



# Department of Public Safety and Correctional Services

## Office of the Secretary

300 E. JOPPA ROAD • SUITE 1000 • TOWSON, MARYLAND 21286-3020  
(410) 339-5000 • FAX (410) 339-4240 • TOLL FREE (877) 379-8636 • V/TTY (800) 735-2258 • www.dpssc.state.md.us

January 8, 2007

STATE OF MARYLAND

ROBERT L. EHRLICH, JR.  
GOVERNOR

MICHAEL S. STEELE  
LT. GOVERNOR

MARY ANN SAAR  
SECRETARY

DIVISION OF CORRECTION

DIVISION OF PAROLE AND  
PROBATION

DIVISION OF PRETRIAL  
DETENTION AND SERVICES

PATUXENT INSTITUTION

MARYLAND COMMISSION  
ON CORRECTIONAL  
STANDARDS

CORRECTIONAL TRAINING  
COMMISSION

POLICE TRAINING  
COMMISSION

MARYLAND PAROLE  
COMMISSION

CRIMINAL INJURIES  
COMPENSATION BOARD

EMERGENCY NUMBER  
SYSTEMS BOARD

SUNDRY CLAIMS BOARD

INMATE GRIEVANCE OFFICE

The Honorable Ulysses Currie  
Chairman, Senate Budget and Taxation Committee  
3 West, Miller Senate Office Building  
Annapolis, Maryland 21401-1991

The Honorable Norman Conway  
Chairman, House Committee on Appropriations  
1312 Whittier Drive  
Salisbury, Maryland 21801-3241

RE: Report to the Joint Chairmen on the 9-1-1 Call Center Technology Upgrade Plan

Dear Chairman Currie and Chairman Conway:

The 2006 Joint Chairmen's Report requested on page 132 that the Emergency Number Systems Board develop a plan to meet the following needs:

*The committees would like Maryland to continue to accommodate the latest technology at its 9-1-1 call centers. As such, the committees direct the Emergency Number Systems Board to develop a plan for upgrading the 9-1-1 call centers to Internet Protocol-capable technology. The plan should include a timeline for implementation, an estimate of anticipated costs and recommendations for increases to currently assessed fees, if necessary. The plan should also include a proposal for educating Voice Over Internet Protocol (VoIP) consumers about the need to purchase Global Positioning System-capable (GPS) attachments for their VoIP equipment or upgrade to a GPS-capable device.*

The Department is providing the enclosed report for your review and comment. The attached electronic report is a summary of the full report compiled by the Emergency Number Systems Board. The summary includes the conclusions on Next Generation 9-1-1 as well its benefits. The Board and the 9-1-1 Directors reached a significant milestone in 2005 by making the State of Maryland only the eighth state in the nation to implement wireless phase II technology statewide. And, we are therefore, not recommending an immediate change in the 9-1-1 fee structure that would be required for upgrading to the Next Generation 9-1-1. The Board will continue to

monitor the evolution of the Next Generation 9-1-1 and make recommendations as appropriate.

I hope this report is both informative and helpful to you and your respective committee members. If the Department or I can be of any further assistance, please do not hesitate to contact me.

Sincerely,



Mary Ann Saar  
Secretary

Enclosure

c: Senator Patrick J. Hogan, Vice Chair, Senate Budget and Taxation Committee  
Senator James E. DeGrange, Sr., Chair, Senate Public Safety, Transportation  
and Environment Subcommittee  
Delegate Talmadge Branch, Vice Chair, House Committee on Appropriations  
Delegate Joan Cadden, Chair, House Subcommittee on Public Safety and  
Administration  
Members of the Senate Budget and Taxation Committee  
Members of the House Committee on Appropriations  
Deputy Chief of Staff Mary Beth Carozza  
Secretary Cecilia Januskiewicz, Department of Budget and Management  
Mr. Donald Hogan, Governor's Deputy Chief Legislative Officer  
Mr. Warren G. Deschenaux, Department of Legislative Services  
Ms. Rebecca Moore, Policy Analyst, Department of Legislative Services  
Mr. David Treasure, Department of Budget and Management  
Mr. Edward M. Cheston, Staff, Senate Budget & Taxation Committee  
Ms. Elizabeth H. Moss, Staff, House Committee on Appropriations  
Ms. Cathy Kramer, Department of Legislative Services  
Ms. Sarah Albert, Mandated State Reports, Department of Legislative Services  
Deputy Secretary G. Lawrence Franklin, DPSCS  
Deputy Secretary Mary L. Livers, DPSCS  
Director Gordon Deans, ENSB, DPSCS  
Director Rhea L. Harris, DPSCS



**EMERGENCY NUMBER  
SYSTEMS BOARD**

**9-1-1**

**REPORT TO THE GENERAL ASSEMBLY**

**“NEXT GENERATION 9-1-1  
UPGRADE PLAN”**

**DECEMBER 2006**

**ROBERT L. EHRLICH, JR.  
GOVERNOR**

**MICHAEL S. STEELE  
LT. GOVERNOR**

**MARY ANN SAAR  
SECRETARY, DPSCS**

**DEPARTMENT OF PUBLIC SAFETY AND CORRECTIONAL SERVICES**



## Department of Public Safety and Correctional Services

### EMERGENCY NUMBER SYSTEMS BOARD

---

---

December 2006

## **Report To The Maryland General Assembly**

### **“9-1-1 Call Centers Technology Upgrade Plan”**

The Emergency Number Systems Board (Board) is pleased to provide this preliminary report regarding a technology upgrade plan for Maryland’s 9-1-1 Call Centers. The report details the significance and benefits of Internet Protocol capable Next Generation 9-1-1 (NG 9-1-1) technologies including a preliminary timeline for implementation and a budgetary estimate of anticipated costs. Based on the findings in this report, the Board is not recommending an immediate change to the current 9-1-1 fee structure. The Board will continue to monitor the evolution of NG 9-1-1 technologies and will make recommendations in the future should a change to fee structure become warranted.

In June of 2005 the Board, due in large part to efforts of local 9-1-1 Call Center Directors, reached a significant milestone in becoming only the eighth state in the nation to implement wireless Phase II technology on a statewide basis. Wireless Phase II technology enables each of the twenty-four Primary 9-1-1 Call Centers to receive call location information for wireless 9-1-1 calls. Unlike wireline callers, wireless 911 callers tend to be transient or less familiar with the location of the emergency. The ability to identify a wireless caller’s location enhances accurate and timely response of emergency services.

In recognition of the Phase II achievement, the Legislative Committees expressed the desire for Maryland to continue to accommodate the latest technology at its 9-1-1 Call Centers and directed the Board to develop a plan for upgrading the 9-1-1 Call Centers to Internet Protocol- capable technology also referred to as Next Generation technology. To assist the Board in this effort, a Task Order Request for Proposal, (“TORFP”) was developed to secure a consultant familiar with NG 9-1-1 technologies and implementation strategies. In July 2006, L. Robert Kimball and Associates (Kimball) was awarded this consulting contract. The Kimball team is recognized nationally for its leadership and assistance in advancing 9-1-1 systems both on a local and national level. Kimball’s report to the Board characterizes NG 9-1-1 technologies, examines Maryland’s current NG 9-1-1 system readiness, identifies projected implementation and recurring costs, and outlines a Maryland NG 9-1-1 implementation timeline as the foundation for

establishing the following recommendations. A copy of the Kimball report is attached for review.

### **NG 9-1-1 Technologies**

The proliferation of cell phone technology placed an additional burden of increased call volumes and less accurate call location information on the 9-1-1 system. With those issues addressed through Phase II technology, 9-1-1 must now respond to new Internet Protocol technological advances in the wireless, wireline and cable industries.

Communicating through text messaging, sending pictures, and now streaming video utilizing your wireless phone or computer service is quickly becoming the preferred method of sharing information. New wireless technologies are either now or will shortly be available to permit sending voice and data at the same time, permitting a picture or other information to be transmitted without losing voice connectivity. Currently, 9-1-1 has no means to receive, process, display, or store this type of data. National efforts are currently underway to create regulations and standards that uniformly address these issues. It is expected that the implementation and testing of these standards, as well as the industry's response to developing new technology and software, will be a prolonged process.

The next generation 9-1-1 system is expected to evolve into an information highway utilizing Internet Protocol (IP) based broadband connectivity in which voice, data, video, and other informational sources will be available to Call Centers for receiving, processing, and dispatching requests for emergency services. To ensure the security and integrity of emergency information, an independent Maryland Public Safety IP Network (PSN) will likely need to be established. At a minimum, the PSN will need broadband capacity sufficient to handle anticipated demands and have connectivity to each of Maryland's primary PSAPs. Redundancy of network connectivity and equipment will be required to further ensure integrity and prompt disaster recovery. Secondary Call Centers (including Maryland State Police) will also need to be connected to the PSN for seamless transfer of calls and sharing of emergency information.

The technology required to receiving, processing, and storing data through a NG 9-1-1 system will also require upgrading the Customer Premise Equipment (CPE), storage media, and software applications at each 9-1-1 Call Center. Current Call Center CPE equipment is IP enabled but software applications need to be developed before data, other than voice, can be processed. Plant/CML, a primary CPE vendor, informed the Board that until national standards are established Plant/CML does not anticipate developing software and related interfacing programs. This delay provides additional time for the Board to upgrade equipment at Maryland's primary Call Centers in response to NG 9-1-1 technologies.

## **VoIP and Global Position Technology**

In Maryland, VoIP service providers currently offer enhanced 9-1-1 service (E9-1-1) to subscribers. Local VoIP emergency service calls to 9-1-1 are processed through the same selective router (Verizon) as traditional phone service and forwarded to the appropriate Call Center, with callback and location information (ANI/ALI) displayed to the Call Taker. This solution works well for fixed location calls where the customers have correctly pre-registered their location with the VoIP service provider.

The use of “nomadic” (mobile) VoIP devices (including laptops) is increasing resulting in a rise in the number of calls routed to the incorrect Call Center due to questionable location information. The VoIP industry established “call centers” to answer undeliverable 9-1-1 calls to determine the appropriate 9-1-1 Call Center to transfer the caller for emergency service. This interim solution is fraught with impediments including delaying an emergency services response.

The Federal Communications Commission (FCC) regulates the basic oversight of 9-1-1 capabilities for Voice Over Internet Protocol (VOIP) services. In June 2005 the FCC released the “*First Report and Order and Notice of Proposed Rulemaking*” (FCC 05-116), which states the following:

***1. In this Order, we adopt rules requiring providers of interconnected voice over Internet Protocol (VoIP) service to supply enhanced 911 (E911) capabilities to their customers. Interconnected VoIP providers may satisfy this requirement by interconnecting indirectly through a third party such as a competitive LEC, interconnecting directly with the Wireline E911 Network, or through any other solution that allows a provider to offer E911 service. The characteristics of interconnected VoIP services have posed challenges for 911/E911 and threaten to compromise public safety. Thus, we require providers of interconnected VoIP service to provide E911 services to all of their customers as a standard feature of the service, rather than as an optional enhancement. We further require them to provide E911 from wherever the customer is using the service, whether at home or away from home.***

***2. We adopt an immediate E911 requirement that applies to all interconnected VoIP services. In some cases, this requirement relies on the customer to self-report his or her location. We intend in a future order to adopt an advanced E911 solution for interconnected VoIP that must include a method for determining a user’s location without assistance from the user as well as firm implementation deadlines for that solution.***

As of December 2006, the technologies to provide nomadic VoIP 9-1-1 caller locations are still being developed. In the time since the release of the above order the FCC and various national 9-1-1 organizations are working with VoIP providers to develop technologies and/or regulations to address this issue.

It has been a common belief that VoIP providers could use the same Global Positioning System (GPS) that the wireless industry currently uses to locate callers but that solution has not yet been embraced. As a result, recommendations to add GPS technology to a user's VoIP equipment would not provide any benefit at this time. It would be premature to tell consumers to purchase GPS attachments or equipment to augment their systems without this being enabled by the VoIP service provider. **Upon the development of VoIP location technologies and subsequent regulations the Board is ready to educate the public utilizing different media sources including distribution of VoIP informational pamphlets at public venues.**

### **Maryland's Current 9-1-1 System**

It should be noted that Maryland currently has a robust 9-1-1 system, maintained in large measure by Verizon, capable of transmitting and processing over 5M voice calls annually from wireline, wireless, and VoIP services. Maryland's twenty-four primary 9-1-1 Call Centers have redundant path routing for 9-1-1 calls and back-up facilities for efficient disaster recovery. The current 9-1-1 system remains responsive to present needs and is not expected to be replaced until the PSN and technological NG 9-1-1 service standards have been established.

### **Costs**

The attached report by L. Robert Kimball and Associates indicates three kinds of expenditures for establishing a NG 9-1-1 System in Maryland. Anticipated costs include the costs associated with 1) planning the network, 2) purchasing and installing network equipment including connectivity and software, and finally 3) the on-going maintenance of the NG 9-1-1 network.

Initial planning costs would be associated with designing the network, selecting a vendor to install the system, and providing oversight of the installation process. The first step in this process would be developing a Request for Information/Request for Proposal (RFI/RFP) for a NG 9-1-1 PSN to identify eligible vendors, specific network designs, and associated implementation costs. Once a vendor is selected, providing independent oversight of network installation and Call Center connectivity will be essential as the PSN is established.

Once the NG 9-1-1 System is operational there will be costs associated with its maintenance. These on-going costs will ensure that the system remains robust and responsive to emergency service demands.

**The Board has examined the estimated costs associated with each of these phases, appearing in the attached Kimball report, and concludes that planning, operational, and initial recurring maintenance cost can be met with no increase in the State portion of the 9-1-1 surcharge.**

Once the PSN is established and operational it will become the responsibility of each county to encumber funding for its portion of recurring network maintenance charges. The new network maintenance charge could be in addition to payments the counties currently make on a monthly basis for maintaining the current 9-1-1 delivery system **Once long-term network maintenance costs are determined, it may become necessary to re-examine the appropriateness of the “county additional fee” portion of the 9-1-1 Surcharge to offset these new costs.**

### **NG 9-1-1 Timelines**

L. Robert Kimball and Associates outlines a six-year process to fully implement NG 9-1-1 in Maryland. The process of establishing a Public Safety Network is predicated on the public readiness to transmit data to the 9-1-1 Centers and the availability of premise equipment and software capable of receiving and processing such data. The Board concludes that this process may be accelerated as the industry increases its focus on NG 9-1-1 systems. Once it is evident how these conditions are going to be met the network design and implementation process should begin. The adoption of regulations and standards, followed by the industry’s announcement of compliant equipment and software, will be the most accurate determination of when to commence establishing the network.

#### **First Year**

- Prepare RFI/RFP to identify network solutions and vendors
- Release the RFI/RFP, review responses and select vendor
- On-going process of upgrading PSAP equipment, as part of their normal replacement cycle, ensuring IP compatibility
- When possible, purchase work stations for secondary PSAPs that serve as a remote off of the Primary PSAPs CPE

#### **Second Year**

- Build out the network to Primary PSAPs
- Negotiate with Vendors to connect with the selective routers and ANI/ALI databases
- Begin the testing process of sending data through the system to the PSAPs and development of local processing procedures.
- Provide NG 9-1-1 Training of 9-1-1 Call Center personnel on an on-going basis
- Begin sending new NG 9-1-1 data sources to the 9-1-1 Centers (repeat these last three steps for each new information source)



## **Second - Third Year**

- Build out the network to the Secondary PSAPs (including Maryland State Police)
- Examine the recurring maintenance costs associated with the network and work with the Legislature to re-examine the County's portion of the 9-1-1 Surcharge for adequacy
- Determine feasibility of expanding the PSN to other emergency services providers for information sharing (Emergency Operations Centers, Federal Agencies, Hospitals, State Highway, etc.)