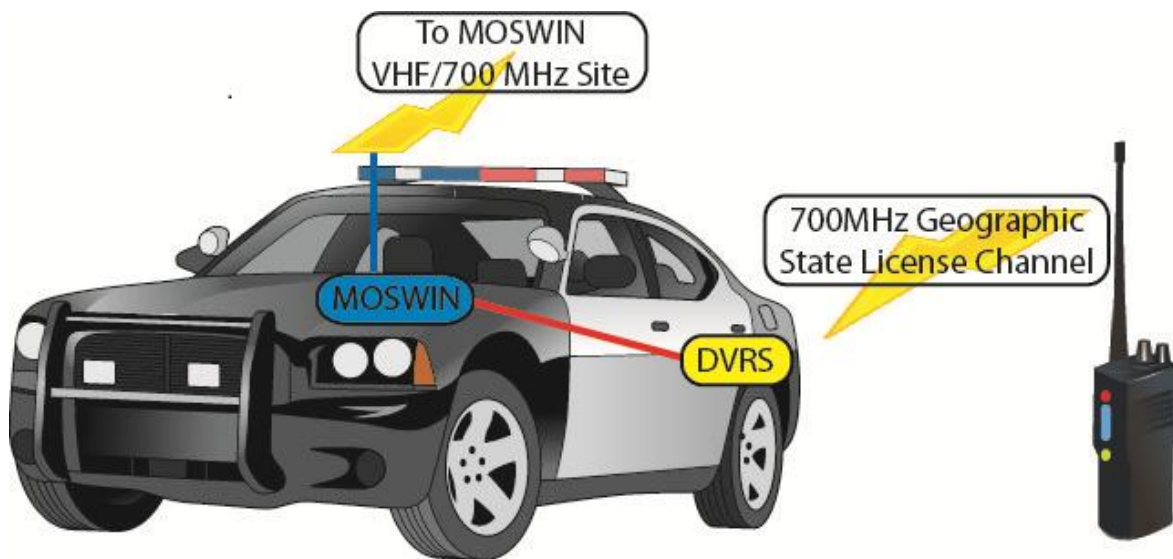
The use of these dedicated DVRS channels connected to the Wide Area VHF/700 MHz Missouri Statewide Interoperability Network (MOSWIN) provides system coverage and interoperability in all of Missouri's 114 counties plus the independent City of St Louis, to other state, local and federal users operating throughout the MOSWIN network.

When a first responder or other MOSWIN user equipped with a 700 MHz DVRS setup leaves his vehicle, the 700 MHz portable radio (DVRS) will tie-in and provides the user portable access to the MOSWIN radio system. More

specifically, the 700 MHz DVRS portable is associated via the DVRS configuration to the internal vehicle VHF trunked mobile subscriber unit. The VHF trunked subscriber unit is then associated to a specific MOSWIN VHF tower transceiver via mobile coverage. Furthermore, the VHF tower location associated provides a specific 37dbu contour that collectively encompasses all cities, and towns within Missouri.

Below is a simple illustration of how the 700 MHz DVRS system works in concert with the VHF/700 MHz/800 MHz MOSWIN Wide Area Network utilizing 700 MHz Geographic State License Spectrum. The MOSWIN network was designed to provide *mobile* coverage throughout the State of Missouri so these vehicular repeater systems offer end users *portable* coverage within the *mobile* MOSWIN footprint. In total over 3000 users access daily 700 MHz Geographic State License spectrum through the use of digital vehicular repeaters throughout the MOSWIN network.

Digital Vehicular Repeater Diagram



The entire population located within Missouri’s 114 counties plus the independent City of St Louis is covered by the MOSWIN VHF/700 MHz statewide network with substantial service by the MOSWIN network’s VHF High Band Mobile Coverage. The Missouri State Highway Patrol asserts that the DVRS implementation in MOSWIN, utilizing 700MHz State License Spectrum, meets the requirement to provide substantial service to 2/3 of the population, as outlined in 47 CFR 90.529 (b)(2), as of June 13, 2014.

ELEMENT 2 The second component of our 700MHz Geographic State License use is the deployment of a six channel 700MHz site on wheels (SOW) to link on-site users to the wide area MOSWIN network. The SOW is deployed to areas where MOSWIN coverage has been compromised by an incident or 700 MHz portable coverage

is required for a planned event. MOSWIN has coordinated with a number of 700 MHz SOW's (implemented) deployed by other Missouri agencies to utilize the same 700 MHz Geographic State License channels throughout Missouri for use with multiple SOW's. The 700 MHz site onboard the SOW connects to a bridging system that allows VHF analog users, using established National VHF Tactical VTAC 36 and VTAC 37 repeater pairs, to be interfaced to the MOSWIN network as necessary in addition to 700 MHz users. During mission critical incidents MOSWIN also deploys portable cache radios capable of operating in conjunction with the deployed SOW.

The SOW solution provides access to the MOSWIN network for all users. Multiple agencies in Missouri have implemented deployable Site on Wheels (SOW) that can also access the MOSWIN network using 700 MHz State Geographic License spectrum under authorization WPTZ785. MOSWIN System Administration has provided the MOSWIN system key and control channel information, necessary to access multiple MOSWIN SOW units, to users throughout the state, including public safety users of 700/800 MHz radios and systems in the St Louis and Kansas City metropolitan areas. This allows access to the MOSWIN network via SOW as it is deployed across the state during mission critical incidents, in support of responders from across Missouri, including responders operating in and around the State's most populated areas.

The 700 MHz Geographic State License Channels to be implemented for statewide SOW use in this deployable configuration are:

25-26	769/799.15625 MHz
153.154	769/799.95625 MHz
235-236	770/800.46875 MHz CC-P
685-686	773/803.28125 MHz
805-806	774/804.03125 MHz
885-886	774/804.53125 MHz CC-A

Where channel 235-236 is the *Primary* Control Channel and channel 885-886 is the *Alternate* Control Channel.

The Missouri State Highway Patrol asserts that the availability of multiple 700MHz deployable sites, utilizing 700MHz State License Geographic Spectrum, integrated into MOSWIN, meets the requirement to provide substantial service to 2/3 of the population, as outlined in 47 CFR 90.529 (b)(2).

ELEMENT 3

An additional element of how the State of Missouri utilizes the 700 MHz State Geographic License under authorization WPTZ785 is mobile tactical use by the Missouri State Highway Patrol (MSHP). The MSHP is the licensee of the Missouri State 700 MHz Geographic License and utilizes 700 MHz State License Spectrum for a number of itinerant and tactical purposes in support of their mission including criminal investigations, in support of Special Emergency Response Teams (SERT), and surveillance and security details throughout Missouri. These tactical channels are pre-programmed into subscriber units and made available to specific users, as necessary. The majority of these tactical channels are utilized statewide over Missouri's 114 counties plus the independent City of St Louis. The channel numbers and names are listed as:

35-36 SWAT, Security and Criminal Investigations

75-76 SWAT, Security and Criminal Investigations

115-116 SWAT, Security and Criminal Investigations

155-156 SWAT, Security and Criminal Investigations

195-196 SWAT, Security and Criminal Investigations

235-236 SWAT, Security and Criminal Investigations

275-276 SWAT, Security and Criminal Investigations

307-308 SWAT, Security and Criminal Investigations

655-656 SWAT, Security and Criminal Investigations

855-856 SWAT, Security and Criminal Investigations

927-928 SWAT, Security and Criminal Investigations

931-932 SWAT, Security and Criminal Investigations

The Missouri State Highway Patrol asserts that the availability of multiple 700MHz mobile tactical subscriber units statewide, utilizing 700MHz State License Geographic Spectrum, integrated into MOSWIN, meets the requirement to provide substantial service to 2/3 of the population, as outlined in 47 CFR 90.529 (b)(2).

ELEMENT 4 As the fourth element of its 700 MHz Geographic State License build-out, the Missouri Department of Public Safety has implemented, or is prepared to implement, 700 MHz Geographic State License spectrum in thirteen (13) fixed implementations in the overall MOSWIN network throughout Missouri serving its total population of 5,988,527 (2010 Census) no later than January 1, 2015. See additional site specific information in Appendix A of this filing. As of June 13, 2014, The Missouri Department of Public Safety has implemented five (5) sites utilizing 700 MHz Geographic State License Spectrum into the MOSWIN network at the following locations:

Rockport, Missouri (Atchison County, Missouri)

29-30 769/799.18125 MHz CC-P

113-114 769/799.70625 MHz

185-186 770/800.15625 MHz

273-274 770/800.70625 MHz

653-654 773/803.08125 MHz

773-774 773/803.83125 MHz CC-A

This site serves a population of 5,656.



Columbia, Missouri (Boone County, Missouri)

65-66	769/799.40625 MHz CC-P
145-146	769/799.90625 MHz CC-A
229-230	770/800.43125 MHz
269-270	770/800.68125 MHz
649-650	773/803.05625 MHz
725-726	773/803.53125 MHz

This site serves a population of 124,230.



Trenton, Missouri (Grundy County, Missouri)

73-74	769/799.45625 MHz CC-P
113-114	769/799.70625 MHz
233-234	770/800.45625 MHz CC-A
273-274	770/800.70625 MHz
653-654	773/803.08125 MHz
773-774	773/803.83125 MHz

This site serves a population of 10,688.



Sikeston, Missouri (Scott County, Missouri)

73-74	769/799.45625 MHz CC-P
113-114	769/799.70625 MHz
233-234	770/800.45625 MHz CC-A
273-274	770/800.70625 MHz
653-654	773/803.08125 MHz
773-774	773/803.83125 MHz

This site serves a population of 40,723.



Jefferson City, Missouri (Cole County, Missouri)

29-30	769/799.18125 MHz CC-P
185-186	770/800.15625 MHz
645-646	773/803.03125 MHz
765-766	773/803.78125 MHz CC-A
813-814	774/804.08125 MHz
849-850	774/804.30625 MHz



This site serves a population of 65,207.

The Missouri Department of Public Safety completed the initial implementation of MOSWIN network in January 2013 and began using the network in support of the communications needs of public safety users. MOSWIN currently supports the communications needs of over 19,000 individual radios and hundreds of Missouri public safety agencies on its network. The growth in the number of users and their needs has resulted in the planning of additional MOSWIN sites. While the initial MOSWIN implementation was a mix of VHF High Band (150 MHz) sites and 700 MHz sites utilizing 700 MHz Geographic State License Spectrum, the majority of new MOSWIN sites, listed below, will utilize specific 700 MHz Geographic State License Spectrum under the existing authorization, call sign WPTZ785. The following MOSWIN sites are funded and will be constructed, implemented and integrated into the network utilizing 700 MHz Geographic State License Spectrum no later than January 1, 2015. Population estimates are derived from 2010 census data.

Stoutsville, Missouri (Monroe County, Missouri)

69-70	769/799.43125 MHz
149-150	769/799.93125 MHz
189-190	770/800.18125 MHz
309-310	770/800.93125 MHz CC-P
729-730	773/803.55625 MHz
809-810	774/804.05625 MHz CC-A



This site will serve a population of 14,490.

Maywood, Missouri (Marion County, Missouri)

109-110	769/799.68125 MHz CC-P
193-194	770/800.20625 MHz
265-266	770/800.65625 MHz CC-A
305-306	770/800.90625 MHz
689-690	773/803.30625 MHz
769-770	773/803.80625 MHz

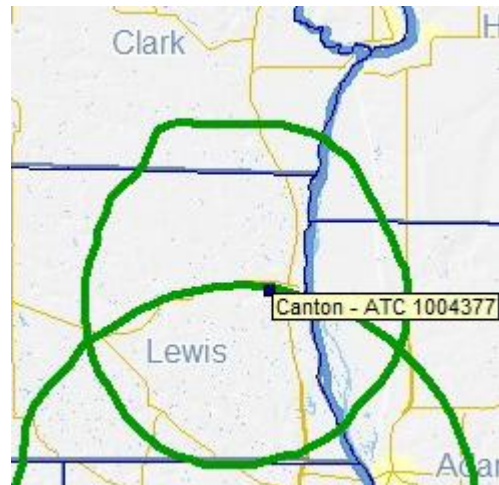
This site will serve a population of 35,269.



Canton, Missouri (Lewis County, Missouri)

29-30	769/799.18125 MHz CC-A
145-146	769/799.90625 MHz CC-P
185-186	770/800.15625 MHz
229-230	770/800.43125 MHz
645-646	773/803.03125 MHz
725-726	773/803.53125 MHz

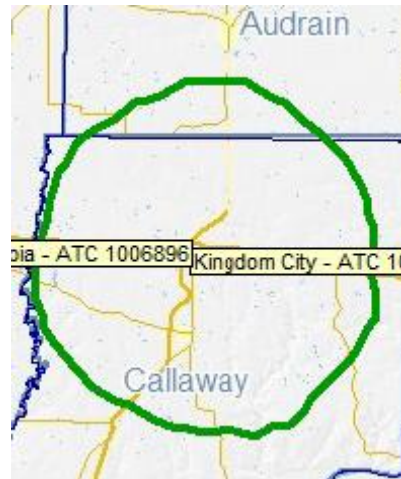
This site will serve a population of 5,819.



Kingdom City, Missouri (Callaway County, Missouri)

73-74	769/799.45625 MHz CC-A
113-114	769/799.70625 MHz
233-234	770/800.45625 MHz CC-P
273-274	770/800.70625 MHz
653-654	773/803.08125 MHz
773-774	773/803.83125 MHz

This site will serve a population of 16,140.



Leasburg, Missouri (Crawford County, Missouri)

109-110	769/799.68125 MHz CC-A
193-194	770/800.20625 MHz
265-266	770/800.65625 MHz CC-P
305-306	770/800.90625 MHz
689-690	773/803.30625 MHz
769-770	773/803.80625 MHz

This site will serve a population of 30,496.



Joplin (Jasper), Missouri (Jasper County, Missouri)

65-66	769/799.40625 MHz CC-A
145-146	769/799.90625 MHz CC-P
229-230	770/800.43125 MHz
269-270	770/800.68125 MHz
649-650	773/803.05625 MHz
725-726	773/803.53125 MHz

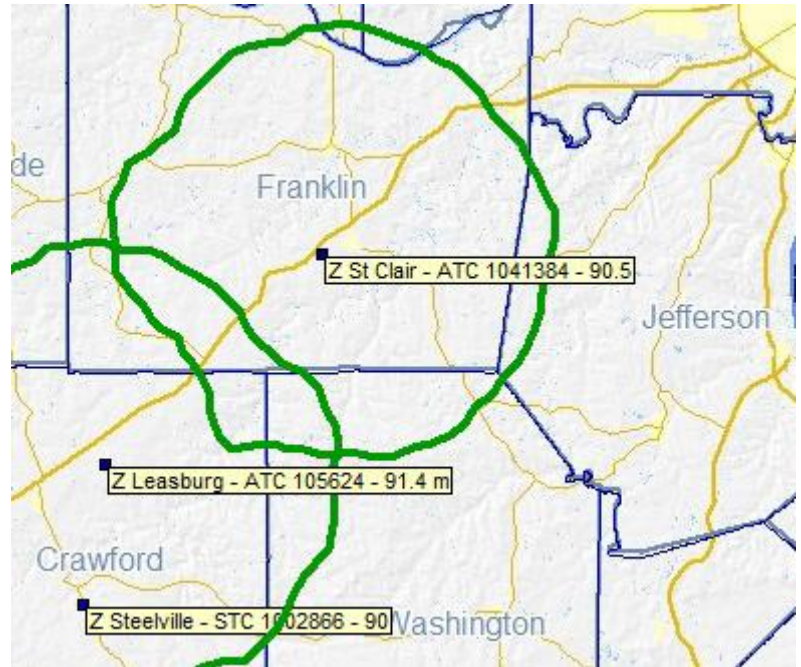
This site will serve a population of 90,052.



St Clair, Missouri (Franklin County, Missouri)

33-34	769/799.20625 MHz
105-106	769/799.65625 MHz
225-226	770/800.40625 MHz
313-314	770/800.95625 MHz
693-694	773/803.33125 MHz CC-P
733-734	773/803.58125 MHz CC-A

This site will serve a population of 59,167.



New Madrid, Missouri (New Madrid County, Missouri)

109-110	769/799.68125 MHz CC-P
193-194	770/800.20625 MHz
265-266	770/800.65625 MHz CC-A
305-306	770/800.90625 MHz
689-690	773/803.30625 MHz
769-770	773/803.80625 MHz

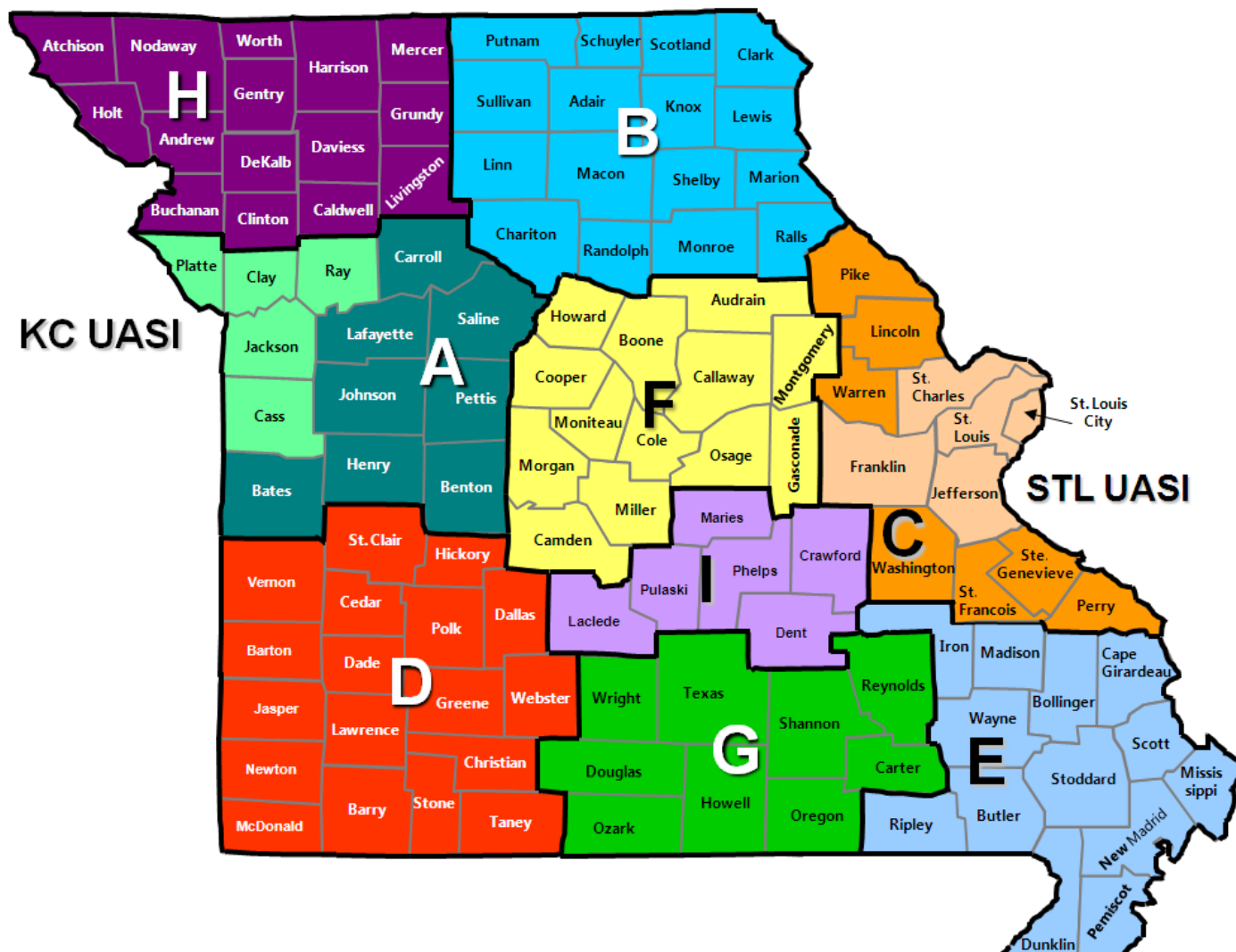
This site will serve a population of 10,912.



Substantial Service Exhibition and Illustration

For the purpose of illustration of the use of Missouri's 700 MHz Geographic State License Spectrum, the State of Missouri is broken down into 9 Geographic Troop Divisions that also serve as Missouri Homeland Security Regions. Those divisions geographically (see graphic below) consist of the following counties:

<u>Troop A</u>	<u>Troop B</u>	<u>Troop C</u>	<u>Troop D</u>	<u>Troop E</u>	<u>Troop F</u>	<u>Troop G</u>	<u>Troop H</u>	<u>Troop I</u>
Bates	Adair	Franklin	Barry	Bollinger	Audrain	Carter	Andrew	Crawford
Benton	Chariton	Jefferson	Barton	Butler Cape	Boone	Douglas	Atchison	Dent
Carroll	Clark	Lincoln	Cedar	Girardeau	Callaway	Howell	Buchanan	Laclede
Cass	Knox	Perry	Christian	Dunklin	Camden	Oregon	Caldwell	Maries
Clay	Lewis	Pike	Dade	Iron	Cole	Ozark	Clinton	Phelps
Henry	Linn	St. Charles	Dallas	Madison	Cooper	Reynolds	Daviess	Pulaski
Jackson	Macon	St. Francois	Greene	Mississippi	Gasconade	Shannon	DeKalb	
Johnson	Marion	St. Louis Ste.	Hickory	New Madrid	Howard	Texas	Gentry	
Lafayette	Monroe	Genevieve	Jasper	Pemiscot	Miller	Wright	Grundy	
Pettis	Putnam	Warren	Lawrence	Ripley	Moniteau		Harrison	
Platte	Ralls	Washington	McDonald	Scott	Montgomery		Holt	
Ray	Randolph		Newton	Stoddard	Morgan		Livingston	
Saline	Schuyler		Polk	Wayne	Osage		Mercer	
	Scotland		St. Clair				Nodaway	
	Shelby		Stone				Worth	
	Sullivan		Taney					
			Vernon					
			Webster					



Missouri county populations per 2010 Census

Adair County	25,607	Greene County	275,174	Ozark County	9,723
Andrew County	17,291	Grundy County	10,261	Pemiscot County	18,296
Atchison County	5,685	Harrison County	8,957	Perry County	18,971
Audrain County	25,529	Henry County	22,272	Pettis County	42,201
Barry County	35,597	Hickory County	9,627	Phelps County	45,156
Barton County	12,402	Holt County	4,912	Pike County	18,516
Bates County	17,049	Howard County	10,144	Platte County	89,322
Benton County	19,056	Howell County	40,400	Polk County	31,137
Bollinger County	12,363	Iron County	10,630	Pulaski County	52,274
Boone County	162,642	Jackson County	674,158	Putnam County	4,979
Buchanan County	89,201	Jasper County	117,404	Ralls County	10,167
Butler County	42,794	Jefferson County	218,733	Randolph County	25,414
Caldwell County	9,424	Johnson County	52,595	Ray County	23,494
Callaway County	44,332	Knox County	4,131	Reynolds County	6,696
Camden County	44,002	Laclede County	35,571	Ripley County	14,100
Cape Girardeau County	75,674	Lafayette County	33,381	St. Charles County	360,485
Carroll County	9,295	Lawrence County	38,634	St. Clair County	9,805
Carter County	6,265	Lewis County	10,211	Ste. Genevieve County	18,145
Cass County	99,478	Lincoln County	52,566	St. Francois County	65,359
Cedar County	13,982	Linn County	12,761	St. Louis County	998,954
Chariton County	7,831	Livingston County	15,195	Saline County	23,370
Christian County	77,422	McDonald County	23,083	Schuyler County	4,431
Clark County	7,139	Macon County	15,566	Scotland County	4,843
Clay County	221,939	Madison County	12,226	Scott County	39,191
Clinton County	20,743	Maries County	9,176	Shannon County	8,441
Cole County	75,990	Marion County	28,781	Shelby County	6,373
Cooper County	17,601	Mercer County	3,785	Stoddard County	29,968
Crawford County	24,696	Miller County	24,748	Stone County	32,202
Dade County	7,883	Mississippi County	14,358	Sullivan County	6,714
Dallas County	16,777	Moniteau County	15,607	Taney County	51,675
Daviess County	8,433	Monroe County	8,840	Texas County	26,008
DeKalb County	12,892	Montgomery County	12,236	Vernon County	21,159
Dent County	15,657	Morgan County	20,565	Warren County	32,513
Douglas County	13,684	New Madrid County	18,956	Washington County	25,195
Dunklin County	31,953	Newton County	58,114	Wayne County	13,521
Franklin County	101,492	Nodaway County	23,370	Webster County	36,202
Gasconade County	15,222	Oregon County	10,881	Worth County	2,171
Gentry County	6,738	Osage County	13,878	Wright County	18,815
				St. Louis city	319,294

Appendix A

700 MHz State License Sites to be constructed prior to January 1, 2015 with funding for acquisition and implementation approved. Leases for access to the tower sites below are completed and approved for the use of 700 MHz State Geographic License Spectrum at these locations by the dates listed.

Location Name	Site Name	FCC Antenna Structure Registration	Latitude	Longitude	MOSWIN 700 MHz State License Constructed as of
Region/Trp H	ROCKPORT	1224092	40-25-40.9N	095-31-20.6W	June 13, 2014
Region/Trp B	CANTON	1004377	40-07-38.0N	091-33-30.1W	January 1, 2015
Region/Trp H	TRENTON	1241605	40-06-19.1N	093-36-23.1W	June 13, 2014
Region/Trp F	COLUMBIA	1006896	38-57-19N	092-16-20.8W	June 13, 2014
Region/Trp F	KINGDOM CITY	1008139	38-56-48.1N	091-56-29.8W	January 1, 2015
Region/Trp I	LEASBURG	1056024	38-06-12.3N	091-18-49.7W	January 1, 2015
Region/Trp B	MAYWOOD	1061652	39-53-09.0N	091-36-39.0W	January 1, 2015
Region/Trp B	STOUTSVILLE	1275292	39-33-02.1N	091-49-46.5W	January 1, 2015
Region/Trp C	ST CLAIR	1041384	37-30-39 N	077-30-39.0W	January 1, 2015
Region/Trp D	JOPLIN	1012933	37-04-37.0N	094-32-16.0W	January 1, 2015
Region/Trp E	NEW MADRID	1206078	36-29-53.0N	089-40-03.0W	January 1, 2015
Region/Trp E	SIKESTON	1226660	36-52-43.9N	089-35-59.4W	June 13, 2014
Region/Trp F	JEFFERSON CITY	N/A	38-34-30.9N	092-10-24.7W	June 13, 2014

Thank you for your consideration regarding this file. Feel free to contact us should you have any questions.

Sincerely

Vernon C. Dougan, Captain

Director of ICTD