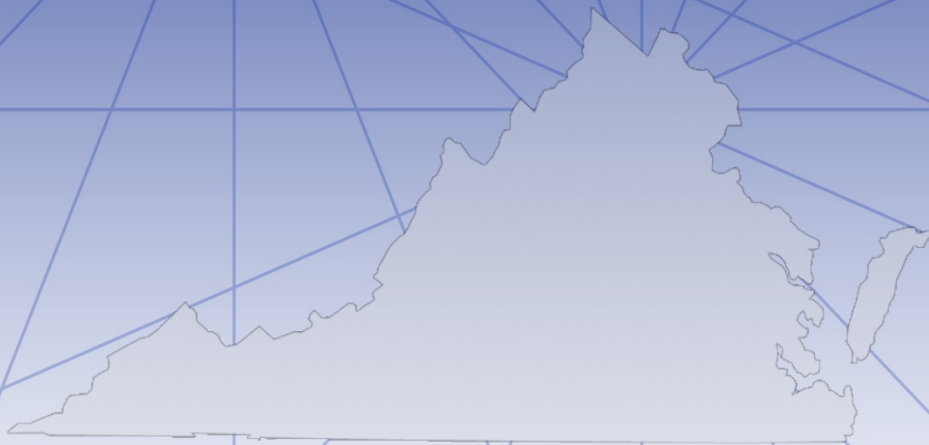


Virginia Information Technologies Agency



# Commonwealth of Virginia Next Generation 9-1-1 Deployment Plan



December 1, 2017

[www.vita.virginia.gov](http://www.vita.virginia.gov)

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## Executive Summary

The Commonwealth has been discussing and planning for next generation 9-1-1 (NG9-1-1) for nearly a decade. With significant advances of the technology and capabilities and functionality of a NG network, now is the time to move from planning to implementation. The question is not if the Commonwealth should deploy NG9-1-1, but rather, how should the Commonwealth deploy NG9-1-1. There is no option for not deploying it. Since 9-1-1 is a local service, it is up to each locality to determine how they will move forward with NG9-1-1 deployment. To aide that decision, this plan proposes the methodology and process to guide the 9-1-1 Service Board and Commonwealth as a whole, through this deployment. Fortunately, localities in the Commonwealth are able to leverage a project in Northern Virginia for both lessons learned and a procurement vehicle that will make the process significantly easier. Each locality will need to determine the most appropriate path, but the Board and VITA are positioned to provide assistance, and to assure a seamless, unified network.

Regardless of the locality's decision, all stakeholders in the 9-1-1 ecosystem must work together on deployment. A primary goal of NG9-1-1 is to ensure calls and information received in one locality can be transferred to any surrounding locality even if it is to another state. Accomplishing that will require continual coordination, communications and cooperation among the stakeholders throughout the deployment process. The cost of failure is too high. Each stakeholder in the 9-1-1 ecosystem must work together and ensure a smooth transition to NG9-1-1.

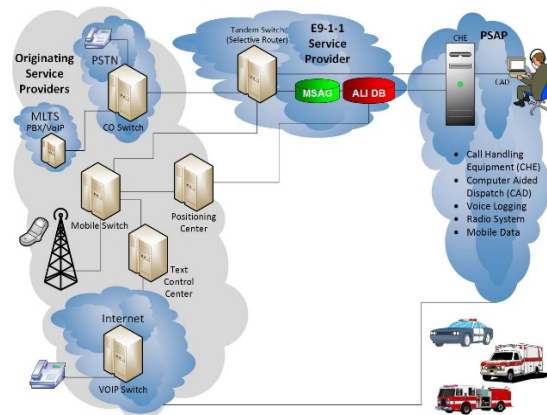
## What is Next Generation 9-1-1 (NG9-1-1)

### Current E9-1-1 Network

Currently, the 9-1-1 system in the Commonwealth is dependent on decades old technology and is tethered to voice-centric communications. It relies on an analog network that is quickly going out of service and places limitations on the reliable delivery of 9-1-1 service.

### How it works

The current E9-1-1 network is accessed through an originating service provider (OSP). The OSP may provide their service to the consumer through the public switched telephone network (landline telephone service), a mobile switching center (cellular or wireless telephone service) or the Internet (voice over Internet Protocol or VoIP service). Regardless of the access technology, the OSP recognizes when the consumer dials the digits 9-1-1 and routes the call to the E9-1-1 service provider's selective router or tandem switch. The E9-1-1 service provider has historically been the local exchange carrier (telephone company) that provides service to the area of the local 9-1-1 center, also called the public safety answering point or PSAP. The OSP delivers the call to the selective router with a ten-digit number. This number is either the call back telephone number for the caller, or a unique number that corresponds to the cellular or VoIP

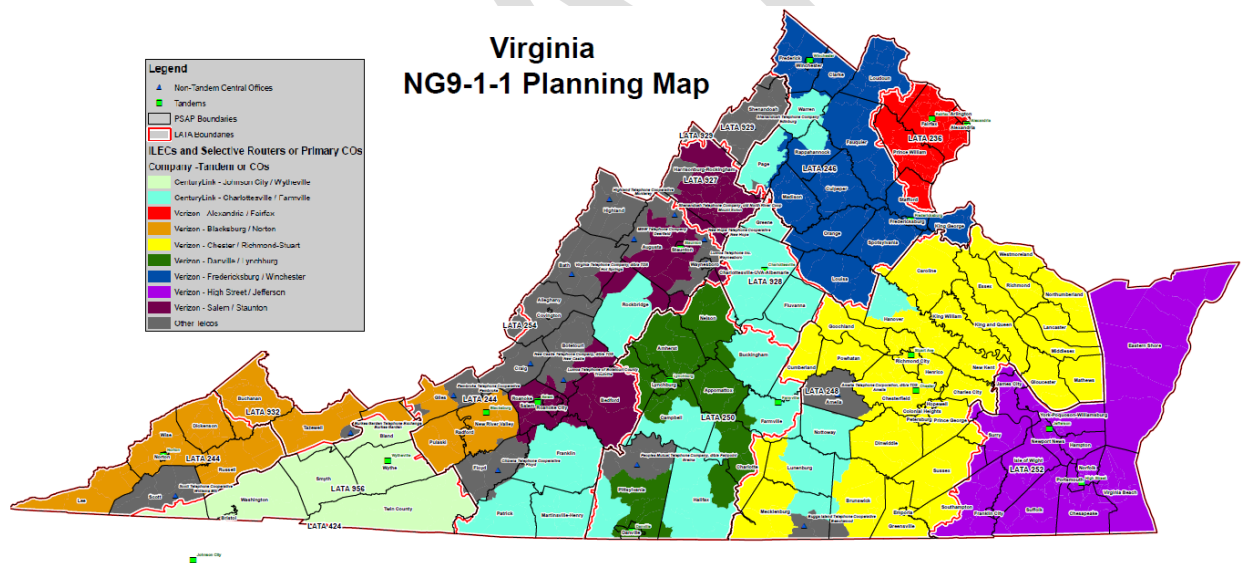


## Virginia NG9-1-1 Deployment Plan

call. The selective router searches a database for this 10-digit number to retrieve a code that identifies the PSAP that should receive the call. The E9-1-1 service provider then routes the call with the 10-digit number to that PSAP across a dedicated, 9-1-1 phone line or trunk. No other data is passed to the PSAP with the voice call. The call handling equipment (CHE) receives the call and the number and immediately sends the number out to the automatic location identification (ALI) database. The ALI database, maintained by the E9-1-1 Service Provider, returns to the PSAP the subscriber information associated to that telephone number, or in the case of a cellular or VoIP call, it goes out to a positioning center to get a current location for the caller. The location information is then presented on the computer screen to the PSAP call taker. With a cellular call, there is often a 15 to 20 second delay before the location is available and often must be requested by the call taker. Until that time, only the location of the cellular tower processing the call is available.

### Shortcomings with Current Solution

Though the current E9-1-1 network is often referred to as a single network, in Virginia, it is actually a collection of nine, independent networks that are not interconnected. That means, if a call is being processed at one PSAP and needs to be transferred to a neighboring PSAP that is on a different 9-1-1 network, it must be transferred on a regular telephone line, which does not transfer any data (subscriber information, location, etc.) about the call. Since about 11% of calls are transferred (mostly cellular calls routed by cellular tower to the wrong PSAP), this can significantly delay processing of the call and response to the caller.



As the number of OSPs continues to grow, the complexity of the current network will also continue to grow. Each OSP needs to interconnect with each of the 18 selective routers serving Virginia. This is not an efficient network design especially as telecommunications companies become more national or even global instead of being a solely local company. Additionally, as new technologies and applications are developed and deployed it will become harder to integrate with the current E9-1-1 network, which is based on technology from the 1970's. Consumers are demanding flexibility and mobility, but E9-1-1 was designed around fixed, landline telephone service, and cannot keep pace with the new, data rich technologies of today. The current solution can only deliver 512 characters of data to the PSAP, so it has an extremely limited ability to process data.

The most significant shortcoming of the current E9-1-1 solution is the fact that the infrastructure on which it is provided is going away. Telecommunications companies are decommissioning the old, circuit-switched networks in favor of VoIP and wireless technologies. So the question is not if the Commonwealth needs to make the migration to NG9-1-1, but rather when the Commonwealth needs to make the migration. Support of the existing infrastructure will become harder over the next five years so the Commonwealth needs to migrate as soon as possible.

### Case for Change

The Commonwealth must move forward now to evolve 9-1-1 and ensure quality service to its citizens and visitors. As service providers begin abandoning the 40-year old, circuit-switched networks, the urgency to update the 9-1-1 infrastructure to NG9-1-1 will increase tremendously. The public is increasingly using IP-based services (text, email, VoIP, video conferencing, social media, etc.) to communicate, but 9-1-1 can only really support voice. While some support for texting to 9-1-1 has been deployed in about 30% of Virginia PSAPs, texting is not easily accommodated in the current E9-1-1 solution. With trillions of text messages sent in the United States each year, texting is a primary form of communications for many Americans especially those who are hearing or speech impaired. Direct access to 9-1-1 for hearing and speech impaired citizens is a critical service and requirement upon all PSAPs. Actions to transform the outdated system into a digital network that is faster, more efficient, and has greater capabilities to serve Virginia's citizens and visitors must begin now.

### NG9-1-1 Network

The Virginia 9-1-1 Services Board has begun the planning and preparation to move to a next generation 9-1-1 (NG9-1-1) system.

The National Emergency Number Association (NENA) defines NG9-1-1 as "a system comprised of hardware, software, data and operational policies and procedures to:

- Provide standardized interfaces from call and message services;
- Process all types of emergency calls including non-voice (multi-media) messages;
- Acquire and integrate additional data useful to call routing and handling;
- Deliver the calls/messages and data to the appropriate PSAPs and other appropriate emergency entities;
- Support data and communications needs for coordinated incident response and management; and
- Provide a secure environment for emergency communications."

NG9-1-1 is based on a modern, internet protocol (IP) network, that has the ability to deliver calls to the appropriate 9-1-1 center faster; transfer 9-1-1 calls and associated data anywhere needed; interconnect with other public safety systems and databases; and to securely receive multimedia communications like text, photos and videos.

NG9-1-1 will require a complete upgrade of the E9-1-1 network to a shared IP network called an Emergency Services IP network or ESInet. There may be more than one ESInet within Virginia. It may be a system of systems, much like the Internet is a collection of many smaller networks that are referred to as a single network. Within the ESInet, there are a number NG9-1-1 core services that will be responsible for validating location information and routing the 9-1-1 call to the proper PSAP. Since voice will be



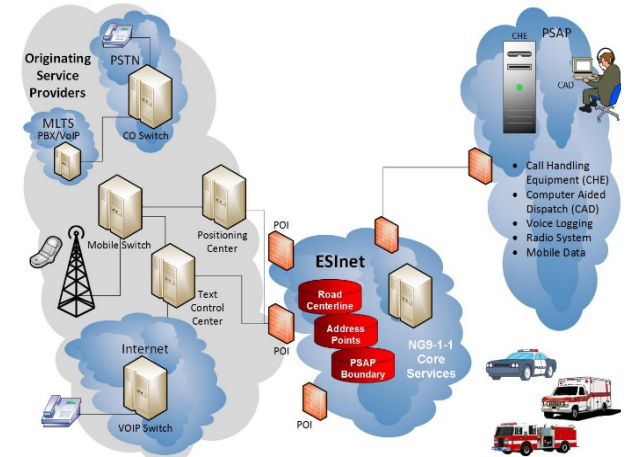
## Virginia NG9-1-1 Deployment Plan

converted to data on this network, the voice and data can travel the same path to the PSAP and do not require the same “lookup” to be performed as is done with the current E9-1-1 network previously described.

NG9-1-1 does not include the call handling equipment (CHE) in the PSAP. While the CHE will need to be “NG9-1-1 ready” to natively interconnect with the ESInet, a converter or gateway can be installed to allow any CHE to connect. This means that a PSAP can choose any CHE they wish. VITA has a number of statewide, CHE contracts available for PSAP use. All of them offer NG9-1-1 ready equipment.

### How it Works

The NG9-1-1 network will be accessed through the same OSPs providing access to the current E9-1-1 network. In NG9-1-1, regardless of the access technology, the OSP recognizes when the consumer dials the digits 9-1-1, but instead of routing the call to a selective router, the OSP routes the call to a point of interconnection (POI) to the ESInet. These POIs will be located strategically throughout the state to allow cost effective access to the ESInet. After the OSP passes a security check to enter the ESInet, it will provide the voice call and all available data about the call. Standards, published by NENA, define a uniformed format in which these data must be provided. A NG9-1-1 core service receives that data and determines the PSAP that should receive the call, and another service routes the call and data to that PSAP. The call handling equipment (CHE) receives the call and the data, and it is presented to the call taker on their computer screen.



### Benefits of NG9-1-1

One of the main benefits of NG9-1-1 is its integration of voice and data. The PSAP and E9-1-1 service provider will no longer have to use inventive and increasingly complex ways to get data into the PSAP. Everything, including the voice call, will arrive at the PSAP as data. This will provide flexibility to the PSAP regarding how that call is to be processed. Callers identified as speaking a foreign language could automatically be routed to a bilingual call taker. Callers from the area of a special event, like a NASCAR race, could be routed to a temporary, onsite command center for processing rather than the PSAP. Since it is all about processing bits and bytes, calls and their associated data could be routed wherever they need to go (within security limitations).

Additional information can also be made available to the PSAP about the caller, the incident or from other PSAPs and first responders. Smartphones, cars and even buildings are now equipped with a wide range of sensors that can provide a wealth of information to first responders, but there is no ability to receive this data in the PSAP. A picture of an accident scene may give responders information about potential hazardous materials or the extent of injuries that may save time and lives. Not all localities will be able to take advantage of this information immediately, but first the infrastructure needs to be present to be able to receive this information at all.

The ultimate goal of the initial deployment is for very little to change regarding the operations of the PSAP. With the exception of adding text to 9-1-1 for those PSAPs not already deployed, 9-1-1 calls will

be delivered the PSAP with the same information provided currently. The PSAP will receive the call faster since call setup time on the current analog network can take eight to thirteen seconds. It will be less than a second with NG9-1-1. Additionally, calls that need to be sent to another PSAP can be seamlessly transferred to any other PSAP not only in Virginia, but adjoining states or anywhere in the nation once NG9-1-1 is fully deployed. But again, the training requirements on 9-1-1 call takers will be minimal with the deployment of NG9-1-1 since their equipment and processes will not be changed by the replacement of the infrastructure.

### GIS Data in NG9-1-1

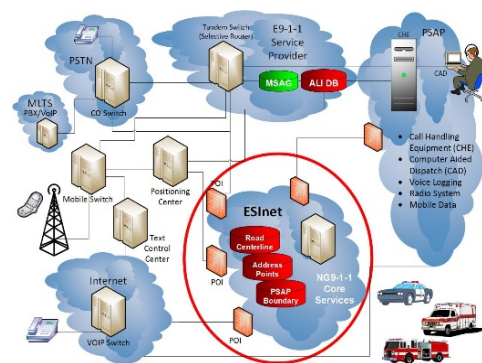
Geographic information systems (GIS) use in the next generation 9-1-1 (NG9-1-1) environment will be increasingly different than how GIS data is used in the current E9-1-1 systems. This is because NG9-1-1 will rely heavily on locally developed geospatial data for routing 9-1-1 calls to the correct PSAP. Significant effort must be made by each locality to ensure that mission critical GIS data layers: PSAP boundaries, road center lines (RCL) and address points, are evaluated and optimized for use in NG9-1-1. Each data set must be accurate, maintained on a regular, frequent basis and conform to established standards for NG9-1-1. Each PSAP boundary layer must align with adjoining PSAP boundaries to assure there are no gaps or overlaps, and GIS RCL and address point data will need to be maintained and improved to perform in the NG9-1-1 environment. To guarantee the success of NG9-1-1, localities must have resources available to assure GIS data is always current and accurate. The investment in GIS data will not only have positive impacts on public safety but will also provide valuable information for decision makers in multiple realms of locality operations such as; economic development, tourism, planning, zoning, land use, tax appraisals and assessments, utilities, public works, emergency management etc.

## Process of Change

### Feasibility Study

Recognizing the need to ensure a timely and comprehensive deployment of this important service, the Virginia 9-1-1 Services Board contracted for the development of an NG 9-1-1 feasibility study. The study, developed through statewide stakeholder input, recommended the Commonwealth implement an emergency services internet protocol (IP) network (ESInet) to advance toward NG9-1-1. Like the internet, there will need to be standards in place to ensure all participants interoperate in a secure and appropriate manner. The study recommended over 100 tasks the Commonwealth needs to complete to accomplish this goal. Key among them was the establishment of governance for required standards.

Working with all stakeholder groups, the 9-1-1 Service Board determined that it is in the best position to provide that governance and to coordinate with surrounding states to ensure seamless interoperability. As a result, they have adopted guiding principles (below), and a legislative position that was passed in the 2016 General Assembly session, which defined the Board's authority with NG9-1-1. As shown in the diagram to the right, this authority only includes those areas within the red circle. All other areas are part of the existing 9-1-1 system and have governance





through the State Corporation Commission (SCC), Federal Communications Commission (FCC) or local governments. As one of the board's guiding principles states, it will take full stakeholder engagement for NG9-1-1 to be successfully implemented. While the 2016 legislative change addressed governance, it did not address sustainable funding for NG9-1-1, which will be addressed in the 2018 General Assembly session.

### Guiding Principles

After reviewing the Feasibility Study, the 9-1-1 Services Board adopted six principles that would guide their planning and implementation of NG9-1-1. The guiding principles are essential for the success of NG9-1-1.

- 9-1-1 is an essential, local/regional, public safety service
- Need to address ALL of 9-1-1 not just NG
- Full stakeholder engagement is needed
- Services must not be degraded
- Economies need to be leveraged
- Doing nothing is NOT an option

### Northern Virginia NG9-1-1 Project

As part of the FY2016 PSAP grant process, the Northern Virginia (NOVA) region, led by Fairfax County, expressed interest in moving forward with an NG9-1-1 project. Therefore, they sought and were awarded \$500,000 to develop the spatial interface to the ESInet in FY2016. The spatial interface (SI) is an NG9-1-1 core service that takes the local GIS data and translates it into the format needed in the ESInet for NG9-1-1 location validation and call routing. Since local GIS data is constantly changing, this is not just a onetime conversion, but rather is a repeatable process to ensure the data stays synchronized. Through a procurement managed by Fairfax County, NOVA engaged General Dynamics IT to develop the SI for the region.

During the following year's grant process, the NOVA region was awarded \$1.2 million to deploy the ESInet and NG9-1-1 core services for the region. Again, Fairfax County took the lead on the procurement releasing a request for proposal (RFP) based on the requirements for the NOVA region. The RFP included a provision that requested a proposal for the Maryland localities in the National Capital Region (NCR) and the rest of the Commonwealth of Virginia. After an exhaustive evaluation and selection process, Fairfax awarded the contract for NG9-1-1 services to AT&T. This contract included a provision that allows other localities to purchase services on this contract. It also includes all services needed to deploy NG9-1-1, including the SI services performed by General Dynamics for NOVA.

The implementation process has begun in the NOVA region with full implementation of NG9-1-1 expected near the end of calendar year 2018.

#### National Capital Region

##### Inside Virginia

Arlington County  
Fairfax County  
Loudoun County  
Prince William County  
City of Alexandria  
City of Falls Church  
City of Fairfax  
City of Manassas  
City of Manassas Park

##### Outside Virginia

District of Columbia  
Montgomery County  
Prince Georges County

### Statewide Procurement Decision

Prior to the NOVA NG9-1-1 project, VITA had planned to issue its own RFP for the statewide deployment of NG9-1-1. While 9-1-1 is a local service, the VITA contract would have provided an option allowing

local PSAPs to utilize it without having to perform their own procurement. As the NOVA ESInet and NG9-1-1 core services project progressed, VITA staff was invited to participate as a non-voting member of the procurement team. This gave VITA staff valuable insight into not only the process, but the requirements and the marketplace. Though the original premise was that the NG9-1-1 requirements in NOVA were likely different than the requirements in the more rural parts of Virginia, a detailed review of the requirements indicated that there was not a significant difference. In other words, NG9-1-1 is NG9-1-1, no matter the size of the PSAP or population of the locality. This realization, plus the fact that the contract includes a provision to be used statewide, caused VITA staff to question the need to perform its own selection process. The following sections provide additional considerations impacting this decision.

### Increased Complexity

Having more choices is not necessarily a positive. As the number of NG9-1-1 solution providers increases, so does the complexity of the networks. NENA has published standards for NG9-1-1 to prevent the independent 9-1-1 networks we have today. Having to interconnect multiple providers will introduce additional points of failure and uncertainty when something goes wrong including who is responsible. Since the Fairfax County contract is the first in place, any future vendor will need to be able to interconnect with the AT&T solution. Again, with the standards, this should not be insurmountable if one or more regions of the Commonwealth select a different solution provider. There is, however, no reason to encourage multiple solution providers unnecessarily. Fairfax County conducted a competitive procurement that resulted in the award to AT&T and their solution should meet all of the requirements throughout the Commonwealth.

### Same Results

If the requirements for NG9-1-1 throughout Virginia are nearly the same as the NOVA requirements, then VITA would likely use the same (or very similar) requirements in their procurement process. Fairfax County conducted such an exhaustive and well-managed procurement process, therefore it is likely that VITA would end up with the same results. Being part of the procurement team, VITA staff did not identify any part of the process that would have been different if conducted at the state level.

### NOVA Contract Still Available

Even if VITA conducted another procurement and awarded to another solution provider, any locality can still choose to use the Fairfax County contract. Since the Fairfax County contract permits other localities to use it, a local PSAP could select that contract instead of the VITA contract. Similarly, the PSAP could choose to perform their own procurement if they felt that is in their best interest due to some unique requirement or a desire for additional competition. While no unique requirements have yet been identified, the bottom line is that the NG9-1-1 solution, like the provision of 9-1-1 itself, is a local decision and service.

### Time Commitment and Limited Resources

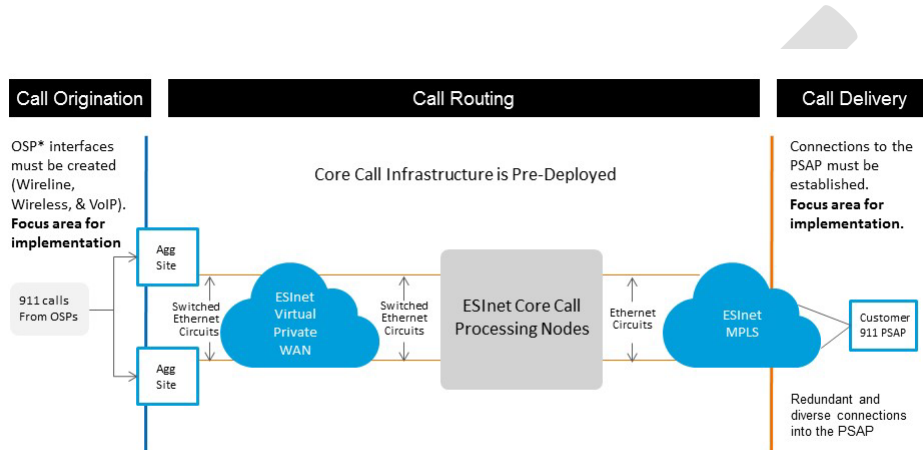
It took Fairfax County over a year to complete its procurement. There is no reason to expect that VITA could perform another procurement any more quickly. That would delay significant progress on the deployment of NG9-1-1 unnecessarily. Additionally, VITA has very limited procurement resources to commit to another procurement due to their involvement with the state IT sourcing efforts. Again, any locality can undertake their own procurement and VITA will support them to the same extent they supported the Fairfax County procurement.

## Recommended Solution

### AT&T Solution

Three functions are required for processing a 9-1-1 call. They are:

1. Call origination – The originating service providers delivering a 9-1-1 call to the ESInet.
2. Call routing – Services on the ESInet that receive the call and determine the appropriate PSAP to send the call.
3. Call delivery – The connections between the ESInet and the PSAP location(s).



AT&T ESInet performs the call routing and delivery functions.

### AT&T ESInet™ – Service Life Cycle

There are 2 major phases of the AT&T ESInet Service Life Cycle:

1. Implementation and Turn-Up – Starts from when the PSAP places an order for the service and ends when an individual PSAP is turned-up and service responsibility is supported by the AT&T 9-1-1 Resolution Center and AT&T Service Management. Each PSAP is implemented via a separate project plan although several projects may be occurring simultaneously.
2. Maintenance and Life Cycle Management – Includes service updates and support relating to the operations of the service, billing, maintenance notifications, and reporting.

### Project Phases for Implementation and Turn-Up

- Requirements Gathering – Data gathered and project plan is solidified.
- Architecture – The detailed solution design is confirmed and finalized based on PSAP requirements and AT&T recommended architectural requirements.
- Integration – Network components and facility equipment must be ordered, staged and installed. Network paths must be tested and turned-up.
- Deployment – Cutover plans are completed and approved. AT&T approaches deployment on a PSAP by PSAP basis.
- Maintenance – Handoff to 9-1-1 Resolution Center and AT&T Service Management for support.

### Implementation and Turn-Up – PSAP Responsibilities

- Appoint a PSAP project manager to interface directly with the AT&T project manager.

- Supply required data on each PSAP via the PSAP data collection template and the PSAP site survey template in the timeframes outlined in the project plan.
- Participate in status meetings regarding the project and approve mutually agreed to project plan.
- Ensure CHE maintenance provider is available at appropriate project team meetings and for testing.
- CHE at PSAP site(s) must interface with the service via the supported NENA i3 interfaces.
- Connect CAMA trunks and all relevant CHE connections including ANI/ALI controller (CHE) ports to the demarcation points of the PSAP Equipment, where applicable. Provide suitable space, power, ground, and environmental controls.

### Implementation and Turn-Up – AT&T Responsibilities

- Assign a designated AT&T project manager to interface directly with the PSAP during implementation.
- Conduct a project kick off call.
- Provide a project team contact list along with appropriate escalation paths.
- Complete a mutually agreed upon project plan and timeline and obtain PSAP approval.
- Conduct status meetings regarding the project.
- Provide site requirements and a site drawing for PSAP review.
- Conduct a site survey.
- Coordinate the onsite installation of AT&T provided equipment/circuits including transport connections and test and turn up at the PSAP site(s).
- Coordinate with the PSAP for cut-over and redirect of call traffic.
- Conduct PSAP training.
- Provide supporting documentation on how to report troubles and to work with AT&T.
- As part of the project plan, AT&T project management will schedule an overview of the service and processes to use to request support.
- Review the acceptance test plan and coordinate execution of testing with customer prior to cut-over.

### Connection to PSAP/Host Location

Network edge equipment is the AT&T ESInet™ Network Termination Equipment (NTE). All NTE is to be located within one equipment closet per PSAP site. Installation services provided at the network edge are to be conducted during standard business hours. The integration of the PSAP's call handling equipment (including associated CHE configurations and cabling), are outside the scope of the AT&T ESInet™ service. This applies to CHE which is managed by AT&T or some other provider. AT&T does compatibility testing with a variety of vendors' equipment.

Deployment options include deployment to legacy CHE equipment in which case the PSAP's CHE must provide a connection to the PSAP side of the demarcation block. Or, the PSAP may be deployed as a standalone NENA i3 PSAP – IP enabled solution. The demarcation point for this solution is the IP side of the AT&T i3 router, which will be installed in the PSAP by AT&T. The PSAP must be able to provide site

entry and assistance, as needed. PSAP CHE must be completely isolated from other IP networks and the CHE switches must have one free Ethernet port per router.

### Text to 9-1-1 Call Routing

With AT&T ESInet™ Service, texts can be routed via the ESInet from the text control centers (TCC). This provides the following advantages:

- Text is delivered over the same path as voice calls, with the same prioritization as 9-1-1 calls;
- Texts are monitored just like other voice traffic; and
- Alternative routing and over-flow rules can also be applied to text calls.

The PSAP is responsible for making the request for service (RFS) from wireless carriers, all text to 9-1-1 compatible call handling equipment, associated software licenses and maintenance support of CHE used to support text to 9-1-1.

### Test and Turn-up of Service – Customer Responsibilities

This is the process where the service is tested and turned over to the PSAP. AT&T will develop a test plan with the PSAP. At the completion of the installation of the service described in the agreed upon project plan, the project manager will conduct a completion/closeout meeting with the PSAP. The PSAP has 14 days to let AT&T know if there are any issues that are within the scope of this project. All issues must be in writing and should be sent to the AT&T project manager. Information on how this should be done will be provided during the implementation project team meetings. Monthly billing will commence on the service activation date. During PSAP training, a one-page job aid is provided with a reminder of how to contact AT&T for additional assistance.

### Deployment Methodology

Since the deployment of NG9-1-1 is replacing the existing E9-1-1 network, the transition must be managed not only to ensure there is no interruption in service, but also to reduce cost. While, again, the ultimate decision of the solution and timing rests with the locality, leaving it solely up to the locality can have two negative impacts. First, as was experienced with the deployment of E9-1-1, this can result in an extended period of time to deploy the service. Second, it can increase the cost of the transition. As PSAPs transition off of the existing network, that will leave fewer PSAPs connected to the selective router and databases. If there are only a few localities left on a selective router, their costs from the existing 9-1-1 service providers may increase. To prevent this, VITA intends to negotiate transition contracts with each of the existing 9-1-1 service providers, but it will require each PSAP to commit to a specific deployment period. If the PSAP can make this commitment, the 9-1-1 Services Board will cover any transition cost associated with support of the existing networks.

Generally speaking, the transition will occur one E9-1-1 network or selective router pair at a time over a 36-month period transitioning the most populous networks first (listed below). This will allow the existing 9-1-1 service provider to decommission the selective routers as quickly as possible, thus reducing cost of the transition. Since quite a bit of preparatory work needs to be completed before transition, work will be performed at the PSAPs throughout the state during the transition period, and PSAPs will deploy live on NG9-1-1 in the selective router order, to the extent practical. If a PSAP is delayed in their deployment, adjustment may need to be made with the schedule. Additionally, if a locality decides to conduct their own procurement, that will need to be factored into the overall

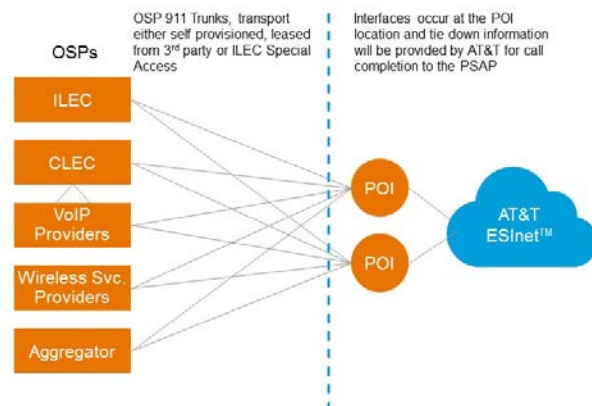
## Virginia NG9-1-1 Deployment Plan

statewide plan so other localities served by the same selective routers are not burdened with a higher cost or delayed in deployment.

Selective Routers	9-1-1 Service Provider	Population
Fairfax/Alexandria	Verizon	2,494,184
High St Portsmouth/Jefferson	Verizon	1,662,247
Stuart/Chester	Verizon	1,660,182
Staunton/Salem	Verizon	453,065
Charlottesville/Farmville	CenturyLink	403,369
Fredericksburg/Winchester	Verizon	343,031
Blacksburg/Norton	Verizon	340,101
Johnson City/Wytheville	CenturyLink	338,311
Danville/Lynchburg Church St	Verizon	320,247
Shenandoah County ECC	Shentel	43,175
Covington	Ntelos	21,556
New Castle	TDS Telecom	5,158
Monterey-Highland Telephone	Highland Telephone	2,216

### Originating Service Provider Transition

Each originating service provider (OSP) will need to move their 9-1-1 traffic from the selective router to an NG9-1-1 point of interconnection (POI). There will be at least one POI to replace each selective router, which will be located near or in the same location as the existing selective routers. Inter-LATA trunking can be quite expensive. Having at least two POIs per LATA will provide redundancy and reduce the cost to the OSP.



Each OSP must submit to the 9-1-1 Services

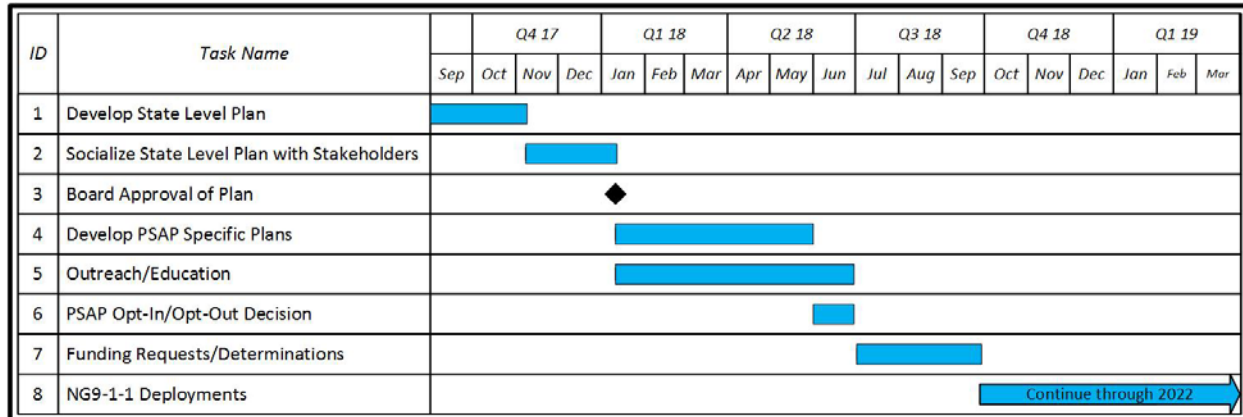
Board a plan for the transition to NG9-1-1. The OSP must work with AT&T or other NG9-1-1 solutions providers selected by the localities in the development of this plan. This will ensure that the transition aligns with the deployment methodology and schedule statewide. Though the OSPs will be encouraged to transition straight to NENA i3 standard routing to the ESInet, as a first phase, the OSP may transition to a legacy network gateway that will receive the same type of trunking currently connected to the selective router. This interim solution will require the OSP to continue to maintain their 9-1-1 data with the 9-1-1 services provider and validate all customer data as service is provided. While this will speed implementation of NG9-1-1 to the PSAP, it will not allow the PSAP to take advantage of full NG9-1-1 capabilities. Any OSP deciding to implement this interim step must include as part of their plan an overall schedule for implementing the full NENA i3 solution.



## Path Forward

### Major Milestones

#### Gantt Chart



#### Board Approval of Plan

With the presentation of this plan at their January 2018 meeting, the 9-1-1 Services Board will need to determine if they concur with its approach. If so, they will approve the plan. It is essential to note that the Board will not be approving a procurement or a contract for NG9-1-1. As this plan indicates, the Board will only be agreeing with the recommendation to NOT conduct another NG9-1-1 procurement and will be recommending to the localities to utilize the Fairfax County AT&T contract for the deployment in their PSAP. If this plan is approved VITA staff will work with AT&T and the PSAP community to develop detailed plans for each PSAP. These plans are for planning purposes only and will ensure the PSAP fully understands what is being offered through the Fairfax County contract. Again, the final decision on use of the contract is that of the locality or PSAP.

#### Develop PSAP & GIS Specific Plans

During the first part of 2018, VITA, AT&T and each PSAP will work together to develop PSAP specific plans for the deployment of the AT&T NG9-1-1 solution. The plans will be developed first for those PSAPs targeted first for deployment. These plans will include the following components identifying the responsible party or options for completion:

- Assessment of geospatial data and the corrective step(s) required;
- Assessment of redundancy and diversity of connectivity to the ESInet and any special construction costs required;
- Non-recurring costs associated with deployment;
- Other transitional costs associated with deployment;
- Monthly recurring costs after fully deployed;
- Equipment requirements within the PSAP (i.e. CHE upgrades, etc.);
- Schedule for deployment including milestones leading up to the cut over; and
- Expected funding from the 9-1-1 Services Board PSAP grant program.

Secondary PSAP, which are PSAPs to which 9-1-1 calls may be transferred, but that do not receive 9-1-1 calls directly, will also be addressed in this plan. Any secondary PSAP connected to the selective routers will also need to transition to NG9-1-1 so that the selective routers can be decommissioned. Since their

transition is required, funding assistance may be available to these secondary PSAPs. Other secondary PSAPs, which usually receive calls transferred to them on a ten-digit telephone line, can be evaluated for participation in the ESInet at the discretion of the primary PSAP. Any cost for implementation of these secondary PSAPs would be the responsibility of that secondary PSAP.

While many of these plans will be very similar, each PSAP will have a few unique situations or issues that will need to be addressed. In short, the plan must lay out how each PSAP will transition from their current state to full NG9-1-1 deployment over the next three years. To make this a reality, all parties must be committed to providing the best possible solution at the least cost.

### Outreach/Education

Another requirement for success is comprehensive outreach and education. There are 122 PSAPs connected to selective routers or otherwise receiving E9-1-1 service in Virginia. In order to transition all of them in a 36-month time period, everyone needs to know what is happening and the plan for deployment. Anything less than open, transparent communications can lead to misunderstandings and unnecessary delays. This is not just about the communications between the 9-1-1 Services Board and the PSAP community, but also with the OSPs, 9-1-1 service providers, local government leaders, GIS and IT professionals and all other stakeholders. It is also not one directional. Communications needs to flow in every direction among the stakeholders. A communications plan must be developed by the end of 2017 that details what communications need to take place, with whom they need to take place, when they need to occur and who needs to deliver the communications. Additionally, all stakeholders need to commit to full engagement meaning that anyone with questions needs to ask them, and keep asking them, until they are answered. Especially as this effort first starts out, no one will have all the answers, however, with open outreach and education, we will work through them together.

### PSAP Opt-In/Opt-Out Decision

After each PSAP specific plan is completed, it will be delivered to the PSAP. Since the PSAP will have been involved in the development of the plan, there should be no surprises contained within it. While a decision within 30-60 days is desired, the reality is that a PSAP will have as much time as they need to make a decision. In fact, a PSAP may decide initially to opt-out of using the AT&T solution then later change their decision, and opt-in. This will have no impact on their funding or participation. The only thing it may impact is the timing of their deployment. A PSAP (or group thereof) may decide they want or need to perform their own RFP process before making a final decision. That is acceptable, but again, the deployment in other localities may continue ahead of them, and other schedule adjustments may be required. The actual process of this decision are detailed below, but ultimately, it is the PSAP who controls when the decision is made and what solution to deploy. As one of the Board's guiding principles states, "doing nothing is not an option."

### Funding Requests/Determination

After the PSAP decides how they would like to proceed, they will submit a funding request. If the PSAP decides to deploy the AT&T solution, the majority of costs should already be identified in their specific plan. However, the PSAP may have other direct costs associated with the deployment that they wish to seek. Additionally, some of the work may be performed by another vendor or organization. The PSAP will submit all of those costs in a funding request to the Board covering all costs associated with the deployment of NG9-1-1 over the next three years (2020-2023). The PSAP grant committee of the Board will review all of these submissions and recommend funding levels for each PSAP. If the Board's

borrowing authority (not to exceed \$30 million) is approved in the 2018 General Assembly session, the funding will be available to the locality as soon as July 1, 2018.

### NG9-1-1 Deployments

With funding available at the start of FY2019, some transition activities could begin at that point. As with the development of the PSAP specific plans, transition activities would start with those PSAP scheduled to begin deployment first. The goal would be to have each PSAP ready to deploy well before their deployment is actually scheduled to occur. These transition activities may include GIS data work, ESInet installation, equipment upgrades, OSP reconnection, etc. When a PSAP is both ready and their network is being transitioned, NG9-1-1 deployment will take place. As noted previously, the impact on the operations of the PSAP should be minimal since the call takers will be using the same equipment and receive the same data. The new infrastructure will provide greater speed and capability, but it will be up to the PSAP to determine when (or if) to implement other changes.

### Opt-In/Opt Out Process

At any point after this plan is approved by the 9-1-1 Services Board, any PSAP may choose to opt-in or opt-out of using the Fairfax County AT&T contract. The PSAP need not wait until the completion of the PSAP specific plan to make the decision. This is especially true if a PSAP plans to opt-out and wants to begin the process of conducting a procurement for their own solution. That can and should start as soon as possible. This decision may be driven by a desire to find the best solution or it may be due to a local procurement decision. While VITA's review of the Fairfax County contract indicates that it can be used by other localities in Virginia, the final decision on its use is a local decision. Local procurement policy must prevail.

#### Opting In

Any PSAP wishing to use the Fairfax County AT&T contract will need to notify the 9-1-1 Services Board through VITA staff and execute a Participation Agreement with AT&T (Appendix A). The notification of the Board needs to include the level of support requested from the Board and VITA. While the details are still being finalized, VITA will likely be able to provide PSAPs with implementation and billing support during the transition. As an example, rather than AT&T billing the PSAP and the PSAP seeking reimbursement from the Board through VITA, VITA may be able to pay AT&T directly for the transition costs. To be clear, this is not required if the PSAP wishes to manage the implementation locally or regionally, but VITA will likely offer that service to PSAPs desiring this level of support. Either way, the same costs will be eligible with no impact on the amount of funding. Each PSAP desiring this type of support will need to specifically request it. A form will be developed that defines the options and allows the PSAP to indicate the desired level of support.

The Participation Agreement is required as part of the Fairfax County contract. It must be executed prior to any work beginning on the deployment of NG9-1-1. VITA can assist with questions about the agreement, but it is executed between the PSAP and AT&T, therefore local counsel should be engaged to review the agreement before execution.

#### Opting Out

Any PSAP wishing to go a different route for an NG9-1-1 solution initially only needs to notify the Board through VITA staff by electronic mail. The PSAP may wish to perform their own procurement or seek another contract vehicle for this service. Any PSAP conducting an RFP is encouraged to include a

provision (§ 2.2-4304) to allow other Virginia localities to utilize the contract. Since any such approach will take time to determine a deployment plan, it is not expected that the PSAP will have all of the details at the time they decide to opt-out. VITA will provide support to any PSAP wishing to opt-out similar to their support of Fairfax County for their procurement. As their deployment plan becomes defined, PSAPs opting out will need to share that with the Board so its impact on statewide deployment can be determined. As noted previously, the migration off of the existing selective routers needs to be managed to minimize overall cost to the Commonwealth. That is why it will be essential for PSAPs using a different solution to continue to coordinate with the Board.

Additionally, to be eligible for funding from the Board, any PSAP deploying a different NG9-1-1 solution will need to commit to ensuring interoperability with the AT&T ESInet solution. It is imperative that the NG9-1-1 networks in Virginia operate as a single solution. Any PSAP choosing a different solution will be responsible to ensure integrated text, voice, and data interoperability with the AT&T NG9-1-1 solution. This includes, but is not limited to, the following requirements:

- Establishing redundant, diverse ESInet and Next Generation Core Services (NGCS) connectivity to the Commonwealth's ESInet at locations defined by VITA.
- Providing NENA standards based border control function (BCF) at the jurisdiction's NG9-1-1 provider's edge.
- Ensuring NOC to NOC communications SOPs are established between the jurisdiction and the Commonwealth ESInet.
- Lab-to-lab testing in non-live environment with current production software releases to verify interoperability.
- Support transitional paths to NG9-1-1 to allow transfer of calls to any neighboring jurisdiction (support legacy call transfer to an ESInet [via interworking IPSR to i3 protocols] and support inbound ESInet calls to a legacy PSAP [via interworking i3 to IPSR protocols]).
- Support SIP interconnection with use of SIP call delivery and use of i3 protocols including but not limited to PIDF-LO, LoST, HELD, GET, SIP REFER, Subscribe/Notify messaging, and EIDD as defined by the Commonwealth's NGCS provider's specification.
- Provide an ESInet solution inclusive of pricing for text-to-911 text control center services. The alternative solution must provide the ability to transfer texts received initially at the first PSAP to any other Commonwealth PSAP, regardless of NG9-1-1 ESInet/NGCS services provider.

AT&T's solution meets the NENA i3 standard so other solutions meeting this standard should be interoperable. Funding will likely be available for integration services between solutions providers, if required.

### Funding Process

#### PSAP

The 9-1-1 Services Board is expected to approve changes to the PSAP grant program in May 2018 based on recommendations from their PSAP grant committee (PGC). It is important to note that some aspects of the existing PSAP grant program will remain unchanged, while others will change significantly. Notably, the PSAP education program (PEP) and consolidation portions of the PSAP grant program will continue in FY2020 and beyond. These support very important goals of the Board and need to be continued. Additionally, funding for call handling equipment (CHE) that is no longer supported by the

vendor should continue, though the funding amounts will need to be reviewed by the PGC as it does every year as part of the guideline update. The continued phase out of funding for computer-aided dispatch (CAD) will likely continue. This means it will no longer be eligible for funding, but again, this will need to be discussed by the PGC and a final recommendation made to the Board.

The significant change to the grant program as a result of NG9-1-1 is that it will need to shift to more of a funding program than a grant program. Rather than submitting a grant request for a specific fiscal year or a specific piece of equipment, each PSAP will need to submit a funding plan for all equipment, service, and costs associated with the deployment of NG9-1-1. Though secondary PSAPs have historically not been eligible for funding through the PSAP grant program, those secondary PSAPs connected to the selective routers will likely be eligible to submit a funding plan, since they must transition to NG9-1-1. The PGC will develop cost guidelines that will identify all allowable costs for which all PSAPs will be eligible for funding, but the intent is to fully fund all PSAP costs associated with their transition to NG9-1-1. Since deployment is projected to take 36 months, this funding plan will span up to three years. While a cost estimate will be required, the Board recognizes that the actual costs may change. As long as the PSAP is operating within their approved plan, VITA will have available contingency funds to support any changes as not to delay deployment until the next Board meeting. VITA will provide the Board with an accounting of all funds at each of their meetings so that all disbursements are tracked against the PSAP funding plans. Annually, PSAPs will be given a window of time to modify their funding plan based on new information, but the Board should be notified of material changes as soon as they are discovered. Material changes to a PSAP's funding plan will require Board approval prior to the disbursement of funds.

To have the required cash flow, the Board will seek \$30 million in borrowing authority from the Virginia Treasury. This will allow the Board to fully fund all transitional costs for every PSAP in Virginia. Though the transition costs of NG9-1-1 will be completed by FY2023, the debt to the Treasury will need to be repaid before the PSAP grant program can go back to funding other equipment and projects in the PSAPs. As soon as the debt is repaid, the PGC should recommend to the Board new grant guidelines to address the routine replacement of PSAP equipment and enhancements to services (especially those facilitated by the implementation of NG9-1-1).

### Originating Service Providers

Each originating service provider (OSP) seeking funding will need to execute a contract with the Board through VITA for the provision of 9-1-1 services. This contract will define the level of service provided by the OSP and the amount of funding to be provided to the OSP for that service. Generally speaking, it will cover the routing of the call to the ESInet(s) and the provision of location information. PSAPs that choose a different NG9-1-1 solution may be included in this contract or they may negotiate their own contract for services with their OSPs. The VITA contract will be available for their use, if desired. Since each OSP has a different architecture, each request for funding will be reviewed by VITA independently. VITA will negotiate these contracts in good faith, but should strive to reduce cost while still achieving necessary 9-1-1 service and ESInet objectives. The reliability, security and integrity of the 9-1-1 service needs to be maintained while ensuring that costs are reasonable and necessary to that ends.

### Overall Budget

The overall budget for NG9-1-1 is comprised of transitional and recurring costs. The transitional costs are limited in duration and comprised of the following:

## Virginia NG9-1-1 Deployment Plan

- NG9-1-1 non-recurring cost – This is the onetime cost charged from AT&T or other NG9-1-1 solution provider to implement NG9-1-1. For the AT&T solution, this is a flat \$4,000 charge per PSAP.
- Special construction costs – This is the cost to install a diverse and/or redundant IP connection to the PSAP. This may involve the installation of additional fiber optic cable or the use of another technology. It is necessary to ensure the high reliability of the 9-1-1 system; however, it may not be available at all PSAP locations. Alternate approaches may be necessary in some locations.
- GIS data preparation – These are the costs associated with ensuring that the local GIS data is of a quality to support NG9-1-1. To be considered ready, 98% of all existing 9-1-1 location records must be retrievable in the local GIS data.
- Originating service provider (OSP) transition cost – These are the costs associated with any actions required by the OSP to deploy NG9-1-1. They may include costs such as the installation and testing of new connectivity to the ESInet point of interconnection and its recurring cost until the legacy connectivity to the selective router is disconnected.
- Legacy 9-1-1 service provider transition costs – During the transition, there may be periods of time when costs are incurred by the PSAP for both the NG9-1-1 network and the current E9-1-1 network. These costs cover those periods of time and any other costs incurred by the legacy 9-1-1 service provider in the transition to NG9-1-1.
- Project management assistance – Not all PSAPs have the resources to manage the deployment of NG9-1-1. These are costs associated with providing project management assistance to those PSAPs that request it through VITA.
- Data analytics upgrade – This is the cost to upgrade the existing data analytics program to support the NG9-1-1 system.

In addition to the transitional cost, there will be recurring costs associated with the provision of NG9-1-1. These costs break down as follows:

- NG9-1-1 recurring costs – These are the annual recurring costs from AT&T or other NG9-1-1 solution provider to provide NG9-1-1 services. For the AT&T solution, they are based on population.
- OSP recurring costs – These are the costs incurred by the OSPs to provide continuing support for NG9-1-1.
- Data analytics recurring costs – These are the recurring costs associated with the ongoing provision of the data analytics solution for the PSAPs.

Taking all of these items into account, the budget for NG9-1-1 is as follows:

Transitional Costs	
Category	Amount
NG9-1-1 non-recurring cost	\$476,000
Special construction costs	\$31,830,516
GIS data preparation	\$3,246,226
Originating service provider (OSP) transition cost	\$5,000,000
Legacy 9-1-1 service provider transition costs	\$5,000,000
Project management assistance	\$1,750,000



## Virginia NG9-1-1 Deployment Plan

Data analytics expansion	\$59,500
Total	\$47,362,242
<b>Annual Recurring Costs</b>	
<b>Category</b>	<b>Amount</b>
NG9-1-1 recurring costs	\$10,749,443
Originating service provider (OSP) recurring cost	\$5,000,000
Data analytics recurring costs	\$561,404
Total	\$16,310,847

With the approximate \$12.6 million already being spent annually on E9-1-1 and the \$69 million already planned for the transition to NG9-1-1 by the Board, there is sufficient revenue to support the full cost of this budget. As noted previously, borrowing authority of \$30 million will be required to support the cash flow required to fund the deployment, and it will take five to seven years to repay that debt. For the recurring costs, some costs will need to be funded locally and others funded at the state level. Though the total NG9-1-1 recurring costs may be about the same as legacy costs now statewide, it may increase or decrease for individual PSAPs. A detailed analysis for each PSAP will be provided as part of the PSAP specific plan. The Board may provide financial support during the transition to those localities facing increases, but ultimately, each PSAP will need to plan for the full recurring cost of NG9-1-1.

### Conclusion

This plan defines the overall, statewide plan for the deployment of NG9-1-1, but it is ultimately a local decision on how to move forward. As the 9-1-1 Services Board guiding principle states, 9-1-1 is a local service, and should continue to be for the foreseeable future. So while this plan lays out a statewide approach, it is ONLY a recommendation to the local PSAPs to utilize the Fairfax County contract with AT&T. Each PSAP can choose to use that contract or conduct their own procurement in another manner. One of the main points of this plan is that the Board will not be asking VITA to conduct another statewide procurement to execute a VITA contract with a NG9-1-1 solution provider. The other main points of this plan lay out a specific timeline and process for those PSAPs that choose to use the Fairfax County contract and for those that do not. It is not all inclusive and there is still much to be learned as the planning and deployment process continue. The development of the PSAP specific plans between January and June 2018 will be a very important step to fully understanding the process and cost of deployment. Undoubtedly, adjustments will need to be made to the schedule and deployment order as a result of these detailed plans. Once this plan is approved and the site specific plans are developed, all stakeholders must be committed to executing these plans.

The key to the success of this transition process will be cooperation, communications and coordination. As noted throughout this plan, the locality and PSAP (which are often the same, but some PSAPs cover more than one locality) are in control and make the final decisions. However, since their decisions impact not only the service provided in the localities they serve, but all neighboring localities in the region, all stakeholders must work together. Similarly, the 9-1-1 Services Board and VITA must also coordinate with seven surrounding states and the District of Columbia (DC) to ensure that 9-1-1 calls can be seamlessly handled. The NOVA project has helped tremendously with Maryland and DC. North Carolina and Tennessee have awarded at least part of their projects to AT&T as well, which will aid in that coordination. The cost of failure is too high. Each stakeholder in the 9-1-1 ecosystem must work together and ensure a smooth transition to NG9-1-1.

### What to Do Now

Though the PSAP specific plans will define more detail of future steps, there are steps that PSAP, OSPs and other stakeholders can take now to advance the deployment of NG9-1-1.

#### Stay Informed and Involved

First and foremost, all stakeholders need to stay informed and involved. A number of outreach and educational events will be scheduled over the next year for all stakeholders. Please participate in as many as possible. This is the most significant change to 9-1-1 since the introduction of E9-1-1 in the 1980's. It is the first fundamental change to the 9-1-1 infrastructure since that time. Everyone needs to stay connected to this process of transition. Ask as many questions as necessary so that everyone is comfortable with the path forward.

#### Start Meeting Regionally

There is no reason not to start meeting regionally to discuss the path forward. Starting discussions early can build the relationships that will be necessary later when topics like PSAP boundaries and routing are discussed. These meeting should include not only representatives from the PSAPs, but also from the IT and GIS agencies in the localities. It is imperative that IT and GIS representatives are involved with NG9-1-1 planning and deployment from the start. NG9-1-1 deployment will require significant IT support to ensure reliability and security as 9-1-1 moves into this new environment. And as previously noted, GIS data is at the core of the ESInet to determine location and routing. That is why it is critical to have their involvement from the first stages of deployment. VITA staff will make themselves available to facilitate the discussions and can coordinate with AT&T for briefings on their technology, approach and solution.

#### Preparing GIS Data for NG9-1-1

All localities can prioritize and make time to improve 9-1-1 GIS data and ensure consistency. Ensure that updated address information is incorporated into the GIS and communicated to other departments and agencies that rely on physical addresses. Using the GIS assessment conducted by VITA, localities can verify that local GIS data meets minimum standards for NG9-1-1 and perform remediation where needed ensuring attribute tables are organized and consistent (e.g., consistent abbreviations, correct spelling), and that topology is correct (e.g., no gaps, no overlaps, no undershoots). Since NG9-1-1 will require ongoing, updated GIS data, it is important the a structured 9-1-1 addressing process is in place. Localities should begin work with neighboring jurisdictions to identify and resolve PSAP boundary issues among key personnel: GIS, public safety, emergency managers. Also, review and become familiar with applicable standards and best practice documents (VITA, NENA, USPS).

## Appendix A

**PARTICIPATION AGREEMENT**

WHEREAS, AT&T Corp. (“AT&T”) and Fairfax County are parties to that Contract Number 4400007825 for Next Generation Core Services Solution (NGCS), between the County of Fairfax and AT&T Corp., dated August 8, 2017, including the Acceptance Agreement, the Memorandum of Negotiations, and all attachments and documents incorporated therein (the “Fairfax Agreement”); and

WHEREAS, \_\_\_\_\_ (“Participant”) wishes to purchase certain AT&T ESInet™ [and optional] services from AT&T under the same terms and conditions provided for in the Fairfax Agreement;

NOW, THEREFORE, PREMISES CONSIDERED, PARTICIPANT AND AT&T AGREE AS FOLLOWS:

1. This Participation Agreement is made between Participant and AT&T (collectively, the “Parties”), and is effective on the date when first signed by both parties. Fairfax County is not a party to this Participation Agreement and takes on no obligations and receives no entitlements as a result of this Participation Agreement.
2. Participant agrees to purchase AT&T ESInet™ [and optional] services in accordance with the terms, conditions, and pricing contained in the Fairfax Agreement, attached hereto as Exhibit “A”, as specified in more detail in Participant’s purchase order(s) attached hereto as Exhibit(s) “B” [attach B-1, B-2, B-3, as needed].
3. Participant agrees to be bound by and pay for all services obtained pursuant to this Participation Agreement and agrees that all terms, conditions, rights and remedies under the Fairfax Agreement applicable to Fairfax County are fully enforceable against Participant as if Participant were the “County” or “Fairfax County” under the Fairfax Agreement. AT&T agrees to provide the AT&T ESInet™ [and optional] services to Participant pursuant to the terms and conditions of the Fairfax Agreement and this Participation Agreement.
4. Under this Participation Agreement, all orders for services must be entered no later than [need specific date] 2025. Services obtained under this Participation Agreement will terminate on or before [need specific date] 2027, or such earlier date as may be set forth in an individual purchase order.
5. This Participation Agreement may not be assigned by Participant. Any such assignment shall be null and void.
6. AT&T may disclose the fact of Participant’s participation to Fairfax County. Such disclosures may include Participant’s name, services purchased, monthly or annual usage, total billings and payment status.
7. In the event of a conflict between the terms contained in this Participation Agreement and the Fairfax Agreement, the terms of this Participation Agreement shall control.
8. Any required notices under this Participation Agreement shall be in writing and shall be sent to the office of the recipient set forth below or to such other office or recipient as designated in writing from time to time:

To Participant:

Name: \_\_\_\_\_

To AT&T:

Name: \_\_\_\_\_

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Title: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_

Title: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_

9. This Participation Agreement constitutes the entire agreement between the parties. This agreement supersedes all prior agreements, proposals, representations, statements or understandings, whether written or oral concerning the services. This agreement shall not be modified or supplemented by any written or oral statements, proposals, representations, advertisements, or service descriptions not expressly set forth or incorporated by this Agreement.
10. Each signatory below represents that he or she is authorized to sign this Participating Agreement on behalf of the party designated.

**IN WITNESS WHEREOF**, AT&T and Participant have caused this Participation Agreement to be executed by their duly authorized representatives as of the date written below.

**[Participant]**

**AT&T Corp.**

By: \_\_\_\_\_  
(by its authorized representative)

By: \_\_\_\_\_  
(by its authorized representative)

\_\_\_\_\_  
(Typed or Printed Name)

\_\_\_\_\_  
(Typed or Printed Name)

\_\_\_\_\_  
(Title)

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(Title)

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(Date)