VIRGINIA
Statewide Comprehensive 9-1-1 Plan

robbery in progress... drug store 1st and main. man armed

SCHOOL BUS

FIRE AND RESCUE
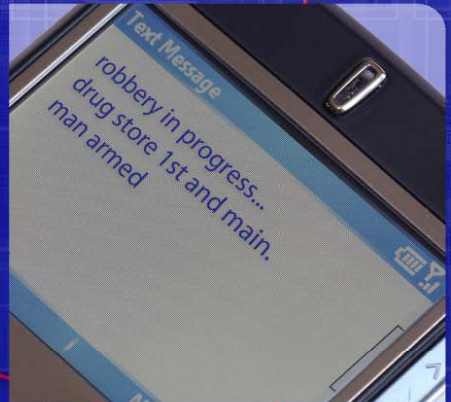
NEXT GEN & BEYOND

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1   INTRODUCTION

HENRY COUNTY, VA: On October 1, 2004, Dr. David Lewis and his son, Will, were kayaking in the Smith River when their trip went awry. After rolling several times in the high water, Dr. Lewis became nauseated, and they pulled to shore to rest. The father and son team decided to hike to the Mitchell Bridge, the pre-determined pick-up location where Mrs. Lewis had agreed to meet them. As dusk approached so did a heavy mist that made navigating the river nearly impossible and risky. The fog and terrain made it difficult to make progress towards the rendezvous point, and they soon became disoriented.

Concerned about her husband and son's delay, Mrs. Lewis called the authorities. Within moments a 9-1-1 telecommunicator was able to reach Dr. Lewis on his cellular phone. After instructing him to call back, the 9-1-1 center used the cell towers in the area to triangulate the general location of David and Will. Then, using satellites that picked up the Global Positioning System (GPS) in David's phone, the 9-1-1 center dispatched the necessary aid. David and Will Lewis were found within ten feet of their estimated position in the woods.

Prior to 2002, this Henry County rescue mission would have required a crew of first responders combing the woods to find the missing father and son. 9-1-1 centers did not have the ability to identify caller location information from cellular phones. Since then, Virginia's 9-1-1 capabilities have come a long way. But in light of new communications technologies – cellular and beyond – many Virginia 9-1-1 centers are once again challenged to live up to the public's expectations.

Virginia is a national leader in the deployment of wireless Enhanced 9-1-1 services and continues its commitment to excellent emergency response by proactively planning for the future and Next Generation technologies.

1.1   THE PURPOSE OF THE PLAN

This Statewide Comprehensive Plan for 9-1-1 (the Plan), including the associated implementation plan, defines key strategic initiatives for improving 9-1-1 services and functionality across Virginia, especially during times of rapid technology advancement. The Plan describes a future for 9-1-1 to include Next Generation 9-1-1 (NG 9-1-1) and will influence Virginia's statewide decisions concerning 9-1-1. The successful achievement of the Plan's initiatives will result in Virginia's ability to continue to meet the public's high level of expectations for 9-1-1 emergency service, provide a consistent level of emergency service across the Commonwealth, and contribute to excellent public safety capabilities that maintain secure communities.

Development of the plan began with a strategy to engage state and local 9-1-1 experts, practitioners, and users in the actual creation of the plan and to achieve consensus on a path forward. This was accomplished through a two-step process. The first step was a series of interactive interviews to gather data regarding the current and future state of 9-1-1, as well as initiatives and strategies that would support NG 9-1-1. The second step was to validate the data in an open offsite session held at the Virginia Information Technologies Agency (VITA) in November. *(See Appendix A for information on the development of the Plan.)*

This Plan is intended for the following audiences:

- 9-1-1, public safety, and communications center telecommunicators, operators, dispatchers, coordinators, supervisors, managers, and information technology (IT) technicians

- Local law enforcement, fire, and emergency medical service (EMS) employees

- Local government officials and sheriffs

- Emergency management personnel at the local, regional, and state levels

- Virginia public safety related agencies

- State and federal legislators

With this Plan, readers will be able to:

- Understand the Commonwealth's 9-1-1 vision, priorities, and plan for implementation

- Align with the Commonwealth's 9-1-1 priorities, which may guide operational, technical, resource, funding, and legislative decisions

- Volunteer to become involved in enacting the vision and initiatives

- Be informed about the future of 9-1-1, including Virginia's activities to make it a reality

The Plan is designed to be regularly referenced, used, and updated. The future vision for Virginia will come to fruition through regular involvement from the 9-1-1 community, those who diligently serve the public everyday and know the issues at hand. It is up to this community, with the assistance of the VITA, to continue to spearhead the improvement efforts needed for Virginia to be a leader in providing services for NG 9-1-1 and beyond.

1.2 BACKGROUND OF VIRGINIA 9-1-1

The creation of a nationwide number for emergency services — 9-1-1 — in 1968 was a simple yet sweeping advancement in emergency services. The establishment and adoption of 9-1-1 service ensured that in an emergency any caller throughout the country could dial three easily memorized digits and quickly have local first responders come to his or her aid.

Technological Advancements

While the first deployment of 9-1-1 increased the speed by which emergencies were reported, the caller still had to supply the telecommunicator with his or her location. In the 1980s, wireline Enhanced 9-1-1, or wireline E-911, changed this – tying the caller's telephone number to his or her physical address for landlines that were validated with the phone company. The introduction of wireline E-911 was a great improvement to the 9-1-1 system, but it would quickly be strained by the introduction and adoption of cellular phones.

The rapid proliferation of cellular technology in the consumer market came as a surprise to many observers, including public safety officials and practitioners. It was widely anticipated that cellular phones would be a commuters' tool and emergency calls would primarily come from highways. The public safety community did not anticipate that cellular phones would move beyond a transitory technology to supplement and sometimes replace landline phones. In addition, 9-1-1 centers would start receiving emergency calls from cellular phones from shopping malls, street corners, and office buildings. Because wireline E-911 is not capable of providing location information for cellular callers, this information had to be collected by telecommunicators, slowing response times.

The deployment of wire*less* E-911 has helped to overcome this challenge by transmitting longitude and latitude information based on the location of the caller's handset to the 9-1-1 center. The location of cellular callers is determined either by the GPS device within the phone itself or through a network solution that employs triangulation. While not as exact as landline technology, wireless E-911 has greatly improved telecommunicators' ability to quickly dispatch first responders to a wireless caller's location.

Continuing Challenges

Today, consumers continue to drive the communications market, bringing new technologies and new ways of communicating into practice. Voice over Internet Protocol (VoIP) phones, text messaging, picture messaging, and video are becoming preferred communications mechanisms, and consumers expect that 9-1-1 centers will keep pace with these technologies.   Most of Virginia's 9-1-1 centers cannot handle new technologies and struggle with antiquated analog technology and a lack of interoperability.

In addition, the Commonwealth faces inconsistencies between rural and urban areas. Urban areas tend to have greater resources and be outfitted with the latest equipment. Many of their rural counterparts, however, lack the means to deploy comparable services.

Beyond technology, Virginia must also consider how 9-1-1 centers are staffed, how that staff is trained and retained, and the responsibilities of that staff. The current 9-1-1 system is staffed with resourceful and adaptive personnel who are dedicated to public safety. However, recruiting and retaining qualified staff is difficult because the work includes high-stress situations, non-competitive wages, and the responsibility of administrative tasks outside of emergency response. In fact, most public safety telecommunicators work overtime to accommodate their understaffed 9-1-1 centers, and often staff shortages prohibit them from leaving their site to attend training courses including those for new technologies and services. (*For more information on the current state of Virginia 9-1-1, see Appendix B.*)

Transitioning from the current 9-1-1 system to one capable of handling the increasing demands of modern technology and including skilled and qualified staff is a complex but realizable goal. This Plan provides a roadmap to move the Commonwealth of Virginia towards a robust and reliable 9-1-1 system that is able to handle new technologies while also helping to ensure a standard level of 9-1-1 service across the Commonwealth.

1.3   KEY TERMS

The following terms are used in this document.

9-1-1	This is the national three-digit number that can be dialed from any phone to contact a local 9-1-1 center to report an emergency.
9-1-1 center	This term is used to describe a 9-1-1 center, a Public Safety Answering Point (PSAP), a locality, or a communications center, which serves as the first response to a 9-1-1 need and involves call-taking and in some cases dispatch functions. For purposes of this Plan, this term refers to any size or type of center, regardless of the number of staff on duty at once or the parent organization of the 9-1-1 center.
Public safety or 9-1-1 telecommunicator	An individual or career profession that involves answering "calls" for emergency services in a 9-1-1 center. Other frequently used names to describe this role are *call-taker*, *operator*, or *communications officer*. For this Plan, the dispatcher position will also be included in this title.
"Call"	This term can refer to a landline or cellular phone call, or any type of contact with a 9-1-1 center used to make a request for emergency aid. Other examples include TTY (machine for the deaf) messages, text messages, and Voice over Internet Protocol (VoIP) phones.
Next Gen 9-1-1 or NG 9-1-1	This is the state in which the general public can make a 9-1-1 "call" using any real-time communications device in voice, text, or video from any wired, wireless, or IP-based device, and the emergency response community can track the "call," identify location information, and transfer data using networked technology to deliver services.

2   STRATEGIC PLAN

Figure 1: The Virginia 9-1-1 Strategy

2.1   VISION & FUTURE FOR VIRGINIA 9-1-1

Virginia's 9-1-1 Centers receive, process, and dispatch requests for emergency aid quickly & accurately:

- From any geographical location
- From any communication device
- In any language

VISION

This vision represents the <u>ideal</u> operational picture for 9-1-1 emergency response functioning at an optimal level of service and capability. Components of this future vision – as defined by Virginia's 9-1-1 stakeholders, practitioners, and experts – include considerations for:

- Services and capabilities
- Infrastructure, equipment & technology
- Operations
- Staff and training
- Governance
- Funding
- *(See Appendix A for more information on the Plan development)*

Services and Capabilities:

In the future, 9-1-1 centers throughout the Commonwealth provide a consistent, seamless, and comprehensive level of service statewide using an IP-enabled system that is dependable and reliable. 9-1-1 centers accept "calls" from all devices and in all forms, in any language, and from special needs populations, such as the hearing impaired, to ensure that no request for assistance goes unanswered.

In addition, Emergency Medical Dispatch (EMD) is available to everyone within the Commonwealth. 9-1-1 centers are not limited by their physical walls, and allow telecommunicators to process calls virtually or from outside the 9-1-1 center. There is a potentially unlimited, but managed, flow of information between any link in the chain of emergency response, including: 9-1-1 centers, emergency responders, patrol vehicles, and hospitals.

Infrastructure, Equipment & Technology:

In the future, 9-1-1 centers throughout the Commonwealth use a flexible, open-architecture application-based system made possible by a statewide IP network. This system allows for easy access to information and provides secure and fluid data transfer between 9-1-1 centers and other public safety entities.

Furthermore, all upgrades to the infrastructure are tested and piloted to ensure quality and redundancy before new technology is widely deployed. Statewide standards and guidelines exist for equipment, technology, and infrastructure to guarantee interoperability and allow for resource sharing providing procurement economies of scale and regional equality.

Operations:

In the future, 9-1-1 centers throughout the Commonwealth will have the option of leveraging the investments made by VITA, through its contractor Northrop Grumman, to enhance continuity of operations and improve disaster recovery. Participation in regional initiatives, a desire for increased information efficiencies, and an interest in services expansion will enable 9-1-1 centers to utilize best practices and standard operating procedures for day-to-day and mutual aid activities, staffing, and training. Economies derived from the synergies of state and local government participation will ensure that public safety telecommunicators are primarily dedicated to 9-1-1 emergency response services, and 9-1-1 centers are fully staffed and able to function when there is a surge or overflow.

Staff & Training:

In the future, Virginia certifies and provides sufficient wages for public safety telecommunicators comparable to other highly trained career professionals. These positions have standard schedules, a career progression, and a steady stream of people interested in working at 9-1-1 centers. Regular training is available on a variety of subjects, in close proximity to 9-1-1 centers, and through a variety of mechanisms.

Governance:

In the future, stakeholder planning efforts will facilitate and support local officials' awareness and understanding of emergency response operations and issues, enabling 9-1-1 centers to operate autonomously from local government agencies. Lastly, the local community is aware of the services provided by the 9-1-1 center.

Funding:

In the future, adequate, regular, and sustained funding is available to 9-1-1 centers. Mandates have a defined business case and value proposition and are fully funded.

2.2   STRATEGIC GOALS

The strategic goals represent overarching, long-term targets that will help Virginia move towards this vision.

Goal A: Provide a standard level of emergency response service to the public

When achieved, this goal will provide consistent emergency response services to anyone residing in or passing through the Commonwealth, at any time of day, and during any event. Consistent service means that all 9-1-1 centers can receive, process, and dispatch "calls" in a dependable and repeatable manner.

Goal B: Position 9-1-1 centers to continuously meet the public's expectations

When achieved, this goal will allow Virginia to keep up with the rapid pace of technology innovation and therefore the constant changes in customers' expectations. 9-1-1 centers realize that the general public expects seamless, reliable, "just in time" service that keeps up with emerging technology innovations. To achieve this expectation, the 9-1-1 community needs to proactively monitor and communicate about the trends and best practices in the field and cooperatively adopt a preparedness mentality to anticipate changes in the public's perception and expectations.

2.3   STRATEGIC INITIATIVES

The strategic initiatives are the actionable elements of the short-term strategy and provide the incremental steps needed to achieve the strategic goals. These initiatives will be refreshed or updated yearly but may last in duration longer than one year. Over time, as new trends, circumstances, and data surface, new initiatives will be required to ensure Virginia remains a model provider of cutting-edge 9-1-1 services.

The five initiatives detailed on the next few pages include the following information:

Description – A brief explanation of the sentiment and the work to be accomplished to successfully complete the initiative

Year One Outcomes – The outcomes yielded in the first year the initiative is successfully completed

Year One Tasks – Milestones and key deliverables to be completed over the next year using Initiative Action Teams (IATs). *(See Section 3: The Implementation Plan.)*

Benefit to the Commonwealth – The value the initiative provides

1 Conduct a baseline assessment of 9-1-1 capabilities and services

Description:

An assessment of Virginia's current 9-1-1 capabilities and services provides a baseline by which decisions may be made related to funding allocation for key gaps between current capabilities and the desired future of 9-1-1. The baseline assessment shall include both operational and technological capabilities. Knowing the exact status of 9-1-1 statewide will enable decision-makers to better address the challenges related to interoperability, staffing, and Next Generation technologies.

Year One Outcomes:

- A comprehensive inventory of all assets, resources, services, and capabilities of 9-1-1 centers in the Commonwealth

- Identification of 9-1-1 centers that are exceeding expectations and delivering excellent services to the public

- Identification of 9-1-1 centers that are challenged to provide various services

Year One Tasks:

- Identify the specific audience and recipients of the survey

- Identify the data points that need to be collected

- Develop the core survey questions, based on the identified data points

- Determine and acquire, if necessary, the survey instrument

- Pilot draft survey with a small sample

- Update the survey based on pilot data

- Conduct the survey statewide

- Compile information

- Determine the baseline

- Conduct an assessment of the data collected

Benefit to the Commonwealth:

- Greater understanding of regional and local successful service and disparities

- Identification of gaps that need to be addressed

2 Develop and apply statewide guidelines to foster a minimum level of 9-1-1 emergency response service across Virginia

Description:

The development of a minimum capability level will provide 9-1-1 centers statewide with the guidance necessary to assess their own capabilities against a common metric. Minimum capabilities will be identified for everyday operations and services including staffing, training, equipment, etc. Guidance will be provided to encourage 9-1-1 centers that do not meet this minimum level to move towards a higher capability level. In some instances, 9-1-1 centers may choose to consider consolidating to provide the minimum level of service by sharing services.

The minimum developed may come in the form of statewide operational and technical guidelines. Some examples include:

Operational

- *Services:* Guidelines for providing EMD services and accepting text messages
- *Staffing:* Standard operating procedures for staffing a 9-1-1 center according to the metrics established by the IAT
- *Training:* Standard training courses, annual courses, and a statewide certification program

Technical

- *Equipment:* Guidelines on the type or make of equipment that will promote interoperability
- *Infrastructure:* Guidelines on connecting to the IP backbone
- *Economies of Scale*: Guidance on the acquisition of new equipment and technology to improve service offerings and interoperability

Year One Outcomes:

- Guidelines for a minimum capability level
- Outreach materials to help centers that are not operating at the identified minimum capability level reach the desired level

Year One Tasks:

- Review the baseline assessment data to determine current operating levels
- Identify the components of the baseline assessment that will be put into the guidelines
- Determine the minimum level for each identified component
- Develop a comprehensive minimal capability level for Virginia 9-1-1
- Communicate guidance to 9-1-1 centers
- Support 9-1-1 centers to reach the minimum capability level

Benefit to the Commonwealth:

- Improved quality of service for the public
- Seamless support to other 9-1-1 centers anywhere in the state when needed and authorized
- Improved interoperability with compatible systems and aligned capabilities
- Long-term savings for localities that consolidate 9-1-1 centers
- Economies of scale buying power

3 Implement a recruitment and retention program

Description:

Recruiting and retaining qualified staff is imperative to the work of 9-1-1 responders, who are the first of the first responders. To effectively do this, the Commonwealth needs a strategy to ensure that telecommunicators are not overworked, that there is a consistent atmosphere of professionalism, and that recruiting is vastly improved.

Year One Outcomes:

- Outreach materials on recruitment and retention best practices

- New employees to staff 9-1-1 centers

Year One Tasks:

- Review current recruitment and retention guidance including the APCO Retains project

- Discuss current guidance with Virginia's telecommunicators to gain insight into the additional needs of the Commonwealth

- Identify and compile Virginia's best practices

- Develop and distribute outreach materials related to recruitment and retention to Virginia's 9-1-1 centers

- Implement best practices and assess progress

Benefit to the Commonwealth:

- A highly skilled, well-trained, and engaged workforce prepared to work in increasingly high-tech 9-1-1 centers
- Reallocation of funds currently spent on training new employees due to high turnover
- Improved work-life balance, morale, and working environment for telecommunicators

4 Enable Next Generation services by connecting 9-1-1 centers to the statewide IP backbone

Description:

Virginia has recently completed the construction of an Internet Protocol (IP) wireline across the Commonwealth, referred to as the "IP backbone" *(as depicted in Figure 2)*. This IP system will provide an infrastructure foundation that allows greater access to information databases and more effective data transfer. Moving to an IP-based system provides a reliable, high-speed way to transfer information while providing greater flexibility and redundancy assurances. The IP wiring is the linchpin for enabling NG 9-1-1. The IP backbone will enable 9-1-1 centers to receive data that is currently unavailable to them, including text messages, pictures, video, automatic crash notifications, and state and private databases.

Figure 2: IP Backbone
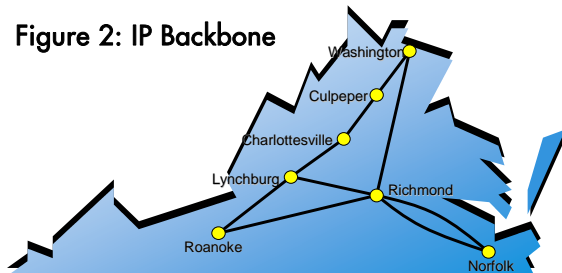
The construction of the IP backbone by VITA, through its contractor Northrop Grumman, was the initial step in enabling NG 9-1-1 capabilities. Now that the wiring is available and being tested, this initiative will focus on "the last mile," which means connecting each of the 9-1-1 centers to the statewide backbone.

Year One Outcomes:

- Pilot program and lessons learned
- "Last mile" connection process
- Connection business case
- Outreach materials for IP backbone connectivity

Benefit to the Commonwealth:

- A 9-1-1 system that accommodates technologies used by the consumer public
- The groundwork for a 9-1-1 system that allows seamless, interoperable data transfer throughout Virginia

Year One Tasks:

- Conduct a pilot program connecting 9-1-1 centers to the statewide IP backbone
    - Test equipment compatibility with IP backbone
    - Document best practices, successes, troubleshooting, and effective solutions
    - Calculate "last mile" costs
- Communicate best practices to all 9-1-1 centers in the Commonwealth
    - Provide advice on technology acquisitions to help ensure they are compatible with Next Gen technologies and interoperability within the system
    - Make use of standardized applications
    - Create and communicate statewide guidance on connecting to the IP backbone, and encourage 9-1-1 centers to connect
    - Develop a business plan including incentives, benefits, and suggested funding for connecting to the IP backbone

Initiative 5C: Create a mechanism for advocacy in the political environment surrounding 9-1-1 emergency response

Description:

9-1-1 centers are the first of the first responders. However, due to the lack of visibility, 9-1-1 is often overlooked in favor of funding law enforcement, fire, and EMS. Many may believe that 9-1-1 gets funded hand-in-hand with these other disciplines. An advocacy program will inform the public and decision-makers of the importance and unique needs of 9-1-1 statewide and add legitimacy to the professionals that provide 9-1-1 emergency response.

Year One Outcomes:

- Increasing the ability of emergency responders to influence their environment would provide the following benefits:

    - Identification of a political champion to advocate for 9-1-1 challenges

    - Informed Virginia elected officials

    - Establishment of a sustainable and effective mechanism to support ongoing outreach and advocacy efforts

Year One Tasks:

- Establish an advocacy group to promote 9-1-1. This group will be made up of Virginia's 9-1-1 practitioners, stakeholders, and associations

    - Recruit members

    - Develop group charter, membership requirements, and standard operating procedures

- Identify the appropriate mechanism for building advocacy for 9-1-1

- Conduct an outreach effort to educate local officials, legislators, and citizens

Benefit to the Commonwealth:

- Increased ability of practitioners to influence and promote change in the 9-1-1 environment
- A clear message and a dedicated and coordinated voice for 9-1-1

3 IMPLEMENTATION PLAN

3.1 ROADMAP

A roadmap lays out the specific steps for immediately executing the strategy and provides traction for accomplishing the initiatives. Awareness of the current status of 9-1-1 statewide *(see Appendix B)* and the vision for 9-1-1 statewide *(see Section 2: Strategic Plan, Vision)* allows for a greater level of planning around *how* change will be achieved. The initiatives and tasks provide the one-year plan for incremental improvement towards the achievement of the vision and goals. Virginia's Roadmap for 9-1-1 is presented in *Figure 3*. This roadmap provides a notional view of the year and the needed implementation activities to help ensure achievement of the Plan.
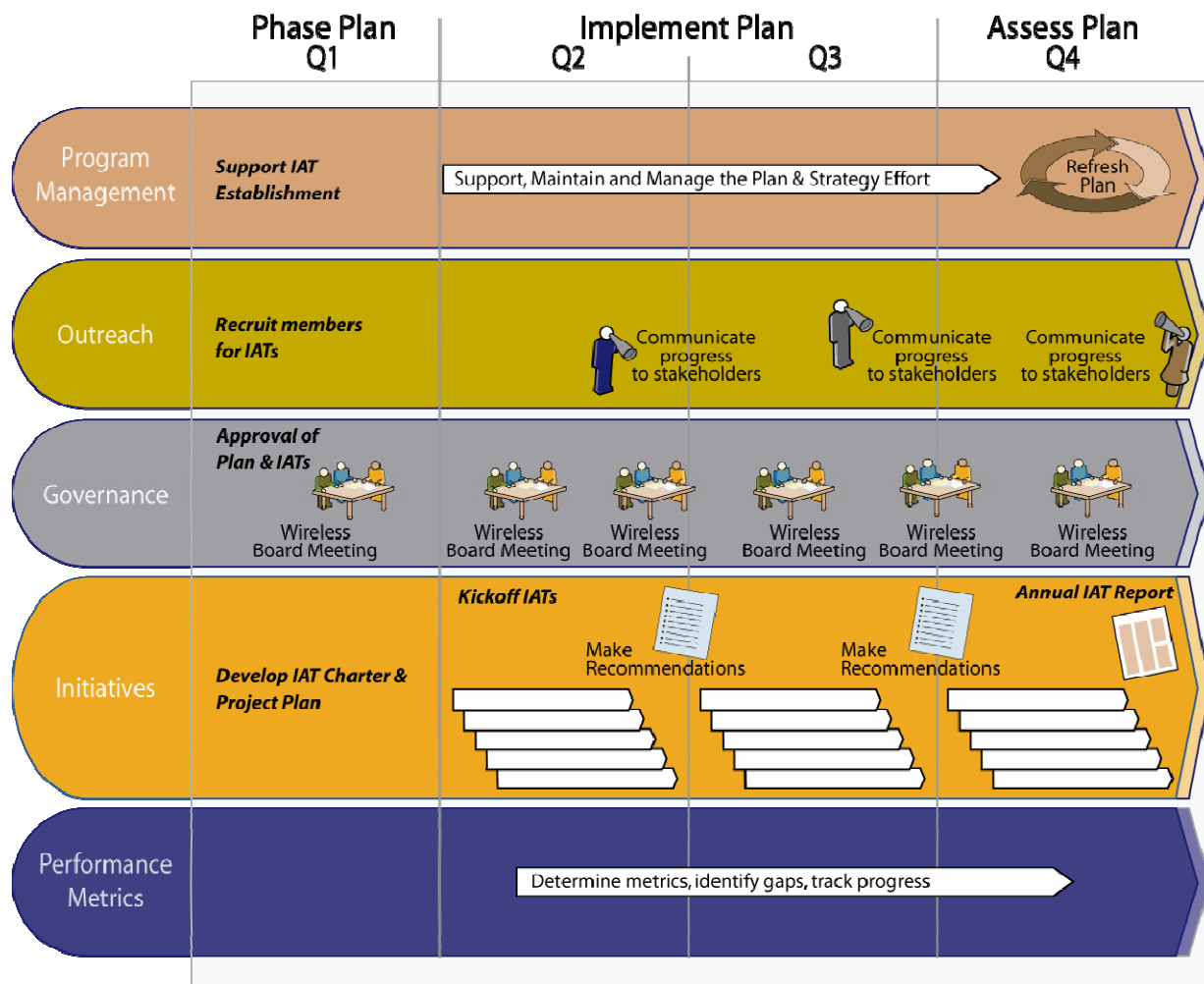

Figure 3: The Virginia 9-1-1 Roadmap

Program Management:

The Virginia Information Technology Agency (VITA) Integrated Services Program (ISP) Public Safety Communications (PSC) Division provides overarching project management for the Virginia 9-1-1 community by providing the following services *(see Appendix C: About the VITA for more information)*:

- Regional Public Safety Answering Point (PSAP) services through four regional coordinators

- PSAP educational and training services

- Next Generation 9-1-1

- Hosted services to PSAPs

At this time the VITA PSC Division provides a Program Management Office (PMO) that is responsible for assisting the strategy effort and the Wireless E-911 Services Board (*see the Governance section below*) and acts as a hub to coordinate 9-1-1 activities. This includes acting as the primary point of accountability for statewide issues relating to the Plan and for gathering and disseminating information about the progress of the initiatives. In addition to daily program management, the PMO will be responsible for the following activities:

- Driving the implementation of the Plan through Initiative Action Teams (IATs)

- Refreshing the Plan annually

- Serving as a liaison between local and regional 9-1-1 communities and the Commonwealth

Outreach:

Critical to the success of the strategy is the ability to communicate with those involved in carrying out the Plan and with those affected by it. Outreach activities will be conducted by the PMO to help inform the community about the content and status of current initiatives. In addition, an informed 9-1-1 community has a greater ability to provide input before decisions are made. Outreach efforts in Virginia will involve, but are not limited to, the following functions:

- Distributing lessons learned and best practices to 9-1-1 centers and the emergency response community

- Creating and executing a plan to educate local and state-elected officials and the public on 9-1-1 needs and capabilities

- Recruiting and engaging additional experts and stakeholders in the implementation of the Plan

Governance:

Governance refers to the system of planning, decision-making, and management established by the state and local community to ensure that the needs of the 9-1-1 community are being met. Virginia 9-1-1 will leverage its existing governance community, the Wireless E-911 Services Board, to support the implementation of this Plan. IATs will be established on a temporary basis to work on specific initiatives and tasks and will provide information to the Wireless E-911 Services Board on a regular basis for review and consideration. The Wireless E-911 Services Board also reserves the right to increase and/or modify established IATs as it deems appropriate.

Wireless E-911 Services Board:

The Wireless E-911 Services Board (Wireless Board) consists of 9-1-1 community experts and leaders from the public and private sectors and provides information on the state of wireline, wireless, and NG 9-1-1 capabilities across the Commonwealth. The Virginia Code requires the Wireless E-911 Services Board report annually to the Governor, the Senate Committee on Finance, the House Committee on Appropriations, and the Virginia State Crime Commission on the following areas:

- The state of enhanced wireless emergency telecommunications services in the Commonwealth

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

- - The need for changes in the wireless E-911 funding mechanism as appropriate, and the sufficiency of other moneys appropriated for the provision of enhanced wireless

Managed by the PSC Division of the VITA, the Wireless Board meets once every other month and includes a PSAP Grant Program Committee that annually appropriates funding to 9-1-1 projects from the Wireless Fund.

The Wireless Board will be engaged in this Plan to help determine roles, responsibilities, and milestones with respect to the strategic initiatives, and offer direction, guidance, funding, and advice for the initiatives.

Initiative Action Teams (IAT):

IATs will be established on an as-needed basis to assist in implementing specific initiatives and/or tasks. Each IAT will have a charter detailing its purpose, standard operating procedures, and roles and responsibilities. Membership will be identified based on the topic and consist of stakeholders and experts with broad and deep expertise. The IATs will make recommendations to the Wireless Board. Similar to working groups, the IATs will develop most of the work and guidance involved in initiative implementation. IATs can be created to assist any new initiative and can be terminated when an initiative is completed.

Initiatives:

Initiatives are focused projects bound by time and achieved through multiple tasks for incremental movement towards the vision. Often the initiatives help reach short-term goals, and when they are complete, new initiatives are formed to continue progress towards the vision. Initiatives typically require various perspectives and input from users, experts, and advisors to accomplish their various tasks. *(See Section 2: Strategic Plan, Strategic Initiatives for details on the five initiatives outlined in this Plan.)*

Virginia is already working towards the implementation of these initiatives through pilots that will be leveraged for statewide guidance. Below, each initiative is linked with an associated pilot that represents just one of the many best practices that will be leveraged by the Commonwealth.

1. Conduct a baseline assessment of 9-1-1 capabilities and services
"Connecting to Databases"

The Valley-Piedmont / Northern Virginia region is currently undertaking a pilot program to connect 9-1-1 centers to a "web-based informational database," allowing 9-1-1 telecommunicators and public safety personnel to inspect, query, and report pertinent data. The success of the project will showcase the feasibility and effectiveness of transitioning 9-1-1 centers to an IP-based system with access to shared data. The pertinent data accumulated from this pilot will serve as the foundation for the statewide baseline assessment.

2. Develop and apply statewide guidelines to foster a minimum level of 9-1-1 emergency response service across Virginia
"Southwest Hosted PSAP Pilot"

The Southwest Virginia Region will be testing the concept of hosted 9-1-1 center services. In this pilot, VITA through its contractor Northrop Grumman, will host the servers and backroom equipment that operates the call handling positions within the 9-1-1 center. Using VoIP and the statewide IP network, the 9-1-1 center will connect to this equipment and receive the services. By sharing common systems, the 9-1-1 center will be able to interoperate, more easily share information, and redirect calls in the event of a 9-1-1 center evacuation or overload situation. Because the systems are hosted in a tier-II data center located in Russell County, which is staffed 24 hours a day and seven days a week, this service will provide routine maintenance, back-up, and recovery services, which are not currently available to most small 9-1-1 centers.

3. Implement a recruitment and retention program
"Fairfax Recruitment Program"

The Fairfax County Department of Public Safety Communications (DPSC) is implementing a program to address the chronic shortage of 9-1-1 telecommunicators. The DPSC has been forced to rely heavily on supplemental staff personnel (police officers and firefighters working overtime), who earn a much higher hourly rate, to accommodate an annual turnover rate of 21%.

The program involves the following projects:

- Designing recruiting materials

- Developing a department website

- Conducting media outreach

- Collaborating with local high schools, community colleges, and universities to attend job fairs and community events

4. Enable Next Generation services by connecting 9-1-1 centers to the statewide IP backbone
"Southside Virginia NG 9-1-1 Pilot"

The 9-1-1 centers served by the counties of Franklin, Patrick, Henry and the city of Martinsville have begun a pilot project with grant funding from the Wireless E-911 Services Board to implement NG 9-1-1 services, including VoIP trunking, selective routing, and IP-based ALI database management. The short-term objective for this pilot is to prove that a technological solution exists and is suitable for deployment in other areas of the Commonwealth. The long-term objective will be to refine performance and integration efficiencies resulting from NG 9-1-1 services supported by an IP-based public safety 9-1-1 infrastructure.

5. Create a mechanism for advocacy in the political environment surrounding 9-1-1 emergency response
"State Interoperability Executive Committee"

The VITA, Virginia APCO and Virginia NENA participate in State Interoperability Executive Committee (SIEC) to coordinate interoperability efforts statewide. The success and lessons learned of the SIEC will be leveraged in the development of a 9-1-1 specific advocacy group.

Performance Metrics:

Performance metrics are used to assess the Commonwealth's progress towards the vision. With the establishment of a baseline of capabilities, the Commonwealth may create performance metrics that appropriately measure the success of the Plan and continue gap identification to allocate resources effectively. In the short-term, each IAT will determine its milestones, major deliverables, and metrics by which it will measure success towards the accomplishment of the initiative.

3.2 LIFECYCLE

While the Roadmap (*Figure 3)* will help the Commonwealth implement the initiatives within its first year, the Plan Lifecycle *(Figure 4, below)* will allow Virginia to refresh the Plan on an annual basis to ensure that the needs of the community continue to be met.

Figure 4: Comprehensive Plan Lifecycle
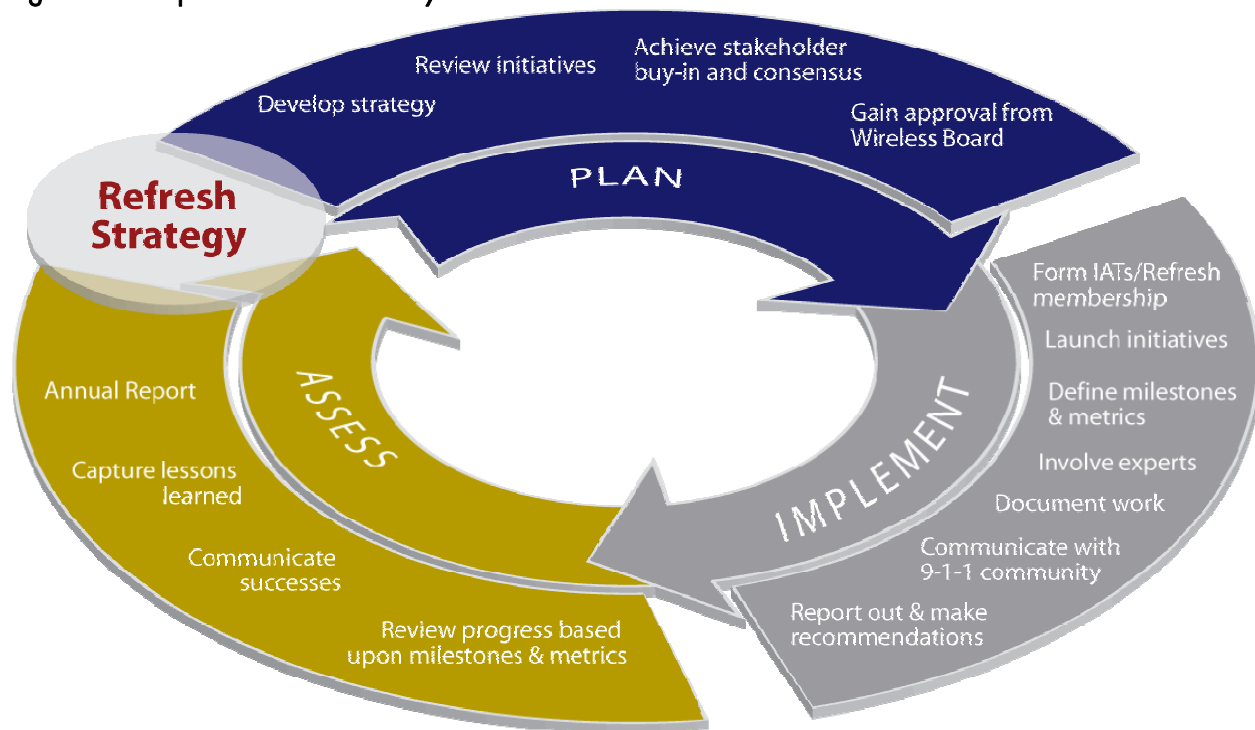
The Plan Lifecycle is a process of planning, implementation, and assessment. Planning is conducted through a collaborative process that considers the needs of 9-1-1 stakeholders and practitioners statewide to develop and gain approval for a comprehensive statewide plan. Implementation is conducted by leveraging stakeholders and the PMO through IATs over one year. The final stage of assessment allows for a comprehensive look at the Plan's progress to refresh and update the initiatives. At this stage, one year initiatives may have either been successfully implemented and therefore removed from the Plan or need further work and therefore remain in the Plan and assigned new tasks for the second year. In addition, new initiatives may be added to address new concerns.

4 CONCLUSION

The demands on the Commonwealth's 9-1-1 system and infrastructures, originally designed for landline communications, have increased exponentially due to the expanding and shifting population and the public's demand for access to emergency services through modern devices. Now is the time to take advantage of the nation's focus on public safety and interoperability to help ensure access to state-of-the-art emergency services 24 hours a day, seven days a week, and 365 days a year for the Virginia public. This Plan establishes the foundation for taking Virginia's 9-1-1 capabilities to the next level – helping our centers achieve a statewide minimum standard level of service, pursuing a more comprehensive and technically advanced suite of services in our major cities, and establishing 9-1-1 telecommunications as a rewarding career choice.

5   APPENDIX

5.1   APPENDIX A: PLAN DEVELOPMENT

The Commonwealth of Virginia Wireless E-911 Services Board is legislated by the Code of Virginia to create a Statewide Enhanced 9-1-1 Plan to move the Commonwealth towards Next Generation technologies and capabilities. To aid in the development of the Plan, the VITA ISP enlisted support from the SRA International Touchstone Consulting Group (Touchstone) to gather information and opinions from Virginia's 9-1-1 end-users and stakeholders. Input from the 9-1-1 community is vital in developing a statewide Plan to build consensus and foster buy-in on the direction of the Plan, from the very people who will be implementing the Plan.

In October of 2007, Touchstone conducted a series of interviews with Virginia's 9-1-1 stakeholders and thought leaders to gather information and to develop a clear understanding of the current status and future vision of 9-1-1 in Virginia. Interviews were chosen as the primary source of data collection because they provide the opportunity for two-way dialogue and customization of interview questions according to the interviewee's background and area of expertise. Involving stakeholders through this method allows them the chance to contribute to the effort, thereby creating alignment and bringing a full range of thinking to the table.

Capability Gap Areas identified during the interviews:

- Services & Capabilities
- Infrastructure, Equipment, & Technology
- Operations
- Staff & Training
- Governance
- Funding
- Regulatory Environment

The data from the interviews was analyzed and transformed into high-level themes and key points that emerged during the interview process and helped to reveal capability gap areas. *(See Figure 5 for the complete list of areas)*. Following the analysis, Touchstone led a joint review session with key stakeholders representing a variety of viewpoints and interests through a process to further refine the themes developed from the interviews and craft statewide initiatives to enable NG 9-1-1. The results of both the interviews and the focus group session provided the components of this Plan.

The following 9-1-1 stakeholders participated in the interviews and/or the joint review session in helping to develop this Plan:

Last Name	First Name	Title	Organizational Affiliation
Agee	Bill	E-911 Coordinator	Franklin County & Association of Public-Safety Communications Officials (APCO) VA President
Broughman	Chief J.B.	Police Chief	City of Covington
Essid	Chris	Interoperability Coordinator	Governor's Office of Commonwealth Preparedness
Gentry	Rodney	9-1-1 Support Division Manager	Hanover County & National Emergency Numbers Association (NENA) VA President
Hanger	Tracy	Battalion Chief	City of Hampton and Wireless E-911 Services Board
Hanson	Tom	PSAP Manager	City of Charlottesville, UVA, Albemarle County
Junkins	Jim	Director	Harrisonburg/Rockingham ECC and State Interoperability Executive Committee
Layman	Bob	Radio Frequency Network Engineer	AT&T and Wireless E-911 Services Board
McGeorge	Constance	Special Assistant to the Governor	Governor's Office of Commonwealth Preparedness
Smith	Larry	9-1-1 Coordinator	Essex County
Souder	Steve	Director	Department of Public Safety Communications, Fairfax County
Sweet	Jonathan	County Administrator	Bland County
Williams	Shannon	9-1-1 Coordinator	Smyth County
Woltz	Robert	President	Verizon (Local Exchange Carrier) and Wireless E-911 Services Board

Additional information was contributed by VITA staff members.

Figure 6: Map of localities represented by interview participants.

Interview participants represent all four VITA regions and each of the cities in red and counties in tan on the map above. These participants provided insight into their locality and surrounding localities whenever possible during the interview process.

5.2   APPENDIX B: CURRENT STATE OF VIRGINIA 9-1-1

The following statements represent the current state of capabilities and operations in Virginia's 9-1-1 centers, as described by the interview subjects and refined by the joint review session. This collection of high-level statements was used as a baseline and common understanding of where Virginia 9-1-1 is today.

Services and Capabilities:

Service and Capabilities refers to the assistance provided to 9-1-1 callers by PSAPs including the technical and human systems that are in place that enable the delivery of 9-1-1 services.

- No phone call goes unanswered

- PSAPs provide more than just classic 9-1-1 service, including:

    - Administrative assistance and 3-1-1 service

    - Senior citizen monitoring

    - Community involvement

- There is frustration that 9-1-1 lags behind current market technology for communications including text messaging, picture messaging, Voice over Internet Protocol (VOIP) and the Internet

- Some PSAPS have not deployed current 9-1-1 capabilities including Computer Aided Dispatch (CAD), Wireless Phase I and II, and wireline

- PSAPs are unable to transfer location and caller data (ANI/ALI data) to other PSAPs

- Call processing time and time to dispatch varies based on technology, call volume, and staffing

- Response time across the Commonwealth varies from 1minute to 45minutes

- Not all PSAPs provide Emergency Medical Dispatch (EMD)

- The basic level of service is not defined (Structure, People, and Technology)

Infrastructure, Equipment & Technology:

Infrastructure and Equipment refers to the technological backbone, composed of both hardware and software, which enables the delivery of 9-1-1 services to the public.

- Virginia is recognized, both internally and externally, as a national leader in wireless deployment

- In some areas, Virginia pushes the envelop in adopting new technologies and services

- There is regional disparity with respect to infrastructure, equipment, and deployment

- Equipment is old and outdated

- The analog network limits data transfer

- For many rural PSAPs, caller location is not entirely accurate or available for wireless

- Interoperability is a challenge, with respect to radios, between PSAPs, and among CAD systems

- The current regulatory environment obstructs movement towards NG 9-1-1 (For example, the Analog Switch, DOT regulations and separate 9-1-1 systems resulting from 9 LATAs)

Operations:

Operations refers to the manner in which PSAPs function and provide services with regards to their mission.

- The VITA regional coordinators provide great value to PSAPs, especially to augment staff for the small/rural PSAPs

- There is a mission gap, and many PSAPs serve as operators for administrative functions in addition to 9-1-1

- Statewide standard operating procedures and definitions do not exist for PSAPs

- Some areas are considering consolidation and shared services; others are conducting pilot projects

- Most PSAPs do not have their own organizational functions (grant writing, supervision, and internal logistics)

Governance:

Governance refers to those charged with providing guidance and oversight of all aspects of PSAP operations and strategy.

- The majority of PSAPs are not independently governed; therefore, funding distribution and personnel management is often conducted by non-PSAP officials

  - PSAP ownership varies and is often split across the state

- There are many late adopters who wait for mandates to make changes

- The administrative agency is often resistant to change and unwilling to give up control and share resources

- PSAPs have a tendency to take on the culture of the agency to which they report in the organizational hierarchy (e.g. - fire, sheriff, or, police). This may result in different/competing priorities depending on the reporting structure

Staff & Training:

Staff and Training refers to the human elements of PSAP functionality, including those that relate to the personnel employed by each PSAP, the staff's qualifications, and training.

- PSAP staff are dedicated, resourceful, and adaptive

- Most PSAPs are understaffed

- Recruitment and retention of staff weighs on PSAPs

    - Constant stress

    - Non-competitive salaries/benefits

    - Small qualified applicant pool

- Pressure to remain operational detracts from taking time to receive training

- PSAPs are handling daily calls, but surge capacity is inadequate

- The general public may not fully understand the level of professionalism required of communication officers to perform their duties. As a result, personal value judgments, from individuals outside the PSAP, may impact PSAP morale and contribute to a feeling among communication officers that their valuable service is not appreciated or perceived to be lacking in professionalism

Funding:

Funding refers to the monetary streams for short-term operating costs, the acquisition of currently deployed 9-1-1 technology, and the migration to NG 9-1-1.

- Funding for wireless deployment is successful

- Many PSAPs recognize the benefit of the PSAP grants program

    - Not all PSAPs are taking advantage of it

    - Limited awareness of other state and federal grant programs, or inability to access due to internal competition at the local level

    - Staffing is limited; they don't have the resources to develop an application

    - Many PSAPs feel they are behind on current 9-1-1 technology due to lack of funds

- PSAPs sense a barrier to NG 9-1-1 is funding

- There is uncertainty about future revenue streams

- Telecommunications tax reform abolished a dedicated funding stream for the PSAPs, which has dramatically reduced operating revenue

- The Compensation Board only funds "dispatchers" (communications officers) that are controlled by sheriffs office

5.3   APPENDIX C: ABOUT THE VITA

The Virginia Information Technologies Agency (VITA) is the Commonwealth's consolidated, centralized information technology organization. The VITA mission is to provide information technology that enables the government to better serve the public. The VITA responsibilities fall into three primary categories:

- Operation of the IT infrastructure, including all related personnel, for the executive branch agencies declared by the legislature to be "in-scope" to the VITA

- Governance of IT investments in support of the duties and responsibilities of the Information Technology Investment Board and the Chief Information Officer of the Commonwealth

- Procurement of technology for the VITA and on behalf of other state agencies and institutions of higher education

The VITA ISP

The Integrated Services Program (ISP) consists of the Public Safety Communications (PSC) division and the Virginia Geographic Information Network (VGIN) division as well as a radio engineering function. The ISP focus is on the following key components:

- Creating an efficient shared services model that provides more cost-effective solutions for small to mid-size state agencies and local government

- Designing an effective enterprise approach that aggressively pursues partnership arrangements, leveraging the Commonwealth's economies of scale potentials to acquire both capital and expertise

- Defining and adhering to a business-oriented value proposition

- Generating an equitable and effective pricing strategy

Both the VGIN Advisory Board and the Wireless E-911 Services Board are supported by the VGIN and PSC Divisions, respectively, as well as several communities of interest network councils (COIN) that represent the stakeholders throughout the Commonwealth in varying disciplines.

Public Safety Communications Division

The PSC provides the following services to the Virginia community:

- Regional 9-1-1 Center Services

  - Currently there are four regional coordinators who provide consultative services and support for developing plans and providing services in each region.

- 9-1-1 Center Educational and Training Services

  - The Division has hosted several ad-hoc training opportunities for 9-1-1 centers as well as formal training courses conducted by a professional training organization such as the National Emergency Number Association (NENA), when requested by a region or a group of 9-1-1 centers. In the future, more training services will be available to complement the existing training programs from the Department of Criminal Justice Services (DCJS).

- Next Generation E-911

  - New challenges threaten to undermine the historical success of the E-911 system. The current system architecture has changed little since its introduction in the early 1980's, which was actually based on 1970s analog technology. This means the current E-911 system handles voice very reliably but can only handle a very small amount of data. Many citizens are opting for more mobile wireless service or cheaper Voice over Internet Protocol (VoIP) services. As the reliability of these services increases, more and more people will adopt them as their only telephone service. 9-1-1 centers will not be able to accommodate these changes with the current system architecture. The Commonwealth needs to begin planning for a Next Generation system that will continue to support the citizens regardless of the device or network protocol through which they request emergency services.

- Hosted 9-1-1 Center Services

  - An observation was made while looking for ways to leverage economies of scale within the 9-1-1 center environment and maintain 9-1-1 center services, that if small localities lack the resources to maintain a 9-1-1 center then several localities could consolidate their 9-1-1 centers to achieve greater economies. With this approach, 9-1-1 centers connect, using the IP network, into a hosted backroom of servers and equipment. 9-1-1 Centers will operate on a shared system while maintaining their autonomy.

Program E-911

The E-911 program provides both wireline and wireless 9-1-1/E-911 throughout the Commonwealth of Virginia. This service includes funding assistance, system design and end user support. All funding requests must be considered by the Wireless E-911 Service Board.

The E-911 program offers the following key features and benefits:

- Review of funding requests from localities

- Liaison between the localities and the Wireless E-9ll Service Board

- Quality assurance of the application process

- Coordination of funds from the wireless providers and distribution of funds