



COMMONWEALTH of VIRGINIA

E-911 Services Board

FY 2016 Annual Report



Prepared by the
Virginia Information Technologies Agency
Division of Public Safety Communications
October 1, 2016



Table of Contents

Executive Summary	1
State of Enhanced 9-1-1 in the Commonwealth	4
9-1-1 Ecosystem.....	4
NG9-1-1	6
Text-to-9-1-1	9
Wireless E9-1-1	9
Wireline E9-1-1	11
State of the Wireless E-911 Fund	11
Wireless E-911 Fund.....	11
Funding Levels.....	12
Wireless Funding Process	13
Conclusion	15

Executive Summary

The *Code of Virginia* (§56-484.14) requires the E-911 Services Board (the “Board”) to report annually to the Governor, the Senate Committee on Finance, the House Committee on Appropriations, and the Virginia State Crime Commission on the following:

- (i) the state of enhanced 9-1-1 services in the Commonwealth,
- (ii) the impact of, or need for, legislation affecting enhanced 9-1-1 services in the Commonwealth,
- (iii) the need for changes in the E-911 funding mechanism provided to the Board, as appropriate, and
- (iv) monitor developments in enhanced 9-1-1 service and multi-line telephone systems and the impact of such technologies upon the implementation of Article 8 (§ 56-484.19 et seq.) of Chapter 15 of Title 56.

- *(i) The state of enhanced 9-1-1 services in the Commonwealth*

Virginia’s current 9-1-1 system is struggling to meet the demands of citizens and there are a number of reasons why the commonwealth finds itself in this situation. Telecommunications services are no longer the exclusive domain of a single local telephone service provider. Instead, in order to meet the needs of consumers for flexibility and mobility, these services are now available from a wide-range of service providers with national and global footprints. New technologies and applications are available at an ever increasing rate, resulting in an array of new communication methods. Furthermore, user demand, which is driving the development for new products and services, is impacting how people communicate, including how they communicate with 9-1-1.

However, the primary reason why Virginia’s current 9-1-1 system is struggling is because the analog technology at the core of the 9-1-1 network is going away. This fact alone will make it impossible for the commonwealth to keep pace with communication advancements and continue to provide the same level of service to its citizens. Much like television or wireless telephone service migrating from analog to digital, so is the landline telephone infrastructure. The same infrastructure that serves the public switched telephone network (PSTN) serves the 9-1-1 network. As more and more elements of this network are decommissioned, the criticality of 9-1-1 migrating off of this network increases. The solution to overcoming this situation is to deploy a Next Generation 9-1-1 (NG9-1-1) system.

NG9-1-1 is a shared Internet protocol (IP) network that uses packet switched technology rather than circuit switched technology. Similar to the Internet, NG9-1-1 architecture will most likely be a collection of networks rather than a single network. In addition, it will need to be built to a set of standards to ensure seamless interoperability not only within Virginia, but also with surrounding states. The backbone of this system is an Emergency Services IP Network (ESInet). The ESInet provides the connectivity between Virginia 9-1-1 centers, commonly referred to as public safety answering points (PSAPs) and transports both the 9-1-1 call and related data.

NG9-1-1 offers numerous benefits to the commonwealth by increasing PSAP capabilities. In the same way that IP technology has allowed greater flexibility and mobility for Virginia citizens, NG9-

1-1 will also provide that same kind of flexibility and mobility to our PSAPs. As requirements grow and change in response to new technological advancements, NG9-1-1 will enable a scalable and adaptable solution. It will also allow the integration of voice and data, which greatly increases the ability of PSAPs to share technology and data. The end result will be PSAPs that have an increased ability to receive more information related to 9-1-1 calls. However, the greatest benefit of NG9-1-1 is that it will enable Virginia to keep pace with technology instead of lagging behind.

The deployment of wireless enhanced 9-1-1 (E9-1-1) Phase I service, where the caller's telephone number and the address of the cell site are provided to the PSAP, is complete. The deployment of wireless E9-1-1 Phase II, which provides the PSAP with the caller's actual location by longitude and latitude, is also complete. Furthermore, all localities within the Commonwealth currently provide wireline E9-1-1 service.

- *(ii) The impact of, or need for, legislation affecting enhanced wireless emergency telecommunications services in the Commonwealth*

The Board is preparing draft legislative changes for the 2017 General Assembly session. These legislative changes were recommended by the Board's Finance Committee and are based on recommendations included in the NG9-1-1 Feasibility Study. The following is a summary of the proposed draft legislation:

- Delay the recalculation of the PSAP wireless funding distribution percentages until July 1, 2018. This will enable the Board to finalize a long-term 9-1-1 funding analysis that includes transitional costs for NG9-1-1. The anticipated timeframe for completing this analysis is January 2017. This analysis is a critical prerequisite for developing additional draft legislation for the 2018 General Assembly session that focuses on funding for the deployment and sustainment of a NG9-1-1 system.
- *(iii) The need for changes in the E-911 funding mechanism provided to the Board, as appropriate*

At the end of FY2016, the Wireless E-911 Fund (the "Fund") remains fiscally sound. However, moving forward, an existing appropriation and transfer from the Fund to other agencies and programs will challenge the Board's ability to meet financial obligations, to both the wireless carriers and the PSAPs, and maintain the viability of the Fund. The current biennial budget includes a \$3.7 million appropriation to the Virginia State Police (VSP) for wireless 9-1-1 call taking. However, all localities in the commonwealth are currently accepting wireless calls and no longer rely on the VSP to transfer wireless 9-1-1 calls to them. Also included in the current biennium budget is an \$8 million transfer from the Fund to the Compensation Board's budget to support sheriff's dispatchers

Continuing to provide funding to the VSP and the Compensation Board could jeopardize the commonwealth's ability to receive federal funding in the future. Federal law enacted in 2004 requires states that apply for federal 9-1-1 grant funding (or the PSAPs within the states) to certify that no 9-1-1 funding raised through state charges was diverted for any purpose other than the purposes for which such charges are designated or presented. This anticipated outcome may now be a reality. The FCC in its seventh annual report to Congress on state collection and distribution of 9-1-1 and enhanced 9-1-1 fees and charges, identified Virginia as a state that has diverted 9-1-1 funds.

However, the impact of the \$8 million transfer has already been felt by the PSAP community since there is less funding available to them for the replacement of outdated equipment and to expand services to the citizens of the commonwealth. The \$8 million transfer to the Compensation Board means that there is \$8 million less funding available for future PSAP Grant Program grants for localities to purchase equipment that is NG9-1-1 ready and fund PSAP NG9-1-1 projects.

- *(iv) Monitor developments in enhanced 9-1-1 service and multi-line telephone systems*

This is a duty of the Board that was enacted on July 1, 2007. Most of the provisions of Article 8 (§ 56-484.19 et seq.) of Chapter 15 of Title 56 took effect on July 1, 2009 and information requested on these provisions is provided to interested parties.

The following sections of the report provide a more detailed analysis of the current state of E9-1-1 in the commonwealth, as well as the Wireless E-911 Fund.

State of Enhanced 9-1-1 in the Commonwealth

9-1-1 Ecosystem

The impending retirement of the analog 9-1-1 network is the most significant event currently impacting Virginia's 9-1-1 ecosystem. As a result, transitioning away from this legacy analog infrastructure to NG9-1-1 is a primary focus of the 9-1-1 Services Board. To help the commonwealth in this effort, the Board approved two significant planning initiatives that were completed in 2015. The first of these initiatives is the NG9-1-1 Feasibility Study¹. This study focuses on how to implement an ESI Net to advance towards NG9-1-1. While discussing the results of the feasibility study, the Board adopted a topographical representation of the 9-1-1 ecosystem (figure 1) to better understand both the legacy and NG9-1-1 components.

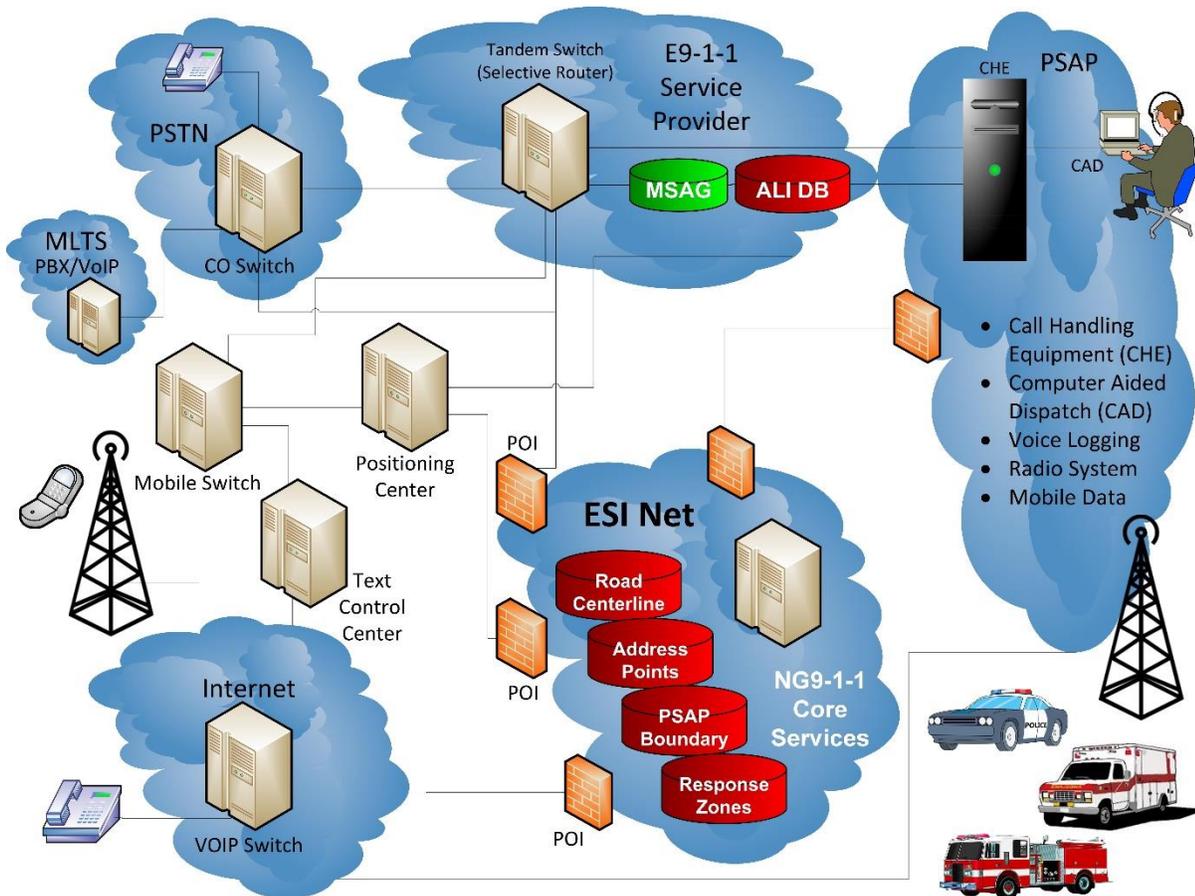


Figure 1 – 9-1-1 Ecosystem

¹ A copy of this study is available from the following link: <http://www.vita.virginia.gov/isp/default.aspx?id=8486>.

On the left side of the diagram are all of the technologies that currently access 9-1-1:

1. Public switched telephone network (PSTN);
2. multi-line telephone systems (MLTS) like private branch exchanges (PBX) or enterprise voice over IP (VoIP)
3. wireless telephone service including texting to 9-1-1; and,
4. Internet VoIP.

These technologies connect to the analog 9-1-1 network represented in the top center of the diagram. As part of the current call delivery process, 9-1-1 Service providers use two informational sources, the Master Street Address Guide (MSAG) and an Automatic Location Information Database (ALI DB), to route calls to the appropriate PSAP and to obtain subscriber information. As the commonwealth transitions to NG9-1-1, the addition of new and different components will be necessary. Primarily, these components are the ESInet and the NG9-1-1 Core Services (NGCS), which are depicted in the bottom center of the diagram. The NGCS provide the 9-1-1 network functions required to accept 9-1-1 calls into the ESInet and then send them to the correct PSAP. The Board has the authority to set standards for the ESInet and the NGCS to ensure that the ESInet can operate as a single network and information can be passed through the ESInet seamlessly. The last area of the 9-1-1 ecosystem, local 9-1-1 governance, is captured on the right side of the diagram.

The second planning initiative related to the 9-1-1 ecosystem is the 9-1-1 Comprehensive Plan². This plan was developed through a stakeholder-driven process that defines key strategic initiatives for improving 9-1-1 services and functionality across Virginia. The end result of this effort was a future-looking, holistic document that helps to articulate the priorities for Virginia's 9-1-1 ecosystem. During the planning process, the 9-1-1 stakeholder community was able to develop a vision that represents the ideal operational picture for 9-1-1 emergency response functioning at an optimal level of service and capability. The statement for this vision is as follows:

In Virginia, 9-1-1 personnel, resources, and systems provide the public – using any communications device and in any language – with rapid, reliable, and accurate emergency response.

² A copy of this plan is available from the following link <http://www.vita.virginia.gov/isp/default.aspx?id=8486> under the Board Publications section.

Through stakeholder interactions, a list of 9-1-1 guiding principles was developed. The Board has endorsed these principles and they make an excellent benchmark against which proposed tasks can be evaluated. The following is a list of these 9-1-1 guiding principles:

- 9-1-1 is an essential, local public safety service
- We must address ALL of 9-1-1, not just NG9-1-1
- Full stakeholder engagement is needed
- Services must not be degraded
- Regional capabilities / initiatives must be leveraged
- Doing nothing is not an option

With these 9-1-1 guiding principles as a backdrop, the current deployment status of all 9-1-1 technologies in the commonwealth will be discussed next.

NG9-1-1

Although the retirement of the current analog network has already been discussed, the impact that this event will have on Virginia PSAPs cannot be overstated. The transition from our current legacy analog network to a statewide ESInet is no longer an optional undertaking. Virginia PSAPs must complete this transition in the next couple of years in order to maintain the same quality of emergency services they currently deliver to their citizens. In addition, this transition has the potential to create a significant financial burden to local governments throughout the commonwealth. Other external factors already discussed, such as carriers abandoning legacy circuit-switched technologies, only underscores the need for active transitioning to NG9-1-1.

Whether Virginia's approach to NG9-1-1 is a single statewide ESInet or interconnected regional ESInets, this type of IP-based network affords a number of benefits:

- Creates a flexible and seamless transition to NG9-1-1
- Overcomes the technical and operational limitations with data sharing associated with the current legacy analog environment, which supports nine independent networks, preventing call transfers between PSAPs served by different networks, and supports the exchange of only 512 characters of data between PSAPs on the same network
- Increase flexibility and staff resources by promoting virtualization, interoperability, and the convergence of applications
- Allows public safety agencies to access shared applications
- Enables the use of broadband networking to improve the public's ability to provide text, video and enhanced voice information from any IP-capable device

The Board took the critical first step in the migration to NG9-1-1 by completing a feasibility study. This study was completed in March 2015 and contains 141 recommendations across the following six thematic areas:

- Governance and Legislation
- Best Practices
- ESInet Design & Pricing
- Geospatial Foundation
- PSAP Grant Program
- Funding

Since the completion of the study, about half of the recommendations have been completed. The following is a summary of the FY 2016 accomplishments:

Governance and Legislation

- Developed educational material for decision makers
- Achieved the following legislative changes during the 2016 General Assembly session to establish a foundation for NG9-1-1:
 - Renamed the Board to the 9-1-1 Services Board (drop “E”) and makes all references consistent
 - Established the Board’s ESInet and core NG9-1-1 services standard setting authority
 - Defines the terms “ESInet” and “NG9-1-1”
- Proposed the following legislative agenda for the 2017 General Assembly session to address NG9-1-1 funding:
 - Delay the recalculation of the PSAP wireless funding distribution percentages until July 1, 2018. This will enable the Board to finalize a long-term 9-1-1 funding analysis that includes transitional costs for NG9-1-1. The anticipated timeframe for completing this analysis is January 2017. This analysis is a critical prerequisite for developing additional draft legislation for the 2018 General Assembly session that focuses on funding for the deployment and sustainment of a NG9-1-1 system.

Best Practices

- Established the Regional Advisory Council (RAC)³:
 - As part of the outreach effort for the feasibility study, local public safety communications professionals expressed a desire for greater input into the work plan and program of the 9-1-1 Services Board. As a result, the Board directed staff to move forward in forming this group. The initial focus of the RAC is to assist staff in establishing the prioritized tasks to support the Goals and Initiatives identified in the 9-1-1 Comprehensive Plan.

³ More information is available from this link: <http://www.vita.virginia.gov/isp/default.aspx?id=6442473725>.

- Launched Regional Advisory Council (RAC) work groups to support the goals and initiatives of the 9-1-1 Comprehensive Plan by undertaking the following tasks:
 - Baseline level of 9-1-1 service and capabilities document
 - 9-1-1 stakeholder communications plan
 - NG9-1-1 deployment and sustainment funding strategy
 - PSAP baseline level of service and capabilities budgets
 - 9-1-1 clearinghouse
 - PSAP staffing analyses
- Instituted a Best Practices Steering Committee to facilitate the publication of best practices for baseline 9-1-1 services and capabilities
- Established a statewide data analytics program to support 9-1-1 Guiding Principles and to provide funding for a standard reporting tool across PSAPs, that provides consistent, comparable data analytics

ESInet Design and Pricing

- Refined the current set of requirements based on the ESInet RFI and RFP efforts undertaken by the northern Virginia PSAPs
- Identified a “trusted partner” approach for a statewide ESInet RFP

Geospatial Foundation

- Completed commonwealth-wide ALI/MSAG analyses
- Reviewed the results of the ALI/MSAG analyses to determine statewide needs and implications
- Established Road Center Line (RCL) and Address Point (AP) data standards
- Developed GIS NG9-1-1 Educational Material

PSAP Grant Program

- Revised the funding scope for GIS-related projects in the FY2018 PSAP Grant Guidelines to limit funding to the three most critical data layers in NG9-1-1 GIS data projects.
- Established a commonwealth-wide contract for PSAP Call Handling Equipment (CHE)

Funding

- Established a long-term 9-1-1 funding strategy using data and informational deliverables produced by the RAC work groups that focused on defining baseline 9-1-1 services and capabilities, developing budgets to support baseline 9-1-1 services and capabilities, and creating an NG9-1-1 deployment and sustainment funding strategy

The 9-1-1 system in the Commonwealth of Virginia has successfully provided access to quality emergency services for decades. However, the public’s increasing use of advanced

telecommunication technologies—i.e., wireless devices, texting services such as short message service (SMS), Voice over Internet Protocol (VoIP) telephony, and broadband applications such as video— is contributing to ever increasing public expectations. As a result, Virginia PSAPs are struggling to maintain the quality of emergency services these entities deliver to their citizens in light of these shifts in consumers’ expectations and behaviors. Furthermore, many of these new technologies are IP-based and not compatible with the current legacy analog infrastructure.

Text-to-9-1-1

Text-to-9-1-1 is no longer a capability that is on the horizon; it has become part of our 9-1-1 reality. At present, there have been twenty-five deployments in Virginia, with many more PSAPs planning to deploy Text-to-9-1-1 service to their citizens as part of upcoming Call Handling Equipment (CHE) upgrades and replacements. Like the deployment of any new 9-1-1 technology, the commonwealth needs a comprehensive strategy for the deployment of Text-to-9-1-1 and PSAPs will need resources and assistance to support their efforts.

To this end, in 2014 the Board established a Text to 9-1-1 Subcommittee to evaluate texting to 9-1-1 as a statewide initiative and to provide recommendations in a white paper. In January 2015, the Board accepted the subcommittee’s final report, establishing the goal of ubiquitous Text-to-9-1-1 service in the commonwealth and the following recommendations:

- Encourage the pursuit of web browser Text-to-9-1-1 solutions
- Leverage text aggregator solutions for statewide deployment
- Integrate statewide deployment of texting to 9-1-1 with NG9-1-1

In addition, Text-to-9-1-1 is a funding priority within the PSAP Grant Program, a Text-to-9-1-1 implementation guide for PSAPs has been created, and Text-to-9-1-1 service as a basic, standard feature will be addressed in all 9-1-1 planning documents.

Wireless E9-1-1

The number of wireless 9-1-1 calls has continued to grow rapidly since wireless service was introduced commercially in 1985. Though the rate of growth has slowed in recent years, the number of wireless E9-1-1 calls continues to surpass the number of wireline E9-1-1 calls in many Virginia localities. Through the 1990s, a 9-1-1 call placed from a wireless telephone would simply be forwarded to a 10-digit telephone number that went to the local PSAP or to the VSP. Coming in on a 10-digit number meant that the location of the caller, call back number and other important data elements were not provided like they were for wireline E9-1-1. This lack of an automatic location resulted in more time for the call taker to process the call or an inability to locate the caller at all. Several incidents were documented around the country that demonstrated the problems PSAPs were having locating a wireless 9-1-1 caller.

Phase II Accuracy

Network based solution:

Accuracy

- 100 meters 67% of the time
- 300 meters 95% of the time

Handset based solution:

Accuracy

- 50 meters 67% of the time
- 150 meters 95% of the time

Figure 2 - FCC Phase II Requirements

To respond to this issue, in 1996, the Federal Communications Commission (FCC) released an order requiring wireless service providers to implement enhanced features and location technology. The implementation was to occur in two phases. Phase I provided the PSAP with the caller's telephone number and the address of the cell site receiving the call along with the orientation of the antenna, if the antenna was directional. Phase II provided the PSAP with the actual location of the caller within a defined margin of error depending on the location technology used by the provider (Figure 2). According to the order, the wireless service provider had to implement Phase I within six months of a request from the PSAP. The timeline for Phase II was contingent on the location technology selected by the wireless service provider, network-based (triangulation) or handset-based (global positioning system – GPS).

An outstanding issue had been over what area the accuracy of Phase II was to be measured. There was stark disagreement between the wireless and E9-1-1 industry leadership on the appropriate area for testing. Because the two location technologies perform differently in different environments, the best alternative for the wireless providers was to have a large test area (nationwide or statewide). This would allow the performance of their solution to be “averaged” across a variety of these environments providing a more general evaluation of the solution's performance. The E9-1-1 community felt the test area should be limited to each PSAP service area thus providing each PSAP manager with an indication of how the location technology performed in their area. This would also provide assurances that the wireless provider was providing a similar level of performance in all different environments.

In September 2010, the FCC adopted benchmarks for wireless carriers to meet these handset- and network-based accuracy thresholds at the county or PSAP level for increasing percentages of 9-1-1 calls over an eight-year period. Four years ago, the FCC went further and announced that after the conclusion of the eight-year implementation period in early 2019, it will sunset the existing network-based rule and require all wireless carriers to meet the more stringent location accuracy standards in the handset-based rule.

In response to the fact that many more wireless 9-1-1 calls are made indoors, the FCC in January 2015 adopted a Wireless Indoor Location Accuracy Report and Order. Under this new order, wireless carriers will have to provide a location fix using technologies capable of providing dispatchable location or 50-meter horizontal accuracy for 40% of all wireless 9-1-1 calls within two years, 50% of all calls within three years, 70% of all calls within five years, and 80% of all calls within six years.

As for vertical location accuracy, wireless carriers will be required to make uncompensated barometric data available to PSAPs within three years. The data will come from handsets capable of delivering such data. Carriers also have three years to develop a vertical location accuracy metric, which they will submit to the FCC for approval. Carriers will have to deploy dispatchable location. This dispatchable location will need to provide a vertical component (z-axis), such as a floor and an apartment number in a high rise building, in the 25 most populous cellular markets (CMAs) within six years, and dispatchable location or z-axis technology in the 50 most populous CMAs within eight years.

At this time, it is not known whether or not the new indoor location accuracy requirements will result in additional cost reimbursement claims, but the likelihood of such an outcome will continue to be evaluated.

Phase I Project Status

To date, all localities have implemented wireless E9-1-1 Phase I (call back number and cell site location) with all of the wireless service providers serving the locality.

Phase II Project Status

To date, all localities have implemented wireless E9-1-1 Phase II (caller location) with all of the wireless service providers serving the locality.

Wireless Responsibility

Section 56-484.16 of the *Code of Virginia* makes clear the General Assembly's intent that wireless 9-1-1 calls be answered by the local PSAP where the call is initiated instead of by the VSP. The *Code* required that by July 1, 2003 all localities be directly taking the wireless 9-1-1 calls made within their jurisdiction. Rather than just taking the call as required by Code, many localities opted to deploy Phase I instead. As a result, the success with Phase I deployment translated into success with moving the calls from the VSP to the local PSAP. Presently, all localities are now accepting all of their wireless 9-1-1 calls.

Wireline E9-1-1

Originally, 37 jurisdictions were eligible for funding because they had not fully deployed E9-1-1 as of July 1, 2000. All of these localities have now deployed E9-1-1 service.

State of the Wireless E-911 Fund

Wireless E-911 Fund

The Fund is generated by a \$0.75 monthly surcharge collected from each wireless customer whose place of primary use is in Virginia. One question the Board is asked annually is whether the surcharge rate should be adjusted. The current funding process, which distributes the revenue collected through the surcharge, is to distribute the majority of the Fund based on a pre-determined formula derived from PSAP costs and call load data. The sufficiency of the surcharge is best evaluated against two criteria.

First, 30% of the Fund is earmarked for wireless services cost recovery. This percentage was established through a legislative change in 2006 and was based on the known, on-going costs of the wireless service providers. Historically, the providers have collected approximately 26% of the Fund and the current percentage has proven sufficient to fund the known, on-going costs of the providers. However, in the current biennium budget there is an \$8 million transfer from the portion of the Fund that is earmarked for wireless cost recovery to the Compensation Board. The intent of this transfer is to pay for sheriffs' dispatchers. In FY2016 sufficient funding was available from the remaining portion of this earmark to pay all wireless service cost recovery requests, but in future years this may not be the case, especially when considering new FCC indoor location accuracy requirements.

The second criterion for evaluating the sufficiency of the surcharge is the potential impact to PSAP funding. The localities have come to rely on the wireless E9-1-1 funding source to operate and maintain their PSAPs. Any reduction to the overall funding would be detrimental to service delivery. The surcharge rate must be sufficient so that the distribution formula results in consistent funding to the locality. Historically, the PSAPs have received 48% of the Fund for recurring and operational costs. The current funding process distributes 60% of the Fund to the PSAPs. This percentage was established through a legislative change in 2006 and has resulted in an increase in the overall amount of funding to the PSAPs. However, not all PSAPs have benefited equally. Those PSAPs located within the fastest growing localities have received a greater portion of the Fund than those PSAPs located in the slower growing localities. Many PSAPs, mostly small and rural, have experienced a significant decrease in funding since the current funding distribution methodology was put into place in 2006.

To provide insight into this trend, the Board established a Wireless Funding Committee in September 2009 to review the wireless fund distribution methodology, and if appropriate, recommend changes, which were made in the 2011 General Assembly session. These changes focused on smoothing out data anomalies and better aligning the funding cycle with local budgeting processes. More recently, changes were made as part of the Governor's Commission on Government Reform and Restructuring. In the 2012 General Assembly session, a change was made to how the 60% of the Fund is distributed to PSAPs. Beginning July 1, 2012, 60% of the Fund is being distributed to the PSAPs monthly by the Department of Taxation. According to each PSAP's average pro rata distribution from the Fund for fiscal years 2007-2012, "...taking into account any funding adjustments made pursuant to..." any audit performed by the Board.

In July 2011, the Board directed staff to validate the call load and cost data submitted by any PSAP having a large variance in their data from FY2008 to FY2009 or FY2009 to FY2010. This data sampling was done in response to the APA audit conducted in FY2010. In January 2012, the results of the initial validation were presented to the Board and staff was directed to validate all data submitted by the PSAPs for FY2009 and FY2010. The final validation results were presented to the Board at their July 2012 meeting. At this meeting, the decision was made to correct all funding for this period, impacting PSAP funding for the next five years.

Finally, the current distribution percentages described above will be recalculated on or before July 1, 2017. However, there is already interest within the PSAP community to forecast the impact of the upcoming recalculation on current distribution percentages. A recent analysis conducted by staff, which was based on four of the five years of required recalculation data, yielded significant negative results. This analysis indicates that small, rural PSAPs may lose up to 70% of their current wireless revenue. As a result, the Board is recommending delaying the recalculation of PSAP wireless funding distribution percentages until the RAC can complete several tasks that will contribute to a new 9-1-1 funding strategy. These tasks focus on identifying transitional costs for NG9-1-1, as well as costs associated with 9-1-1 baseline services and capabilities.

Funding Levels

In order to appropriately analyze the effects of the current funding methodology, it is necessary to review the funding levels for both the wireless carriers and the PSAPs. The total amount of funding received by the carriers for the recovery of costs incurred during FY2016 was \$2,771,922. This amount is well within the 30% of the Fund set aside for this purpose, which in FY2016, was \$13,702,038. Any remaining funding in FY2015 was transferred into the PSAP Grant Program for

the FY2016 funding cycle. The PSAPs received a total of \$27,404,076 through the 60% formula distribution and were allocated another \$7,569,803 from the FY2016 PSAP Grant Program funding cycle. This amount is more than the \$7,059,722 allocated in FY2015. As a result, in FY2016 the PSAPs received a total of \$34,973,879. Compared to FY2015, when the PSAPs received a total of \$33,906,215, the overall result is an increase of 3.1% in funding to the PSAPs.

Ensuring an appropriate funding level into the future requires sufficient revenue to be generated. Since the actual revenue for FY2016 was about \$58 million, each penny of surcharge collected generates approximately \$773,333 of revenue annually. It is important to note that there are other draws on the Fund that reduce the amount of funding available to the PSAPs and the wireless service providers. The Division of Public Safety Communications (PSC), a portion of the Virginia Geographical Information Network (VGIN) Division, and centralized billing agreements for PSAP wireless 9-1-1 services with Verizon and CenturyLink are funded through wireless E9-1-1. Since this funding is contained in the Appropriation Act, it is subtracted before the distribution of funding based on the formulas, thus evenly reducing the amount of funding across the three funding programs.

In addition to the \$8 million transfer from the Fund to the Compensation Board, the current biennial budget also includes a \$3.7 million appropriation to the VSP for wireless 9-1-1 call taking. Just like the \$8 million transfer, this appropriation reduces the amount of funding available to the PSAPs and wireless service providers. This appropriation was originally established to provide funding to transfer wireless 9-1-1 calls from the VSP dispatch centers to the local PSAPs. However, all localities in the commonwealth are currently accepting wireless calls and no longer rely on the VSP to transfer wireless 9-1-1 calls to them. Thus, justification for the VSP receiving wireless E9-1-1 funding no longer exist and could jeopardize the commonwealth's ability to receive federal funding in the future.

Federal law enacted in 2004 requires states that apply for federal 9-1-1 grant funding (or the PSAPs within the states) to certify that no 9-1-1 funding raised through state charges was diverted for any purpose other than the purposes for which such charges are designated or presented. A state that has diverted funding shall be ineligible for federal funding for 18 months after the diversion. Federal law enacted in 2008 also provides that state expenditures of 9-1-1 charges are to be in support of 9-1-1 and enhanced 9-1-1 services, or enhancements of such services, as specified in the provision of state law adopting the fee or charge. Va. Code § 56-484.17 does not address other purposes generally and does not mention the transfers to the VSP and Compensation Board specifically. If the transfers are determined to be a non-compliant diversion, this would impact the commonwealth's ability to receive federal 9-1-1 grant funding in the future. This event is more likely now that the FCC in its seventh annual report to Congress on state collection and distribution of 9-1-1 and enhanced 9-1-1 fees and charges, identified Virginia as a state that has diverted 9-1-1 funds.

Wireless Funding Process

The Board began providing funding to PSAPs and wireless service providers in FY2000. Since FY2000, the Board has approved the distribution of over \$385.3 million to localities and over \$70.4 million to the carriers. The amount of funding increased each year as more localities moved to implement the service and more deployments occurred (Figure 3). However, in the most recent fiscal years, the amount of funding has stabilized. As the costs have become more stable, the PSAPs have begun receiving a more constant funding level, which is primarily comprised of personnel

funding. As a result, in FY2006, the board recommended a legislative change to implement its current formula-based funding process for the PSAPs. These changes were codified with the passage of Senate Bill 395 during the 2006 General Assembly session.

This current approach to funding splits the Fund into three parts. The first part is a 60% allocation to be distributed to the localities for PSAP operations. Beginning July 1, 2012, this portion of the Fund is distributed to the PSAPs monthly by the Department of Taxation according to each PSAP's average pro rata distribution from the Fund for fiscal years 2007-2012. The 60% allocation represents an overall increase of funding to the PSAPs since historically they received approximately 46% of the Fund for recurring costs. However, while this funding replaces the funding provided for recurring costs of wireless E9-1-1, it may not cover the non-recurring costs such as equipment replacement. The projected increase in funding (the difference between 46% and 60%) will likely address these non-recurring costs (over the life cycle of the equipment) in larger localities, it will not in many smaller localities. As a result, the Board also recommended the creation of another partition of the Fund, the PSAP Grant Program.

The PSAP Grant Program utilizes a 10% allocation of the Fund and is intended to assist the localities with the most need. While the legislation provides the Board with great latitude in the adoption of grant guidelines, the focus of these guidelines is on the purchase of equipment and services that support NG-9-1-1 and E9-1-1. The Board formed the PSAP Grant Committee to develop grant guidelines as soon as the legislation was approved to ensure that funding would be available to the localities as quickly as possible. Logistically, the Board was not able to implement the full grant process until the FY2008 funding cycle, but the Board accepted emergency grant requests in FY2007 to ensure that no locality would lose funding during the transition from the old process to the new.

In addition to the 10% allocation of the Fund, the PSAP Grant Program will also receive the remaining funding from the portion of the Fund earmarked for Commercial Mobile Radio Service Cost Recovery. Wireless service providers can seek cost recovery for direct and reasonable costs for the deployment and operation of the wireless E9-1-1 network. Since 60% of the Fund is distributed to the localities and 10% is allocated for PSAP grants, 30% remains for this part of the Fund allocation. Any funding remaining in this part of the Fund at the end of the fiscal year will be transferred to the PSAP Grant Program. Any funding remaining in the PSAP Grant Program at the end of the fiscal year will be distributed to the localities in the same manner as the 60% part of the Fund; however, the Board may retain any or the entire amount if a specific need is identified in the next fiscal year.

FY	PSAP Funding	Wireless Provider Funding
2000	\$4,316,115	\$396,144
2001	\$7,047,639	\$1,862,736
2002	\$13,930,840	\$3,719,132
2003	\$18,861,283	\$5,288,230
2004	\$16,015,454	\$8,361,966
2005	\$20,086,422	\$8,106,850
2006	\$18,680,037	\$5,371,059
2007	\$25,443,756	\$5,019,411
2008	\$30,858,208	\$5,399,847
2009	\$36,275,235	\$5,078,528
2010	\$42,693,511	\$4,251,126
2011	\$27,610,503	\$4,326,989
2012	\$28,317,542	\$3,823,170
2013	\$29,802,209	\$3,145,601
2014	\$31,558,099	\$3,217,093
2015	\$33,906,215	\$3,033,497
2016	\$34,973,879	\$2,771,922
Total	\$420,276,947	\$73,173,301

Figure 3 - Wireless E-911 Funding History

In FY2016, the amount of PSAP grant awards totaled \$7,569,803. When compared to the amount of grant awards made in FY2015, which was \$7,059,722, a 7.2% percent increase in funding occurred. However, this is significantly less than the \$15,945,527 in grant awards that were awarded in FY2010. The main reason for this decrease is the \$8 million that is transferred from the Fund to the Compensation Board. Despite the decrease in funding, the PSAP Grant Program continues to provide critical 9-1-1 equipment and services to the PSAPs.

The commonwealth's 9-1-1 system must keep pace with technology, which is progressing at an unprecedented rate. In order to support the current and future needs of Virginia citizens, the planning process for NG9-1-1 must continue, as well as the current holistic approach of supporting 9-1-1 services. To assist in both of these efforts, the current PSAP Grant Guidelines includes a new grant program – Shared Services. The purpose of the Shared Services grant program is to provide graduated funding to groups of primary PSAPs for multi-jurisdictional NG9-1-1 and E9-1-1 projects for equipment and services that are out of service, without vendor support, technically outdated, can no longer perform at an established minimum functional standard to sustain an acceptable level of service to the public, or strengthen current 9-1-1 operations through equipment or service beyond the PSAP's current capabilities. Furthermore, the FY2018 PSAP Grant Guidelines has narrowed the scope of GIS funding to supporting NG9-1-1 GIS data projects that focus only on these three mission critical data categories:

- Boundary Issues
- Road Centerline
- Address Points

In addition, PSAPs can now obtain funding for Text-to-9-1-1 projects. Text-to-9-1-1 is a funding category in the current PSAP Grant Guidelines. However, these Text-to-9-1-1 projects must utilize a Web browser solution since this approach provides greater functionality than other solutions.

Conclusion

The members of the Board continue to be effective in their role of promoting and assisting with the deployment of NG9-1-1 and E9-1-1 services throughout the commonwealth. As a result, Virginia continues to be a nationally recognized leader in 9-1-1. During this past fiscal year, the Board had several accomplishments. The Board directed staff to establish a Regional Advisory Council. The initial focus of the RAC has been to assist staff in establishing the prioritized tasks to support the Goals and Initiatives identified in the 9-1-1 Comprehensive Plan. In addition, the Board has advanced the commonwealth's transition to NG9-1-1 by continuing to implement the recommendations contained in the NG9-1-1 Feasibility Study. Presently, the Board has completed about half of the study's recommendations. The Board also remains committed to the statewide deployment of Text to 9-1-1, adopting the goal and recommendations presented to the Board in January of this year by the Text-to-9-1-1 Subcommittee.

The Board has approved draft legislative changes for the 2017 General Assembly session as a first step towards funding NG9-1-1. The following is a summary of the proposed draft legislation:

- Delay the recalculation of the PSAP wireless funding distribution percentages until July 1, 2018. This will enable the Board to finalize a long-term 9-1-1 funding analysis that includes

transitional costs for NG9-1-1. The anticipated timeframe for completing this analysis is January 2017. This analysis is a critical prerequisite for developing additional draft legislation for the 2018 General Assembly session that focuses on funding for the deployment and sustainment of a NG9-1-1 system.

The implementation of statewide wireless E9-1-1 and wireline E9-1-1 is also complete. To date, all localities have implemented wireless E9-1-1 Phase I (call back number and cell site location) and wireless E9-1-1 Phase II service (caller location), as well as wireline E9-1-1.

The Appropriations Act for the current biennium budget continues the transfer of \$3.7 million to the VSP and the \$8 million transfer from the Wireless E-911 Fund to the Compensation Board to support Sheriffs' dispatchers. These transfers may impact the commonwealth's ability to receive federal funding in the future. This event is more likely now that the FCC in its seventh annual report to Congress on state collection and distribution of 9-1-1 and enhanced 9-1-1 fees and charges, identified Virginia as a state that has diverted 9-1-1 funds. Despite the decrease in available funding for PSAP grants beginning in FY2011, the PSAP Grant Program continues to provide critical NG9-1-1 and E9-1-1 equipment and services to the PSAPs.

The Board continues to remain well positioned to address new and coming challenges to the 9-1-1 system in Virginia.