



MPSCS NEWSLETTER

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UPCOMING EVENTS

Training

Contact: Gloria Cline
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- November
(NO TRAINING SESSION)
- December
(NO TRAINING SESSION)
- January 11-14
(Livonia)

QUICK STATS

- TOTAL RADIOS:
50,665
- AMOUNT ADDED IN
PAST TWO MONTHS:
263

FUN FACT

- Michigan has the most underground natural gas storage capacity of any State in the Nation

The Mutual Aid Box Alarm System, MABAS

MI Fire Departments are standardizing mutual aid deployment

The Mutual Aid Box Alarm System (MABAS) is a standardized method of streamlining the requesting and providing of emergency service resources for its users.

In the late 1960s, suburban Chicago fire departments acknowledged the need for a systematic process to request and provide mutual aid. Now, MABAS represents over 1200 agencies in Illinois, and is operating in other Midwest states such as Wisconsin and Indiana.

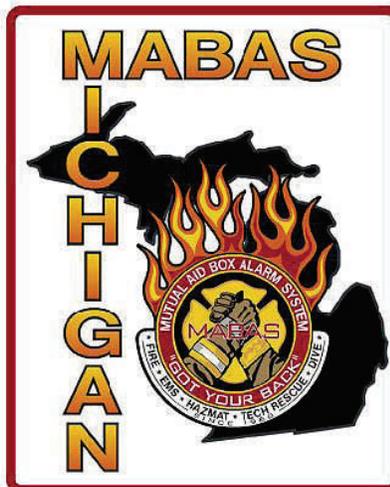
The concept of pre-programmed responses to escalating alarm levels started in the 1870s. Fire departments used telegraph systems to signal dispatchers of a fire and its alarm level. Depending on where the fire occurred, and what alarm level was activated, the dispatcher signaled units that were predetermined to respond, based on their location and resources. This is the same concept that drives today's MABAS.

MABAS provides the operational framework to streamline mutual aid agreements statewide and across state borders. Every participating agency signs a contract, committing them to send resources to assist a community in need. MABAS creates common mutual aid agreements, common communications plans, and common operational procedures.

In Michigan, over twenty counties are working to become part of the MABAS-MI initiative. MABAS-MI will improve disaster response capabilities, reduce the impact of man-made or natural

disasters on effected communities, and strengthen state-wide mobilization.

The following paragraphs summarize what an agency must do to become a part of MABAS-MI.



First, agencies must create a MABAS division. A division is composed of all fire departments in an area of a county, the entire county, or several counties linked by common borders. Prospective divisions must then contact MABAS-MI organizers, who will provide an overview of the start-up process and discuss the resources available for assistance.

Important communications pathways are then created. Traditionally, MABAS communications occur on simplex, VHF high band frequencies. This presents many challenges for MABAS-MI, as many fire departments have moved to UHF and 800 MHz radio systems, and many of the standard MABAS frequencies are allocated for other uses.

MABAS-MI has decided that divisions can use existing communications infrastructure to communicate intra-divisionally. Communications plans must be created with neighboring divisions to facilitate seamless interoperability.

MABAS-MI has a policy that any regional, multi-regional, intrastate, or interstate deployments of MABAS-MI resources are equipped with the standard VHF radio communications capability.

MABAS-MI is also planning to utilize the MPSCS for coordination of major incidents and activation of the statewide fire services emergency plan. The MPSCS has created two talkgroups to aid the MABAS-MI initiative.

Divisions must designate primary and back-up dispatch locations for MABAS-MI communications. MABAS-MI will also implement regional dispatch centers in each of the seven state districts, determined by the Michigan State Police, to improve control of processing communications.

Then, Local governments must adopt the MABAS-MI and MEMAC agreements before becoming a division. There are three steps to this process, which are available on the Michigan Association of Fire Chief's (MAFC) website: www.michiefs.org.

Next, prospective divisions must apply for division status by submitting six documents (located on the MAFC website) to the MABAS-MI Executive Committee.

To resolve these issues,

(continued on page 4)

Simulcast Technology:

Breaking down the communication system that is gaining popularity across the U.S.

Simulcast technology is a radio communications method that permits multiple radio sites to broadcast one signal to a large geographic area. For public safety agencies with many impenetrable buildings, limited frequency resources, and the desire for an easy-to-use system, simulcasting is an option that deserves some attention.

A simulcast system is composed of multiple radio sites connected to a prime site by either microwave links, fiber, or T1 lines. All sites are synchronized with satellite GPS which allows them to transmit the same signal at exactly the same time.

When a radio user transmits to the simulcast system, the signal is received at multiple sites. The signal is then sent to the prime site, where the system determines which site received the best signal. The optimum signal is then sent back to each site and transmitted at to the user with an identical frequency. This ensures that areas between simulcast sites will receive the same information at the same time from each site the radio can hear, regardless of coverage overlap

What are the positives of this technology?

- *Frequency efficiency*

Because sites use the same frequencies, a large-area simulcast system requires less frequencies than any other type of system. When additional sites are needed to increased coverage, new channels are not necessary.

- *Increased receiving probability*

Because transmissions are occurring at more than one site, each transmission is more likely to be received than it would be from a single site. This allows simulcast signals to penetrate buildings bet-

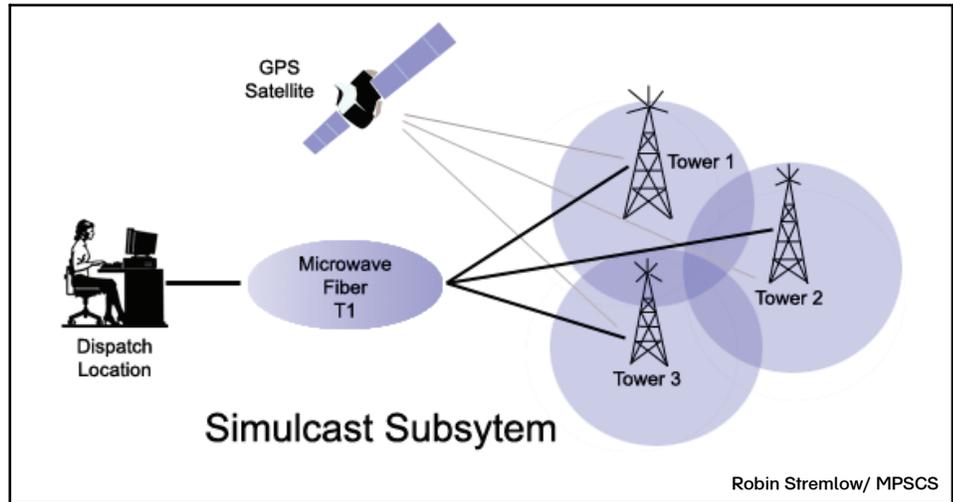


Diagram of a basic simulcast subsystem. Sites are connected by microwave, fiber, or T1 lines, and transmissions are synchronized by GPS satellite. The prime site evaluates received signals from each site, and selects the highest quality signal to be broadcasted from each site simultaneously.

ter than other systems.

- *Ease of use*

No other radio communication technology with equal coverage capacity is easier to use than simulcast.

What are the negatives of this technology?

- *Additional Cost*

The necessary equipment for simulcasting is more expensive than multicasting. Once a system is in place, though, maintenance is fairly simple.

- *Potential multipath interference*

This type of system-induced interference can be experienced if the subscriber radio receives signals of equal strength from both a near and far site that arrive at the radio at slightly different times.

Good optimization and design of the system help make this a rare occurrence with mobile and portable radios. Problems can still be experienced with control station scenarios where high gain directional antennas are used. To avoid this problem, special care should be taken when choosing the direction of the antenna.

Simulcast technology has existed since the 1960s. Due to tightening spectrum regulations by the FCC, and the need for robust, powerful systems, this technology has since increased in popularity.

Six simulcast subsystems are currently operating on the MPSCS, with another two systems scheduled to go live in 2010 (Washtenaw and Wayne counties).

Fire Codes: Changes to the national fire codes improve in-building communications

Recent changes to nationally recognized fire codes will ensure that buildings permit public safety transmissions more effectively than before. Two code associations, the National Fire Protection Association (NFPA) and the International Code Council (ICC), create guidelines for building specifications to accommodate a number of things, including in-building communications.

The new codes specify that on each floor of the building, 95% of the area must meet signal strength requirements of -95dBm downlink (receiving) and

-100dBm uplink (transmitting). In critical areas, such as stairwells and command centers, the coverage requirements must be met in 99% of the total area.

While bi-directional amplifiers (BDAs) are the preferred method of increasing in-building communications, other methods can be used.

Creators of the new codes received many of their ideas from existing requirements in local jurisdictions. Some cities establish their own codes for in-building communication, but for those that have not, these new codes provide a stan-

dardized recommendation for coverage levels, and the means of attaining them.

The NFPA and the ICC established many other fire codes in 2009, including an additional exit-stairway requirement and a minimum of two water storages in buildings taller than 420 feet.

All fire codes are established to ensure that certain building procedures are followed and materials are used to increase a building's safety in case of fire. Codes do not affect local jurisdictions until the local officials approve the codes for their area.

MPSCS' Six Simulcast Subsystems

Below is a listing of all simulcast subsystems operating on the MPSCS. Saginaw county's system went live in mid-October. Two additional simulcast subsystems, in Washtenaw and Wayne counties, are scheduled to go-live in 2010.

	Live Date	Towers	Radios
Monroe	2005	5	1,442
Genessee	2005	7	1,880
City of Detroit	2005	10	10,000+
Macomb	2006	9	4,481
St. Clair	2007	3*	1,335
Saginaw	2009	4	1,700

* St. Clair county will add two more sites to its subsystem in 2010

Rebanding Update:

Project team will submit all plans by January 2010

The pace of work on the Rebanding Plan has picked up as various compilations of data, studies, and analyses are near completion. These are now being reviewed and utilized to create a proposed budget. The objective is to mold a seamless plan that addresses the multi-faceted issues and challenges of Rebanding the nation's largest interoperable public safety network.

The MPSCS Rebanding Plan proposes a three-phase implementation effort:

- 1. Creation of a Mutual Aid Back-to-Back Repeater system** to assure availability of both the existing and Rebanding Mutual Aid frequencies during the Rebanding process. This will ensure that all radios, both those that have yet to be Rebanding as well as those that have, will continue to have uninterrupted access to these channels throughout the Rebanding process.
- 2. Reband all subscriber radios** in an organized and systematic sweep, county by county working from south to north and then west across the UP. Radios will retain their existing control channels, and have the new Rebanding frequencies installed.
- 3. Reband the Fixed Network Equipment (FNE)** at the 229 antenna towers upon completion of the subscriber Rebanding effort. The FNE at each site will be retuned, and in some cases replaced, to provide reception and transmission levels that are as good as or better than what are present throughout the state.

The MPSCS has scheduled the submission of its plan and budget for Phase #1 (the Back-to-Back Repeater System) to Sprint and the FCC's Transition Administration (TA) by the end of November. Upon approval and completion of a Frequency Rebanding Agreement (FRA) with Sprint, mobilization for this phase will get under way.

The plans and budgets for Phases #2 and #3 will be submitted by January, 2010.

While the light at the end of the tunnel (project completion) is still very distant, it appears that we are at least at the beginning of the long tunnel of implementation.

Updates will appear in each future issue of this Newsletter. However, detailed project information, upcoming events, and up-to-date progress reports can be found at the Rebanding Project's website: <http://www.rccpm.com/M800MHz/default.aspx>

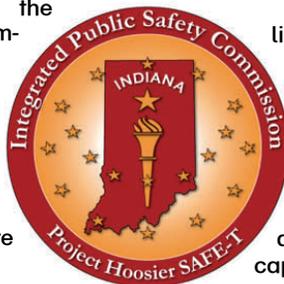
Indiana's Project Hoosier SAFE-T System

The developing communication system to our south

In 1997, Indiana began discussing deficiencies in their public safety communications. Two years later, the Indiana General Assembly created the Integrated Public Safety Commission (IPSC), which coordinated the creation of Project Hoosier SAFE-T. In 2002, the first public safety agencies went live. Today, all 132 planned tower sites transmit vital public safety communications daily, and more are under construction.

SAFE-T (Safety Acting For Everyone - Together) provides interoperable communications for state and local agencies in each Indiana county. With over 50,000 users, it is important that all agencies not using the system are able to

communicate with those who are. This vital communication is possible through patches and gateway networks.



What does the future look like for the Project Hoosier SAFE-T? In the short-term future, IPSC officials will focus on implementing CAD availability statewide. They also plan to move the system to a P25-compliant platform that is more robust and has a larger radio ID capacity. The Indiana system is running out of radio IDs (much like the MPSCS), and hopes to create a solution to this problem soon.

For more information, visit the IPSC's website at: www.in.gov/ipsc.

SAFE-T Statistics

Platform	Motorola 4.1 Astro Smartzone Omnilink
Coverage Percentage	99.4% statewide mobile coverage 95% statewide portable coverage
Towers	132 towers (mix of state-owned and leased)
Radios	50,000 radios
Data IDs	1,045 mobile data IDs (in use by 16 agencies)
Agencies	900 agencies
Employees	36 in-house, + 8 contract infrastructure maintenance techs
Co-Locations	Yes. Public safety and commercial agencies co-locate on state-owned towers for a fee.
CAD	Available for State Police. Will soon be available for Fire, Police, and EMS statewide
AVL	Available
RMS	Available for Law
Current Funding Sources	\$1.25 from every license plate and driver's license renewal (\$13 mil/year), State and Federal funding. No user fees.



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Usage Statistics

2009	Total Calls	PTTs	PTT Change From 2008
Sep	4,683,348	8,417,884	+608,924
Oct	4,254,294	7,602,768	- 136,193

(continued from page 4)

Because of MABAS-MI's high level of standardization, the organization developed a Field Operating Guide (FOG) for all divisions to use as their basic operating procedure toolkit. Should a division wish to make minor intra-divisional changes, they must submit a written document to the MABAS-MI Secretary/Treasurer, which will be reviewed by the Board of Directors.

Each division then needs to create box alarm cards. These identify the required MABAS-MI resources necessary for an emergency event in a given response area. A box card design guideline is available on the MAFC website.

Then, all personnel assume MABAS-MI policies and procedures. MABAS-MI can provide divisional training, or assist the training officer. Training sessions can be scheduled by contacting the Executive Board.

Finally, a "Go Live" date is set. If box cards are created early in the process, departments may begin calling each other for assistance before that date using the alarm levels established in the box cards.

For more information on MABAS-MI, visit www.michiefs.org.

Keep Your Eyes Open for UPCOMING ISSUES of the MPSCS Newsletter.

- New Data Security Technology
- MPSCS Performance Standards
- Project 25 Phase 2 Standards
- Point-To-Point Technology
- Communication Technology
- MPSCS Staff Bio
- System/User ID Updates
- Rebanding Updates
- ...and more!