



## **Narrowband Mandate and Statewide Interoperability**

### **ISSUE**

This *Issue Review* highlights the federal mandate requiring all non-federal public safety license holders on frequencies ranging from 72-512 MHz to reduce their operating bandwidth from 25 kHz to 12.5 kHz narrowband channels by January 1, 2013.

### **AFFECTED AGENCIES**

Departments of Public Safety, Transportation, Natural Resources, Public Health, and Corrections; Homeland Security and Emergency Management Division; and local public safety entities

### **CODE AUTHORITY**

Chapters 80 and 693

### **BACKGROUND**

In 1998, the Federal Communications Commission (FCC) assigned the 700 MHz spectrum solely to public safety channels. These frequencies were unusable in many jurisdictions due to analog television broadcasts. Public safety channels were operating next to commercial systems resulting in ghosting and channel interference. The Deficit Reduction Act of 2005 (DTV Act) set a date of February 17, 2009 (delayed to June 12, 2009) for TV broadcast stations to vacate the 700 MHz spectrum and required the FCC to auction off the D-Block of the analog spectrum no later than January 28, 2008. The FCC attempted an auction but there were no bidders that met the minimum so it will be redone at some point in the future.

On December 23, 2004, the FCC released a narrowbanding notice that established the following deadlines:

- January 1, 2013 deadline for migration to 12.5 kHz technology.
- Applications for wide band operations (25 kHz channels or bandwidth) accepted until January 1, 2011.
- Applications for modification of operations for existing stations using 25 kHz technology accepted until January 1, 2011.
- Manufacture and importation of any equipment on 25 kHz channel permitted until January 1, 2011.

During the 2007 Legislative Session, HF 353 (Public Safety Interoperability Act) established the Iowa Statewide Interoperability Communications System Board under the joint purview of the Departments of Public Safety (DPS) and Transportation (DOT) and outlined Board membership and duties. A list of Board members is available at: <http://isicsb.iowa.gov/board-members.html>.

**CURRENT SITUATION**

Both State and local agencies need to develop a strategy to migrate to narrowband systems by assessing their current radio equipment and modifying licenses to narrowband emissions. Radios purchased within the last five years are narrowband capable but will need to be reprogrammed. Agencies that do not migrate to narrowband 12.5 kHz channels by January 1, 2013, face the loss of communication capabilities. This will impact the radios used in State government including the Departments of Public Safety, Transportation, Natural Resources, Public Health, and Corrections.

Currently, most public safety radio systems use 25 kHz channels and 85.0% of the systems are a combination of VHF (75.0%) and UHF (10.0%) frequencies. Depending on the age of the radio equipment, radio users can remain on their current frequencies and continue to operate in analog as long as they comply with the federal mandate to reduce channel bandwidth and update their operating license.

**BUDGET IMPACT**

In November 2008, Iowa received \$10.9 million in federal money through the Public Safety Interoperable Communications (PSIC) Grant Program. The Program will assist public safety agencies in the planning and coordination with, acquisition of, deployment of, or training for the use of interoperable communications equipment, software, and systems. Approximately \$845,000 was set aside for the creation of a Strategic Technology Reserve (STR). The STR is capable of re-establishing communications when existing critical infrastructure is damaged or destroyed in an emergency or major disaster. The STR will be housed in three separate mobile facilities. The first is the DPS Communications Bus, the second is the Woodbury County Communications Bus, and Homeland Security and Emergency Management Division is working to identify a third communications bus on the eastern side of the State.

The remaining \$10.1 million was divided with \$2.0 million remaining at the State level for planning and administration and \$8.1 million being passed through to local governments. Monies need to be expended by September 30, 2011. The \$8.1 million was awarded to nine local jurisdictions and required 20.0% local match. Match money is not required for planning projects and additional local match money was identified by local jurisdictions.

As of January 14, 2010, a total of 64.3% of the local pass-through portion of the grant has been expended. See the following table for amounts passed through to local governments. Some of the projects listed are under budget. The Iowa Statewide Interoperable Communications System Board will review projects and may appropriate funds to additional entities in the future.

**Pubic Safety Interoperable Communications (PSIC) Grant Fund Amounts**

County	Requested Amount	Local Match	Total	Expended To Date			Use
				Grant Amount	Local Match	Total	
Hardin	\$ 374,057	\$ 93,514	\$ 467,571	\$ 0	\$ 0	\$ 0	Relocation and construction of new radio tower including microwave linking of new tower to two communication centers. Creation of an EMA repeater, alpha/tone paging system, adding mobile data, and equipping two mobile communications trailers.
Jasper	1,600,000	400,000	2,000,000	312,888	86,643	399,531	Central Iowa Interoperable Improvement Project to include the purchase of a local/wide area IP-based gateway for PSAPs, a new base radio system for Mahaska County, a few storm sirens, and coordinating narrowbanding mandate for Davis, Jasper, Lucas, Mahaska, Marion, Monroe, and Poweshiek counties.
Johnson	1,927,882	481,971	2,409,853	1,927,882	923,919	2,851,801	Partially fund the purchase and upgrade of present towers, construction of three new towers, radios, and all associated PSAP radio equipment, VIDA and ISSI switches, cross-band linkers, repeater systems, and simulcast and voting technology.
Linn	480,000	120,000	600,000	0	0	0	VIDA switch, data and joint AVL system, joint CAD RMS jail solution for Linn County, Cedar Rapids, and Marion.
Plymouth	30,320	7,580	37,900	12,452	3,113	15,565	Rapid Response Portable Interoperable Communications System
Polk	300,000	0	300,000	57,487	0	57,487	Hired RCC Consultants, Inc. from Richmond, VA to assist with RFP preparation to seek a new public/private partnership to provide a P25 compliant trunked digital radio system to serve both Westcom and Polk County PSAP's and their respective agencies along with local government.
Scott	2,700,540	667,160	3,367,700	2,700,540	957,471	3,658,011	Replace all radios to P25 standards and EDACS capabilities, move all Public Safety to the 800 trunked common system for all law enforcement, fire, and emergency management in Scott County.
Story	358,400	89,600	448,000	0	0	0	Replace eight consoles at three PSAPs with VoIP Digital Radio Consoles, purchase programmable P25 compliant portable/mobile radios for law enforcement, fire emergency management services, and hospitals for Story County, Ames, Iowa State Univeristy, two hospitals, and all fire, emergency management services and law enforcement.
Woodbury	300,000	5,200,000	5,500,000	179,075	56,507	235,582	Equipping communications training lab with resources to begin the delivery of training, shared radios, and a phone switch and radio cache for the mobile communications unit.
	<u>\$ 8,071,199</u>	<u>\$ 7,059,825</u>	<u>\$ 15,131,024</u>	<u>\$ 5,190,324</u>	<u>\$ 2,027,653</u>	<u>\$ 7,217,977</u>	

Notes:  
 EMA - Emergency Mutual Aid  
 PSAP - Public Safety Answering Point  
 ISSI - Inter Sub System Interface  
 VIDA - Voice Interoperability Data Access  
 AVL - Automatic Vehicle Location  
 CAD RMS - Computer Aided Dispatch Records Management System  
 EDACS - Enhance Digital Access Communication System  
 VoIP - Voice over Internet Protocol

The Iowa Statewide Interoperable Communications System Board contracted with Federal Engineering, Inc. to develop a long term Master Plan that was approved by the Board on November 8, 2009. The Master Plan proposes a phased implementation of a new 700 MHz voice/data system using 265 towers (some new and some existing) to establish a microwave and ICN backbone in the State that provides 95.0% coverage in every county, with a minimum of three channels per site, covering approximately 26,000 users. The cost analysis of the Master Plan has an estimated cost of \$336.0 million and is planned in six phases. The full text of the Master Plan is available at: <http://isicsb.iowa.gov/news/federal-reports.html>.

The following two charts show the estimated cost by phase and by cost category.

#### Estimated Cost by Phase

Implementation Phase	Estimated Cost (in millions)
Phase 1	\$ 24.0
Phase 2	64.0
Phase 3	63.0
Phase 4	97.0
Phase 5	41.0
Phase 6	47.0
	<u>\$ 336.0</u>

Source: Table 14 on p. 234 of the Master Plan

#### Estimated Cost by Category

Implementation By Cost Category	Estimated Cost (in millions)
Site Infrastructure	\$ 96.0
Communications Equipment	91.0
Backhaul Transport	76.0
Project Management, Engineering, and Implementation	48.0
Contingency and Spares	25.0
Total	<u>\$ 336.0</u>

Source: Table 15 on p. 235 of the Master Plan

As part of the Master Plan, the consulting group recommended repacking the existing 48 channels available for State public safety use and 154 channels available for local public safety use reducing the operating bandwidth from 25 kHz to 12.5 kHz in the 700 MHz spectrum. Repacking reduces channel width allowing additional channels to exist within the same spectrum space. This increases the number of State channels to 96 and the number of local channels to 308. The same channel can not operate side by side since it is doubled. To avoid interference, channels need to be separated across the State. Because every State has a different interoperability plan, the State use and general use channels along the State borders may need to remain at 25 kHz to facilitate coordinated use of the spectrum with adjacent states. Reducing the bandwidth reduces the radio coverage. This requires additional towers to be built to provide the same radio or signal coverage for an area. The Board approved the plan and it was transmitted to the federal government.

On January 27, 2010, the ISICS Board voted to approve the Statewide Interoperability Coordinator (SWIC) position. There are federal funds available from Interoperable Emergency Communications grants to support the FTE position and outreach efforts. The Board also approved the RFP for the Master Plan.

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