



St. Clair Countywide Radio System



Project Update Report

September, 2004

Why this report?

This report is intended to be the first of several that will come over the next few months as the implementation of the County's new state-of-the-art 800 Megahertz (MHz), digital, trunked radio system moves into high gear. The purpose is to keep folks who need to know and those who want to know up to speed on how the implementation is progressing.

Referendum fails: Unfortunately (if you followed the primary election last March) you know that our attempt to get the voters to approve an increase in the County's relatively low 911 surcharge (now 65 cents per month) failed. This increase was intended to provide the funding to enable a complete replacement of the entire local government two-way radio system for all county, municipal and special district agencies in the County. It would have provided enough money to purchase the over 1,500 vehicle mounted and hand held radios that would be required to complete a one-for-one replacement of all of the current obsolete radio equipment. It also would have provided funding for a sorely needed Computer Aided Dispatch (CAD) system for the County's CENCOM dispatch center, as well as funds to construct a complete new CENCOM facility, permitting them to move out of the totally inadequate basement of the County jail building.

So what happens now? Even before the surcharge referendum took place, adequate funding was in place (through a combination of Federal FEMA grant funds, County ETSB funds and County Board funds) to pay for the initial infrastructure for the new radio system, new dispatcher consoles for CENCOM and end user radios for agencies of the County government (Sheriff, Highway Department and a few other smaller departments). This initial infrastructure meant having enough tower sites (10 total located throughout the County) to provide good hand-held, walkie-talkie "talk-in" and "talk-out" coverage from inside medium density commercial buildings over 95% of the County's land mass. This coverage level far exceeds what exists today. However, this initial infrastructure is "skinny" in the sense that it only has enough capacity (talk channels) to support around 500 end user radios, which is about how many users there are across the entire county government operation. Had the surcharge increase been passed, then enough channels would have been added at each of the 10 sites to serve the capacity needs of the 1,500 to 2,000 radios that could eventually populate the system. So, with this initial funding, the system had already been ordered and is about to be installed. Had the surcharge been passed, the initial order (placed in late 2003) would have been changed to reflect the additions to provide more capacity and more end user radios.

As planning for the implementation proceeded, the County Board was asked to consider how to deal with the inadequate CENCOM dispatch facility. Ultimately, County and ETSB staff recommended that the current CENCOM space be vacated and that a new dispatch facility be built in available space in the County ETSB's headquarters building at 101 S. 1st Street in Belleville. Had the surcharge increase passed, it was planned to have the new and ultimate CENCOM facility occupy a large vacant (but totally

unimproved) space in the lower level of the ETSB building at a cost of several million dollars. However, with the funds unavailable, the County Board and the ETSB agreed to provide just under \$1 million to create an adequate, interim CENCOM facility to occupy about 40% of the main floor of the ETSB. For those who have been in the ETSB building, the new CENCOM dispatch center will occupy about 80% of the entire left (south) side of the upper floor as you enter the building, with the ETSB training and admin offices occupying the rest of this floor. Construction bids should be let for this work in the next few weeks and we are looking for completion by around then end of 2004.

As for the radio system itself, we have a contract with Motorola for about \$8 million which will provide the 10 tower sites we described earlier, about 400 end user radios, 5 dispatcher console positions and a number of other elements. Our entire system will be the property of St. Clair County, but the whole system will be "subscribed to" the now-under-construction Illinois State Police/Motorola **STARCOM 21** statewide radio system. This means that we will be able to take advantage of the main system control computers located at the ISP in Collinsville without having to spend more than \$1 million for our own. It also means that through this connectivity to the STARCOM controller, we will have complete radio interoperability with the State Police and any other state or local entity that joins STARCOM statewide. Importantly, however, our system will be ours. We own it and we get to decide how it will be used.

Identifying our 10 tower sites and securing the necessary licenses and permissions to install equipment at the sites has proven to be a major issue. To save money, we wanted to avoid having to build any of our own new towers on land we would have to purchase. We tasked Motorola to find and make arrangements to contract for space on existing tower sites. In some cases it is costing some monthly rent at a tower site. In other cases it is free (MetroLink's main tower, for example), and in still other cases we negotiated arrangements with agencies such as the Cities of O'Fallon and Millstadt to gain access to towers they owned in return for current or future access to the new radio system. Working out all these arrangements has taken many months, and dealing with several levels of Federal bureaucracy has not made it any easier, but we are now confident everything is in place to permit site installation to proceed.

What's next? Actually, several key elements, as follows:

1. On September 24th, our implementation team will be at Motorola HQ in Schaumburg, IL where we are going to "do the FAT" (**F**actory **A**cceptance **T**est) for the system. This is where all the system components are assembled on the factory floor and connected as they will be once installed on site. Then we run through a series of "does it do _____ the way it is supposed to" tests, with all the components connected to the control computers back here in Collinsville. Assuming it passes the FAT, the components are then crated up and shipped to the County for installation at the 10 tower sites and the CENCOM dispatch center.
2. Once the components are installed in the field, we begin to receive and program the end user radios. We can then begin the "CAT" (Coverage Acceptance Test) for the system. This is a laborious process that will probably take us until the Spring of 2005. We actually don't want to do the final CAT until after the leaves are out on the trees, so that we can test how the system covers even with the foliage "eating up" (absorbing) the radio signals as it does. These tests are very precise and demanding. Basically, we and Motorola will be traveling into over 1,700 ¼ mile square sections of the County where we will assess the signal strength with precise computerized equipment. If the measured signal is strong enough to penetrate a typical commercial building anywhere within that ¼ mile square section then that section will be marked PASS. In the end 95% of the sections must pass such a test. Even in the few sections that may not pass, it is expected that the signal strength will still be adequate to serve a portable radio, on the street.
3. Concurrent with the CAT, we will be completing the new CENCOM facility and equipping it with the new dispatcher consoles and providing extensive dispatcher training on them. We will also be going out to a number of facilities in the County and installing what are technically called "RF Control Stations". Actually, these are more like mobile radios connected to an AC power supply

and an external antenna, and then placed inside a building to provide access to the trunked radio system for staff from within that building. Some of the places where these devices will be installed are the County Highway Garage and the County Highway HQ facility, so they can communicate with their fleet and personnel from inside their buildings. **IMPORTANTLY**, the County also plans on providing and installing these RF Control Stations to each of the current 911 dispatch centers (PSAPs) in the County. The reasons for this are several:

- a. One of the major objectives of our Federal grant is to provide for or improve **public safety communications interoperability** within the County and outside the County. By installing these RF Control stations at these PSAPs, we can establish a “**St. Clair County Inter-System Talk Group**” on the County’s trunked radio system. This will be like a “party-line” where each 911 dispatch center listens in at all times, subject to call from another 911 dispatch center in the County or from a public safety (or other entity) mobile or portable radio that needs assistance. For example, if a County Highway Department truck is driving down a street in East St. Louis and sees a house on fire, they could switch their County trunked radio to the “talkgroup” labeled “COUNTY INTERSYSTEM” and transmit, “County Highway Truck #33 to East St. Louis Fire”. The ESL PSAP would answer up, and the highway truck could provide the address and nature of the fire, thereby speeding up the response. Similarly, there might be a need for the Cahokia 911 dispatcher to be accessed direct by a County snow plow during a blizzard. Or, the Belleville dispatcher or a Belleville squad car may need to instantly alert the Swansea dispatcher that a bank robber is headed North on Route 159 so that Swansea officers are not caught off-guard when they attempt to stop a speeder who is actually the bank robber who thinks the Swansea officers are trying to stop him for bank robbery.
- b. These RF control stations will also provide access to another feature that is not technically part of the County’s new trunked radio system. Simply put, using our Federal grant money, we are paying to install 5 new conventional (meaning non-trunked) 800 MHz repeaters on 5 new federal “interoperability channels”. These repeaters are being installed over in St. Louis, but will provide mobile radio coverage and coverage to all the St. Clair County 911 PSAPs on these 5 channels. Via these repeaters, any St. Clair County PSAP equipped with the above described RF control station, or any 800 MHz equipped vehicle or public safety officer in St. Clair County will be able to talk to any St. Louis police car or officer, MetroLink security detail officer or anyone else with an 800 MHz radio. We are also actively working with an East and West Metro task force trying to devise other mechanisms to expand this interoperability to include VHF (150 MHz) and UHF (460 MHz) radio systems, as well as federal agencies in the area.
- c. In the next few weeks, staff from our radio project team or our consultant will be reaching out to all the 911 PSAPs in the County to finalize arrangements for and facilitate in the installation of these RF control stations. They will remain the property of the County, and their use will be subject to a Memorandum of Understanding which will have some expectations on the receiving agency, but the County is not charging anything for these radios. And, these radios will also access the STARCOM 21 system and will fulfill the operational capabilities the State was referencing in a recent letter to agencies all over the state encouraging them to acquire such radios and pay a fee for using them. In other words, St. Clair agencies will get these radios for free as a part of the County system, and will not have to pay any money for their use.

What does the future hold?

All along, it has been the County’s objective to create the foundation infrastructure for a two way voice (and some day, probably data too) radio system that would be a platform that could support all the communications needs of every County, city, school and special district agency in the County. Our initial

desire was to have adequate funding through the proposed surcharge increase to make this a reality and extend day-one access to all potential users right off the bat. However, the voters did not support that effort, at that time. Nevertheless, we will have succeeded at implementing a foundation which is designed to support the necessary incremental expansion to provide the capacity necessary to support any new users who choose to migrate to the system, regardless of the source of their funding. If a given agency decides they want to migrate their radio operation to the new 800 MHz trunked system, but retain their own dispatch center, they may choose to do so, provided they can come up with the money to buy the end user radios (mobiles and portables), convert their dispatch center to be able to access the system for dispatch purposes and participate in the system maintenance plan.

As it stands now, the County will be dispatching and conducting all Sheriff's department activities on the new radio system once it is installed and accepted. Additionally, all County Highway Department activities will move to the new system. Further, a wide array of smaller County agencies (many of which do not have access to two way radios today) will be operating on the new radio system. All of these agencies will have their own, private "talk groups", but will also share several "common talk groups" with all system users to permit joint department operations at emergencies. Also, the Millstadt Police, Fire and EMS services will be using the new system at the outset.

In a concurrent (but unrelated) project, the County's ESDA operation has received a \$100,000+ federal grant to plan for and implement a new, simulcast paging system. The same consulting firm which has been managing the trunked radio project is also managing the new paging system project to ensure coordination between the two efforts.

Conclusion: We hope to publish these Project Reports about monthly over the next year or so. If anyone has any questions they would like to see addressed or explored here, please send them to Norm Forshee at the ETSB (277-7316 Ext 106) or via e-mail to Norm911@co.st-clair.il.us. In the meantime, we will leave you with some pictures of what the new radios that County personnel (and Millstadt Fire) will be using will look like:

