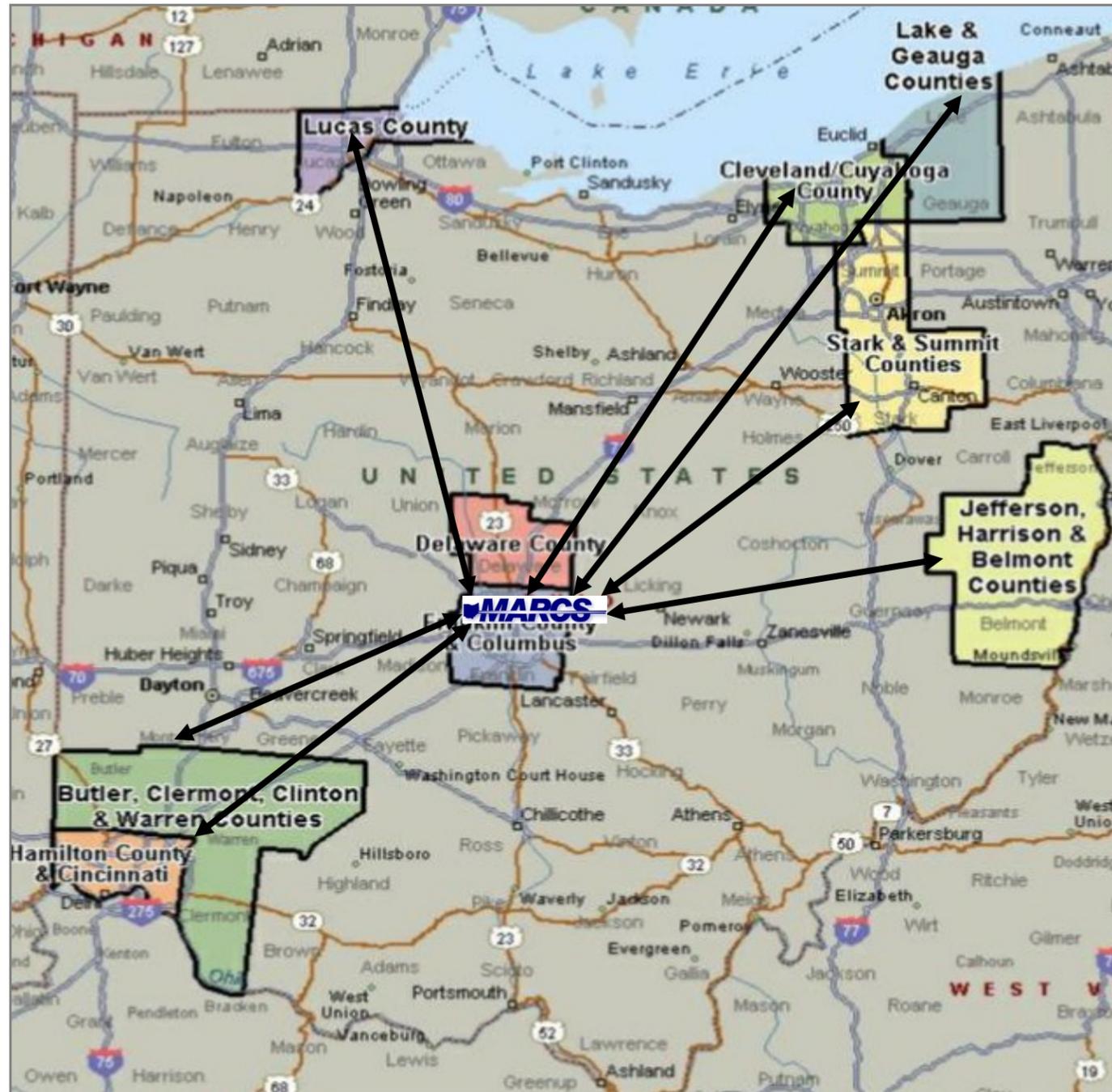


After this upgrade, the end state in Ohio will be a ubiquitous, integrated system providing the coverage and capacity needed to provide voice radio service for more than 150,000 radios all first responders in the state of Ohio. This platform will take Ohio well into the 2030 timeframe prior to any significant technology refresh being required.

The graphic below displays the end state—the statewide MARCS platform seamlessly joined with the seven next generation regional systems serving the most highly populated areas of the state. The resulting “System-of-Systems” will serve as a true model of intergovernmental shared systems.

2020 OHIO STATEWIDE SYSTEM-OF-SYSTEMS



Completing Ohio's 21st Century Statewide Radio System

Ohio's MARCS voice radio platform is at the end of its reliable life cycle. MARCS was designed in the 1994-1997 timeframe; construction began in 1999, initial operations began in 2001 and the initial project was completed in 2004. Factory support is no longer available for this infrastructure. Cannibalized spare parts are purchased from other retired communication systems to maintain the infrastructure and there is no capacity for additional users. In May 2012, Ohio's Controlling Board approved the spending of \$90M in COPS funds to upgrade the MARCS infrastructure to a VoIP platform. MARCSIP project management activities will begin at the beginning of FY13 (7/1/12). This upgrade will provide multiple benefits for Ohio's first responders and citizens and will avoid a catastrophic collapse of the current system.

By completing the migration to MARCSIP, Ohio will establish a true statewide system of systems, eliminating fragmented and dated local systems. The migration will result in the following positive outcomes:

SAVINGS

Significant savings of taxpayer's dollars as the rebuilding and subsequent ongoing maintenance of local legacy systems will not be necessary.

MAXIMUM INTEROPERABILITY

Maximizing interoperability by insuring both coverage and compatibility regardless of the location of the emergency response;

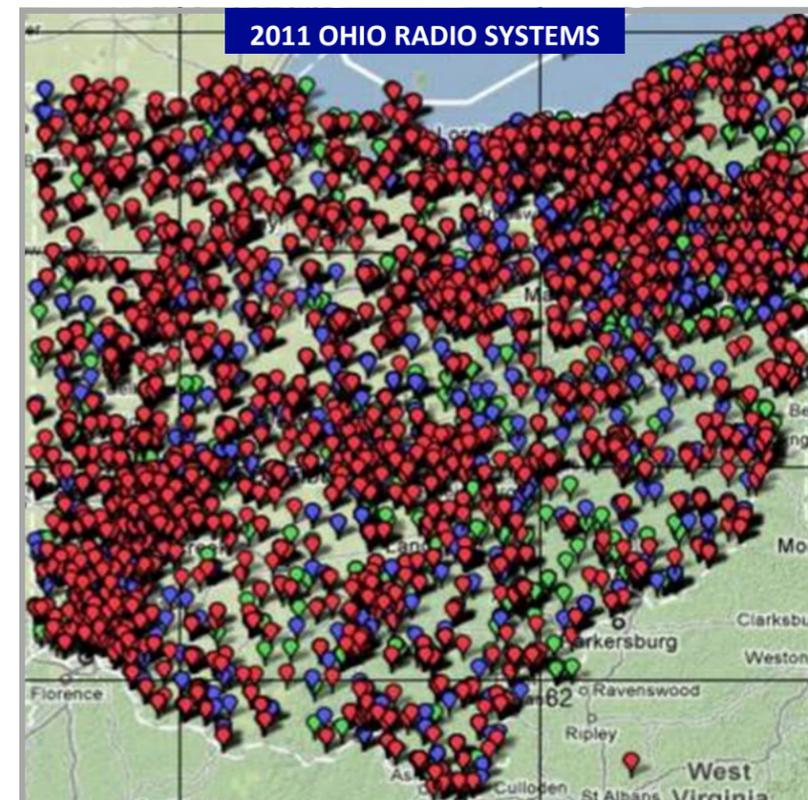
SHARED SERVICES

Serving as a model for the growing reality of the need for shared services amongst all levels of government;

SAVING LIVES

Ultimately, the saving of lives (of both the public and our first responders) due to more timely and effective responses.

THE SOLUTION



Today, there are 1,337 discrete radio systems identified in Ohio serving police, fire, EMS and other first response forces. According to a study completed by RCC Consultants in 2010, at the request of the MARCS Task Force, an upgrade to Ohio's current system can potentially save as much as \$0.7 billion in tax dollars over the next ten years. This is an estimate of avoided costs to maintain local systems (\$32.2 million annually), upgrade the majority of systems using frequencies that must be narrow-banded by January 1, 2013 (\$61.8 million one time and mandatory), and upgrade the few dozen 800 MHz systems when funding is made available locally to improve performance and interoperability and maintain vendor support (\$308 million one time and optional up to a point). The comparable 10-year cost to upgrade and maintain MARCS is \$250 million.

The 1,337 radio systems (shown left) are representative of 1960's—1980's technologies!

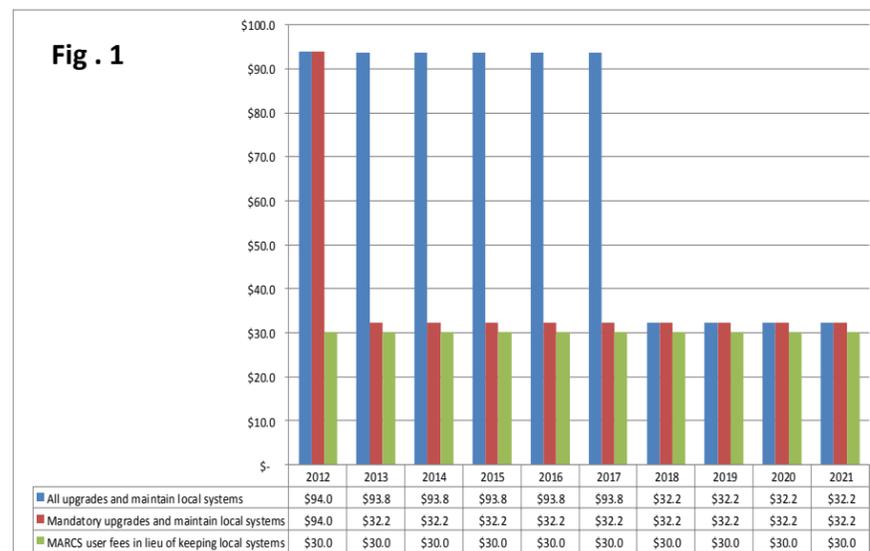
- Red — Systems to be Narrowbanded
- Green — UHF System
- Blue — VHF System

Questions should be addressed to Darryl Anderson, MARCS Program Director, at 614-207-4453 or

Darryl.anderson@oit.ohio.gov

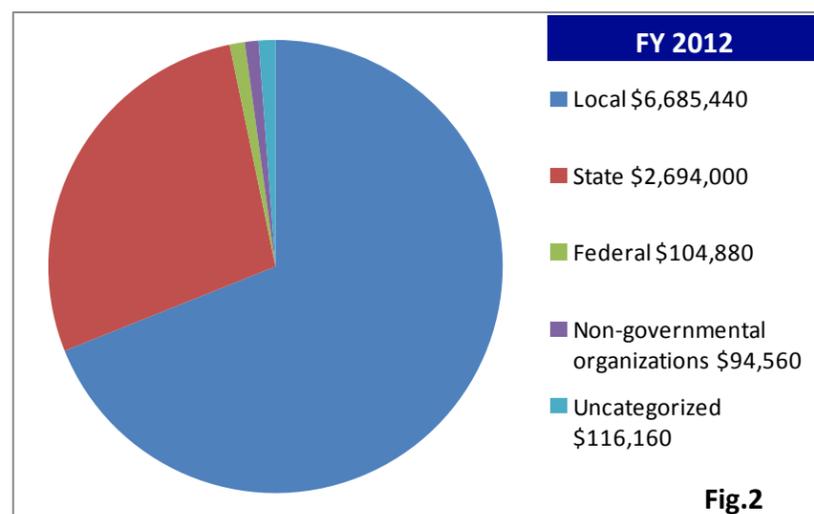
LOCAL AGENCY UPGRADE COSTS VS. COST TO JOIN MARCS

Figure 1 (right) illustrates the \$.7B local government costs for local system upgrade, replacement and maintenance (represented by the red and blue vertical bars) that can be avoided by migration to MARCS, even with the current MARCS user fees (chiefly, the \$20 per month radio fee) factored in (green vertical bars). Economies of scale indicated user fees would reduce as the number of customers increase. (This is based on RCC's 2010 estimates based on industry trends. This figure assumes local governments will spread the \$308M in upgrades for 800 MHz systems across five years from 2013 to 2017).

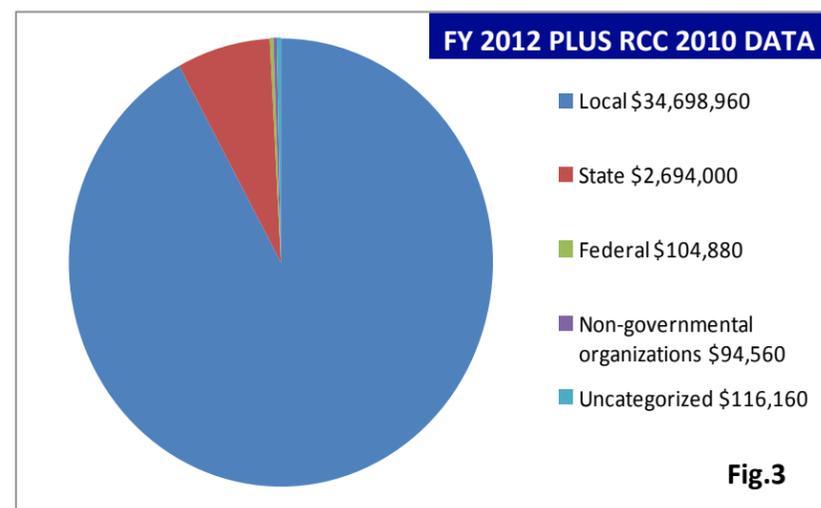


MARCS REVENUE FROM LOCAL ENTITIES FY 2012

Current local government MARCS users already represent more than two-thirds of revenue from the \$20 per month radio fee, as shown in Figure 2.



If paying the \$20 per month radio fee in lieu of keeping and upgrading their own systems, local governments would represent more than 90% of such revenue for MARCS operations, as shown below in Figure 3. As Figure 1 demonstrates, the additional local revenue from entities not already using MARCS is estimated to be significantly less than their costs to continue maintaining and upgrading their own systems over the next 10 years.



ISSUES AND ACTION PLANS

While the current platform continues to serve its customer base with the expected mission-critical voice and data communications, several issues are present or on the horizon requiring strategic attention.

ISSUE 1—END OF LIFE

The current platform will reach end of life for factory authorized support in the 2013-2015 timeframe. Currently it is necessary to purchase used parts from multiple online sources for critical spares, and this trend will continue to escalate. Fortunately, with the recently approved \$90M funding allocated by the State of Ohio, the upgrade to the VoIP P25 compliant MARCSIP platform will rollout beginning July 1, 2012.

ACTION #1

MARCSIP provides an opportunity to provide service to state and local governments through a single system/network. The upgrade is required to maintain our mission-critical public safety radio system, provide the system capacity to meet the continuing demand for more radios on the system, and provide spectrum capacity necessary to support additional radios and talkgroups. Project management activities are underway to aggressively implement the upgrade to MARCSIP. Resolution to Issue1 – End of Life will end as each site is upgraded.

ISSUE 2—NARROWBANDING

The federal government's "narrowbanding" requirement has a significant impact on local government. This frequency realignment affects many public safety agencies throughout the state and requires significant expenditure of funds at the local level to upgrade aged radio systems operating in the 150 and 450 MHz range on or before January 1, 2013. Left unaddressed, this "narrowbanding" will create radio interference issues, the potential for "outages," and the possibility of heavy fines.

ACTION #2

Many of these local agencies can transition to the MARCSIP platform prior to the January 1, 2013 federal deadline by participating in any five of the "MARCSIP Governance Models" approved by the MARCS Steering Committee. Public safety agencies must prepare plans to address the "narrowbanding" requirement within the next few months. The five governance models approved by the Steering Committee, offer the opportunity for local government to meet the "narrowbanding" deadline while enhancing public safety communications. Migration to MARCSIP supports the concept of a single mission-critical public safety system for Ohio, and allows governmental agencies faced with "narrowbanding" a cost effective option to replacing their current "smokestack" system. Since funding for the upgrade is in place, the next-generation MARCS solution remains a viable option for them.

PHASE ONE—9/11

RCC Consultants estimated the upgrade cost to be \$205 million. By eliminating traditional integration procurement, tasking the state with program management and utilizing established state-term schedule pricing for both equipment and engineering services, the actual cost of the upgrade will be held to \$100 M or less. MARCS has moved forward to begin the migration to the new system, using funding from the National Telecommunications and Information Administration/Public Safety Interoperable Communications (NTIA/PSIC) to reduce the overall costs of the system upgrades. The first step was completed early in 2010 and included installing a new Zone Controller at the MARCS Core Site, located in the State of Ohio Computer Center. This next-generation Zone Controller is now synchronized with a select group of towers located in northeastern Ohio, where 700 MHz frequencies are currently available and went live September 1, 2011.

PHASE TWO—10/13

The second and most comprehensive physical infrastructure phase of the migration will be the installation of two additional Zone Controllers; equipping all remaining voice and data towers with 700 MHz frequencies; and linking these sites to the suite of Zone Controllers. This phase will ideally begin in 2012 and be completed in either 2013 or 2014, depending on the availability of funds over the biennium. Build-out can be tailored to meet the needs of local agencies avoiding the "narrowbanding" deadline.

PHASE THREE—10/14

The final phase of the migration will be the conversion of MARCS's existing 800 MHz Intellirepeaters to synchronize with the IP-based Zone Controllers, and the reprogramming of all MARCS portable, mobile, and base radios to utilize the IP platform as the primary system.

After this final phase is completed, the existing 3.5 system zone controllers and assorted peripheral equipment will be turned down and removed, if not reusable.

In summary, Ohio's MARCS radio system has answered the need for a single statewide system for all state agencies needing wireless mission critical radio service for the last decade. Since 9/11, MARCS has expanded to include many additional users – first responders from townships, municipalities, counties, regional governments, federal agencies and even quasi-public first responders. MARCS currently supports almost 48,000 voice radio ID's statewide, including state, local, county, and township police, fire, Emergency Medical Services (EMS), Emergency Management Agencies (EMA), all corrections officers from both adult and juvenile state systems, and other first response personnel.