VIPER and FirstNet are Vital for Public Safety Interoperability, but VIPER Requires Upgrades
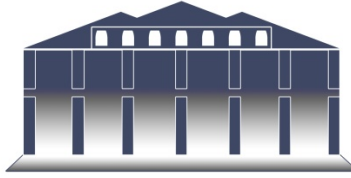

**Final Report to the Joint Legislative
Program Evaluation Oversight Committee**

Report Number 2018-02

April 9, 2018

NORTH CAROLINA GENERAL ASSEMBLY
Legislative Services Office

Paul Coble, Legislative Services Officer

Program Evaluation Division   *John W. Turcotte*
300 N. Salisbury Street, Suite 100   Director
Raleigh, NC 27603-5925
Tel. 919-301-1404 Fax 919-301-1406

April 9, 2018

Senator Brent Jackson, Co-Chair, Joint Legislative Program Evaluation Oversight Committee
Representative Craig Horn, Co-Chair, Joint Legislative Program Evaluation Oversight Committee

North Carolina General Assembly
Legislative Building
16 West Jones Street
Raleigh, NC 27601

Honorable Co-Chairs:

Session Law 2017-57 directed the Program Evaluation Division to evaluate North Carolina's Voice Interoperability Plan for Emergency Responders (VIPER) and FirstNet technologies with an emphasis on the systems' current states, potential duplications, governance and financing structures, and upgrade needs.

I am pleased to report that the Department of Public Safety and Department of Information Technology cooperated with us fully and were at all times courteous to our evaluators during the evaluation.

Sincerely,

John W. Turcotte
Director

VIPER and FirstNet are Vital for Public Safety Interoperability, but VIPER Requires Upgrades

Summary

Session Law 2017-57 directed the Program Evaluation Division to evaluate North Carolina's Voice Interoperability Plan for Emergency Responders (VIPER) and FirstNet technologies with an emphasis on the systems' current states, potential duplications, governance and financing structures, and upgrade needs.

No duplication exists between VIPER and FirstNet's major functions and services. VIPER and FirstNet share the common purpose of improving interoperability for public safety first responders, but the two systems complement rather than duplicate functionality. Each system possesses important capabilities for first responders that the other system does not offer. North Carolina's Statewide Interoperability Executive Committee, which monitors interoperable communications issues in North Carolina, will continue to report on the systems as their technologies evolve.

The VIPER system provides statewide voice interoperability to local, state, and federal entities in North Carolina, and stakeholders perceive it to be a reliable system. The State Highway Patrol distributes approximately 100,000 VIPER IDs statewide, approximately 78% of which are distributed to local government entities. Associations and county points of contact perceive that users are generally satisfied with VIPER, but these stakeholders have suggestions for improving the system.

The VIPER system is supported by equipment purchases and in-kind contributions from local agencies; charging user fees could reduce participation in the network and diminish statewide interoperability. Approximately 70% of VIPER's 220 sites contain infrastructure or equipment from non-state entities, and these partnerships are crucial to VIPER's success.

Failure to upgrade VIPER's base stations and related software will adversely affect VIPER's continued reliability and interoperability. Motorola will soon stop supporting VIPER's base stations, which will reach the end of their life cycles as of January 2019, as well as VIPER's current software, which is four years behind the most recently available version.

Based on these findings, the General Assembly should
- direct the Department of Public Safety (DPS) to increase its VIPER outreach programs to improve engagement of VIPER stakeholders,
- direct DPS to determine the value of in-kind contributions provided to the VIPER system, and
- consider appropriating funds to upgrade VIPER base stations and establish routine software updates.

Purpose and Scope

Session Law 2017-57, Section 16B.5.(a) directed the Program Evaluation Division to evaluate North Carolina's Voice Interoperability Plan for Emergency Responders (VIPER) and FirstNet technologies. Four research questions guided this evaluation:

1. What are the current states of VIPER and FirstNet?
2. What services are or will be provided by VIPER and FirstNet?
3. What equipment upgrade needs exist for VIPER?
4. What are the most effective governance and operational financing structures for VIPER and FirstNet?

The Program Evaluation Division collected data from several sources:

- interviews with and queries of the Department of Public Safety and State Highway Patrol, the organization that manages VIPER;
- interviews with and a query of the Department of Information Technology's Broadband Infrastructure Office, the organization that manages FirstNet in North Carolina;
- review of documents outlining the histories of VIPER and FirstNet;
- a survey of and data collection from VIPER points of contact for local governments in all 100 North Carolina counties;
- a query of state and federal agencies that use VIPER;
- interviews with and queries of the North Carolina Association of Chiefs of Police, North Carolina Sheriffs' Association, North Carolina Association of Fire Chiefs, North Carolina Association of Emergency Medical Services Administrators, and North Carolina Association of Rescue and Emergency Medical Services, Inc.;
- interviews with stakeholders of the VIPER and FirstNet systems, including the Statewide Interoperability Coordinator, and Motorola, VIPER's primary vendor;
- research on interoperable land mobile radio systems in other states;
- research on other states' decision-making processes for opting into or out of FirstNet; and
- inspections of 15 VIPER tower sites.

Background

In the mid-1990s, the North Carolina General Assembly raised concerns with perceived deficiencies in statewide public safety interoperability. In its 1994 Special Crime Session, the General Assembly directed the North Carolina Criminal Justice Information Network (CJIN) to assess the state of public safety interoperability in North Carolina. The Federal Communications Commission defines interoperability as "[a]n essential communications link within public safety and public service wireless communications systems which permits units from two or more different entities to interact with one another and to exchange information according to a prescribed method in order to achieve predictable results." CJIN contracted Price Waterhouse LLP to conduct a study of the State's capabilities, and the resulting 1995 report recommended that the General Assembly "establish standards for, and implement a mobile voice and data communication network that allows state and local law enforcement and public safety agencies to communicate with each other, regardless of location in the state."

In 1999, the Secretary of the Department of Crime Control and Public Safety directed the State Highway Patrol to plan and develop an 800 MHz system that eventually became known as VIPER. In 2002, CJIN contracted the Gartner Group to produce a report that would follow up on Price Waterhouse LLP's 1995 report. This report also recommended North Carolina construct a statewide radio system using the 800 MHz frequency spectrum due to the availability of that frequency range for public safety and the State Highway Patrol's plans to utilize it. Official construction of the VIPER system managed by the State Highway Patrol began in 2003, funded at the time by grants from the Department of Homeland Security.[1]

In December 2004, CJIN and the Department of Crime Control and Public Safety reported a plan for VIPER to the General Assembly. The plan identified the goal of VIPER as providing "the ability of public safety agencies to communicate with each other using a single, common radio system." The report recommended suitable funding should be provided to produce statewide coverage by 2009 and estimated the total cost of system construction would be $190 million. As shown in Exhibit 1, more than $242 million in state, federal, and local government funds have been expended for VIPER system infrastructure during the past 14 years.[2] VIPER has not received federal funding in recent years, and staff ceased applying for federal grants in 2012 due to new environmental regulations that did not allow for extended grant performance periods.

---

[1] The State Highway Patrol's role in managing VIPER makes the system unique among comparable land mobile radio systems; similar systems in other states are typically managed by agencies that are focused on administration or information technology.

[2] Historically, federal homeland security grant awards to states carry pass-through requirements that obligate a minimum of 80% of awarded funds to local or tribal units of government. In agreement with state public safety officials, local governments decided in 2004 that interoperability was a top priority and that local pass-through funds should be used to help complete the buildout of the VIPER system.

Exhibit 1

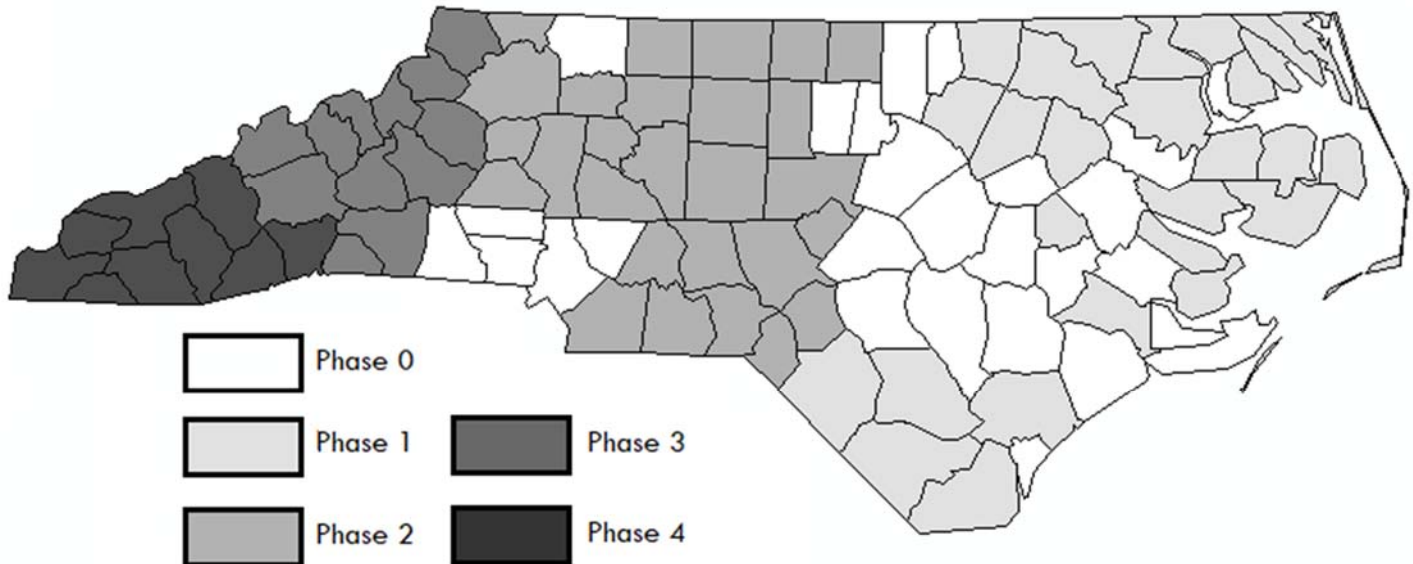VIPER Infrastructure
Funding Sources,
FY 2003–04 to
FY 2016–17

Source	Amount	Percentage Contributed
State Appropriations	$130,526,146	53.82%
Federal Grants	111,892,218	46.14%
Local Match	105,149	0.04%
Total	**$242,523,513**	**100.00%**

Note: This exhibit does not include in-kind infrastructure contributions from local governments or local government funds expended to purchase radios or other equipment.

Source: Program Evaluation Division with information from the State Highway Patrol.

Following the release of the 2004 VIPER plan, the State Highway Patrol encountered funding and leasing issues that forced the plan to be altered. The 2004 VIPER plan called for a five-year buildout period, starting in the central and eastern regions of North Carolina and ending in the western region of the state. This timeline was contingent on receiving the full requested funding amount in Fiscal Year 2004–05, which did not occur. Furthermore, leasing processes, which typically last between 9 and 24 months for each site, as well as the mountainous topography in western North Carolina, contributed to delays in buildout completion. Although the State has not adhered to the original proposed timeline, VIPER infrastructure has generally been built out in the originally intended order. Exhibit 2 shows the originally intended order of VIPER system buildout, and Appendix A shows the actual buildout in three-year intervals between Fiscal Year 2002–03 and 2017–18.

## Exhibit 2: Original Planned Order of VIPER System Buildout, 2006—2010

Source: Program Evaluation Division based on the 2004 VIPER Legislative Report.

As of Fiscal Year 2016–17, approximately 90% of planned VIPER infrastructure is built out and operational. The State Highway Patrol eventually plans to operate a total of 241 VIPER sites when the system is completed.[3] By the end of Fiscal Year 2017–18, the State Highway Patrol plans to have 220 sites fully operational, with 100% of infrastructure built out by Fiscal Year 2021–22. As shown in Exhibit 3, the buildout of infrastructure has slowed in recent years.

Exhibit 3

Percentage of VIPER
System Completed by
Fiscal Year
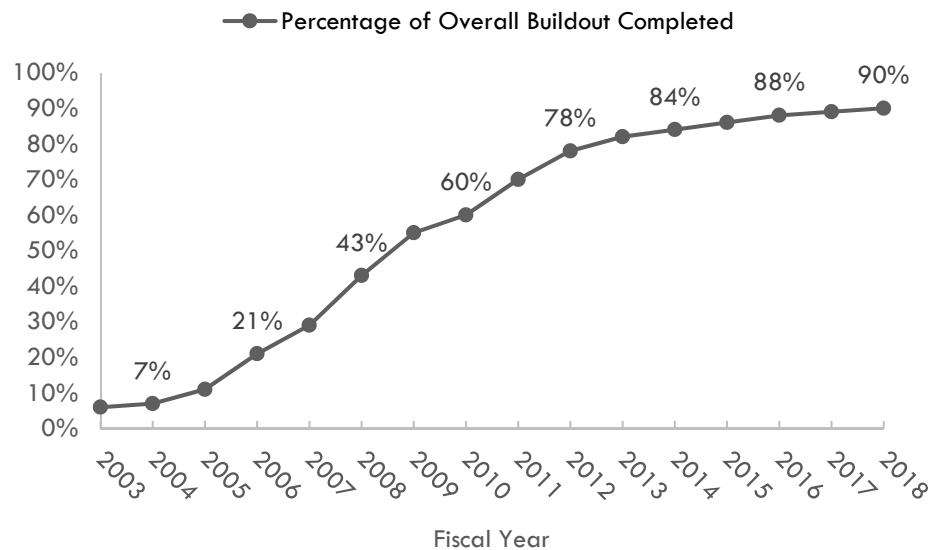
Source: Program Evaluation Division based on information from the State Highway Patrol.

In 2012, a new interoperable public safety data communications system, FirstNet, was introduced by Congress. The Middle Class Tax Relief and Job Creation Act of 2012 identified the need for a nationwide interoperable broadband network. This network would allow public safety first responders such as police or firefighters to have higher priority on cellular broadband networks when transferring data and would offer pre-emption capabilities when networks are congested. AT&T was selected as the vendor for this project in 2017 with a 25-year contract, and states were given the option of whether to opt into or out of FirstNet. Opting into FirstNet places the responsibility and cost for the project on the federal government and its vendor. Opting out of FirstNet means states have to secure their own vendors that must build out comparable systems at the states' expense.

North Carolina began to work with federal representatives of FirstNet in 2012. Since 2012, federal and state funds have been appropriated for the State to work with the federal government and assist the Governor in deciding whether or not to opt in to FirstNet. Exhibit 4 shows funds expended between Fiscal Years 2013–14 and 2016–17. The assigned State Point of Contact in North Carolina, housed in the Department of Information Technology (DIT), has conducted stakeholder engagement through a variety of forums, outreach, and education since FirstNet's inception.

---

[3] A VIPER site includes land, a building, a tower, and equipment.

Exhibit 4

Planning Funds
Expended for FirstNet
in North Carolina,
FY 2013–14 to
FY 2016–17

Source of Funds	Amount	Percentage Contributed
Federal Funds	$1,229,378	77%
Approved Matching Funds	364,916	23%
Total	**$1,594,294**	**100%**

Note: "Approved Matching Funds" include state appropriations, in-kind volunteer hours from local and state first responders, in-kind contributions from state employees, and other in-kind expenditures such as office space.

Source: Program Evaluation Division based on information from the Department of Information Technology.

In 2017, the federal government provided each state with specifically tailored plans that outlined how AT&T would implement FirstNet. North Carolina's Department of Information Technology formed a team comprised of stakeholders that included representation from local, county, and state agencies to review the State's plan. The team provided hundreds of comments and other feedback to AT&T and the federal government. In September 2017, after states reviewed their draft plans, AT&T and the federal government provided them with official, final state plans. The release of these plans began a 90-day countdown for governors to make a final decision on whether to opt in or out.

In November 2017, Governor Cooper announced that North Carolina has decided to opt into FirstNet.[4] With this decision, AT&T will provide infrastructure and oversee the project in accordance with its federal contract and will be responsible for providing competitive pricing to local and state agencies that choose to subscribe. AT&T's performance will be monitored and the company will be held accountable by the federal government. DIT plans to monitor FirstNet's rollout and provide support and information to local governments that subscribe or are deciding whether to subscribe to the service.

Because VIPER and FirstNet serve a common purpose of improving interoperable communications for first responders, concerns may exist as to whether VIPER and FirstNet will duplicate each other's functions. At a time when the Department of Public Safety has requested appropriations for upgrading VIPER's base stations and software and North Carolina has decided to opt into FirstNet, the General Assembly directed the Program Evaluation Division to evaluate the potential overlap of the two systems' functions and their future needs.

---

[4] As of January 2018, all 50 states have officially opted into FirstNet.

Findings

Finding 1. No duplication exists between VIPER and FirstNet's major functions and services.

To determine whether duplication exists between VIPER and FirstNet, the Program Evaluation Division examined the administration and functionality of both systems to identify similarities and differences.

The Program Evaluation Division found that, at a fundamental level, VIPER and FirstNet have three significant similarities. The most basic similarity is that both systems provide interoperable communications for federal, state, and local emergency first responders. This common purpose appears to be the primary cause for concern that the two communications systems may have overlapping functions. In addition to serving the same primary users, VIPER and FirstNet are also similar in terms of:

- **Compatible Equipment Requirements.** To use either system, first responders must purchase compatible equipment. VIPER requires federal and state agencies and local government entities to purchase radios that are compatible and meet its standards; FirstNet will require users to purchase devices that are compatible with its network. Neither VIPER nor FirstNet provide financial assistance to agencies or local government entities to purchase equipment.

- **Participation.** Federal and state agencies and local government entities can choose to participate or not participate in either system. No mandate requires participation.

However, several administrative differences exist in the oversight, management, and financing of VIPER and FirstNet. VIPER is a fully state-controlled system; the State Highway Patrol of the Department of Public Safety manages and oversees VIPER and is responsible for maintaining the system including requesting funding for upgrades. Currently, state appropriations are the primary funding source for VIPER operations and infrastructure needs. VIPER users do not pay fees to access the system but are required to buy compatible radios to use the system.

Conversely, FirstNet is a federal program under the U.S. Department of Commerce, which has selected AT&T to operate the network. Now that the Governor has chosen to opt into FirstNet, the State has no further responsibility for funding or managing the system, though the Broadband Infrastructure Office of the Department of Information Technology will monitor rollout and provide support to local government entities as they decide whether or not to subscribe to the service. The FirstNet system was initially funded with federal resources through an FCC auction and will be sustained by AT&T through user fees and commercialization of unused capacity. FirstNet users must pay subscriber fees to AT&T to utilize the system and must purchase compatible devices as defined by AT&T.

Exhibit 5 summarizes the administrative differences between VIPER and FirstNet.

Exhibit 5: VIPER and FirstNet Have Fundamental Differences in Oversight, Management, and Financing

Administration	VIPER	FirstNet
Oversight and planning	Department of Public Safety, State Highway Patrol	• United States Department of Commerce, FirstNet • Department of Information Technology, Broadband Infrastructure Office
Management	Department of Public Safety, State Highway Patrol	AT&T
Primary vendor	Motorola	AT&T
Funding sources	• Federal grants (2004–2015) • State appropriations (2004–present) • In-kind contributions from local governments (2004–present)	Federal funding, user fees, commercialization of unused capacity
Subscription fees	Users are not charged subscription fees	Users will pay fees established by AT&T

Source: Program Evaluation Division based on documentation from the Departments of Public Safety and Information Technology.

Most importantly, although VIPER and FirstNet serve the same users, the two systems do not duplicate each other because they offer different functions that utilize unique infrastructure and equipment. Exhibit 6 provides a brief summary of how VIPER and FirstNet differ and do not duplicate each other.

Exhibit 6

VIPER and FirstNet Offer Different Functions Utilizing Unique Infrastructure and Equipment

	VIPER	FirstNet
Function	Push-to-talk mission critical voice communication	High speed data transfer
Equipment	Land mobile radios	Devices with data transfer capabilities including cell phones, tablets, and laptops
Infrastructure	A closed system utilizing a trunked radio system operated by the State Highway Patrol	An open system utilizing the cellular broadband network operated by AT&T

Source: Program Evaluation Division based on information from the Departments of Public Safety and Information Technology.

Functionality differences. VIPER, a land mobile radio system, allows users to push a button and instantly communicate a voice message to other radios in a pre-arranged talk group. This fast, simple method of communicating, known as push-to-talk, is imperative for public safety users, particularly in emergency situations where mission critical communication is required.[5] FirstNet, when implemented, will provide high-speed data and video

---

[5] Mission critical voice communications include several elements including but not limited to one-to-many and push-to-talk communications and high audio quality.

transfer services including downloading of maps and blueprints and the use of public safety applications that can aid first responders. Currently, FirstNet does not offer the mission critical push-to-talk functionality provided by VIPER that would allow users to push a button and instantly communicate with other first responders. Conversely, VIPER does not offer the data transfer capabilities provided by FirstNet. Although FirstNet may eventually gain mission critical push-to-talk voice communication as a function, there is no current timeline for its implementation.

Equipment differences. VIPER uses push-to-talk land mobile radios for voice communications. To utilize the FirstNet system, first responders will use devices with data transfer capabilities such as cell phones, tablets, and laptop computers. At this time, no devices exist that combine mission critical push-to-talk communication with data transfer capability.

Infrastructure differences. VIPER is a trunked radio system that uses a master computer, or base station, to facilitate communication between radios specially programmed to work within a closed system. Trunked systems are secure and outside radios are unable to gain access. Trunked systems work with multiple calls at a time, and radios can be assigned to various talk groups and channels. Exhibit 7 demonstrates VIPER's functionality as a trunked, land mobile radio system.

Exhibit 7: VIPER System Radio Communication
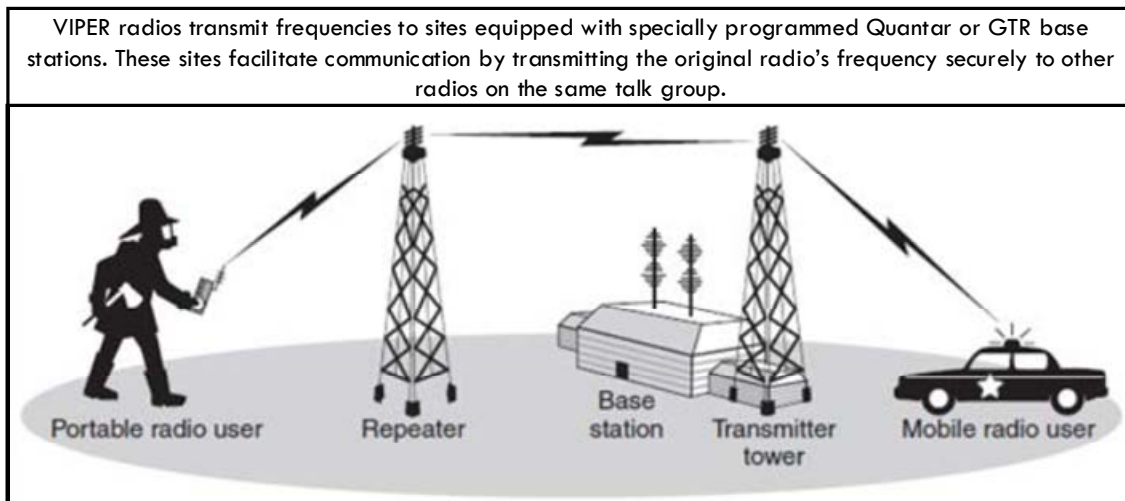
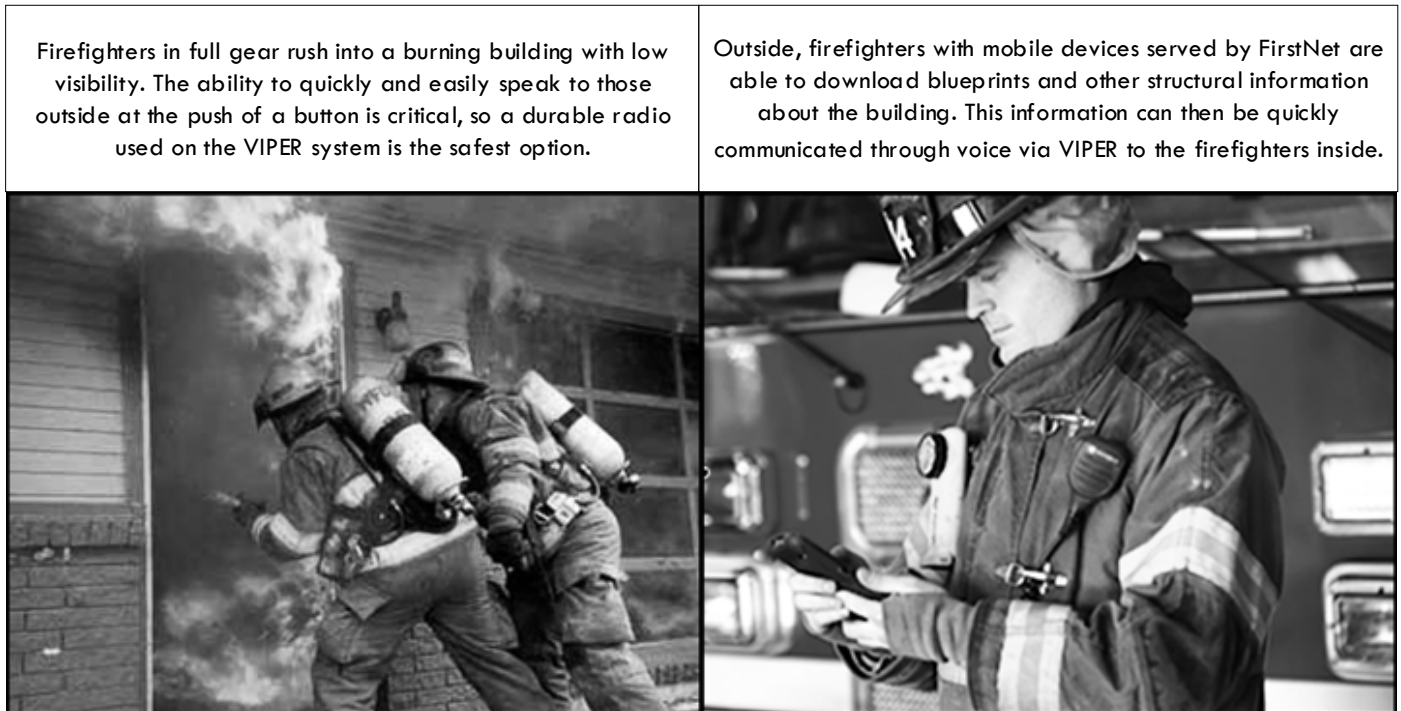Source: Program Evaluation Division based on information from DHS.gov.

FirstNet will function using data communication via AT&T's cellular broadband networks. AT&T will use its existing system of cellular towers and build additional infrastructure as needed to provide services to North Carolina first responders. Although FirstNet is an open system, public safety responders will have high-speed, pre-emptive access in emergency situations.[6]

FirstNet is not designed to replace or duplicate land mobile radio systems but instead will complement the mission critical push-to-talk functionality provided by VIPER. Push-to-talk functionality is mission

---

[6] FirstNet will allow for pre-emption, giving subscribed emergency responders priority access over non-priority users in a congested cellular network. Pre-emption ensures that first responders will not have to compete with other users for a connection.

critical for first responders because it allows for instant communication with their peers, but some emergency situations also require access to high speed data transmission. Exhibit 8 provides an example of how a fire department could use VIPER for voice communications and FirstNet to transmit important data during a fire emergency.

Exhibit 8: Example of Firefighters Using Both VIPER and FirstNet Services

Firefighters in full gear rush into a burning building with low visibility. The ability to quickly and easily speak to those outside at the push of a button is critical, so a durable radio used on the VIPER system is the safest option.	Outside, firefighters with mobile devices served by FirstNet are able to download blueprints and other structural information about the building. This information can then be quickly communicated through voice via VIPER to the firefighters inside.

Description Source: Program Evaluation Division.

*Photo Sources: FireServiceInfo.com and GCN.com.*

In summary, the VIPER and FirstNet systems do not duplicate each other. Both systems serve the same users, but VIPER and FirstNet offer different functions that utilize unique infrastructure and equipment. Currently, FirstNet does not offer the push-to-talk functionality provided by VIPER that allows users to push a button and instantly communicate with other first responders, and VIPER does not offer data transfer capabilities. Although FirstNet may eventually gain mission critical push-to-talk voice communication as a function, there is no current timeline for its implementation and at this time no devices exist that combine mission critical push-to-talk voice communication with data transfer capabilities.

Finding 2. North Carolina's Statewide Interoperability Executive Committee monitors interoperable communications issues in North Carolina and supports both VIPER and FirstNet.

The State Emergency Response Commission, which reports to the Secretary of Public Safety, recognized in recent years the need for an entity to be established having oversight of public safety communications.[7,8] Formed as part of federal grant requirements to oversee public safety communications on a statewide level, the State Interoperability Executive Committee was thus established as a subcommittee of the State Emergency Response Commission. Members of the State Interoperability Executive Committee are state and local subject matter experts on public safety communications. Membership is comprised of a diverse group of stakeholders that includes representatives of VIPER, FirstNet, the 911 Board, state executive branches, and state public safety associations. The Statewide Interoperability Coordinator, a full-time position in the Department of Public Safety, serves as executive director of the Committee. Exhibit 9 depicts the State Interoperability Executive Committee's reporting process in relation to VIPER and FirstNet.

Exhibit 9

Reporting Relationship of the Statewide Interoperability Executive Committee
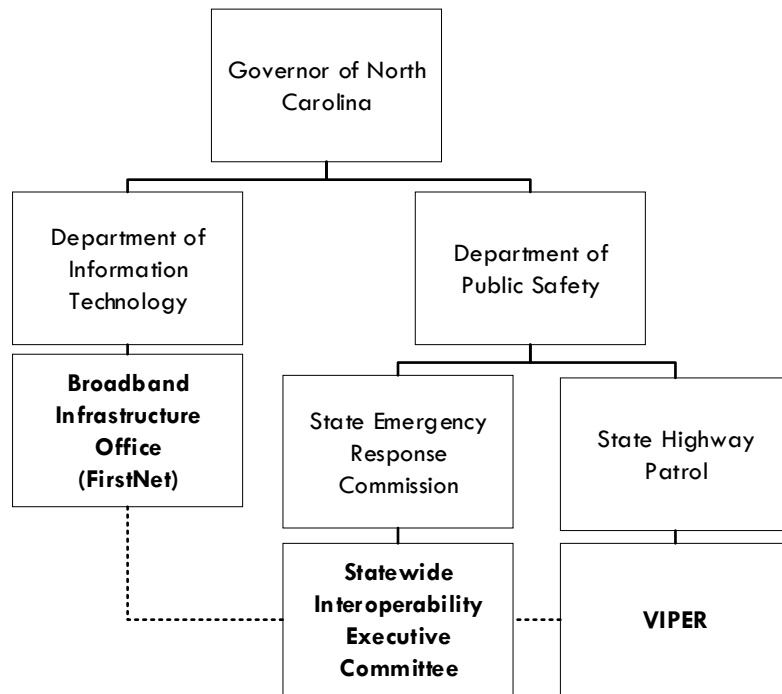
Note: VIPER and FirstNet both have representation on the Statewide Interoperability Executive Committee.

Source: Program Evaluation Division based on information from the Departments of Public Safety and Information Technology.

---

[7] The State Emergency Response Commission is formally known as the North Carolina Emergency Response Commission.
[8] Established when Congress passed the Emergency Planning and Community Right-to-Know Act of 1986, SERC acts in an advisory capacity to provide coordinated stakeholder input to the Secretary of the Department of Public Safety in the preparation, implementation, evaluation, and revision of the State's emergency management program.

The State Interoperability Executive Committee is responsible for
- advising the North Carolina Emergency Response Commission on interoperable communications issues,
- making recommendations to the Commission regarding state public safety communications policies and procedures, and
- improving the flow of information between agencies to reduce communications gaps.

Through collaborative partnerships with other entities having direct knowledge and responsibility for public safety communications systems, the State Interoperability Executive Committee is able to prioritize strategic goals in an effort to holistically enhance emergency communications.

The Statewide Interoperability Executive Committee is responsible for the development of the Statewide Communications Interoperability Plan; the committee anticipates the plan will be updated in 2018. The plan provides a strategic direction and contains actionable goals for enhancing public safety communications interoperability in coming years. Actionable goals and objectives outlined in the plan pertain to governance, technology, funding and sustainment, and outreach and implementation initiatives overseen by working groups within the Statewide Interoperability Executive Committee. The 2018 plan will include best practices and recommendations for how the State can best support VIPER and FirstNet to enhance statewide interoperable communications. The committee's plan and strategy will include partnerships with the following entities:
- VIPER,
- Broadband Infrastructure Office / SPOC (FirstNet),
- SERC Regionalization Committee (SRC),
- local government stakeholders,
- alert and warning stakeholders, and
- the 911 Board.

As VIPER and FirstNet technologies continue to evolve, the Statewide Interoperability Executive Committee will monitor the systems and make recommendations as to how they can complement each other to improve statewide public safety interoperability.

Finding 3. The VIPER system provides statewide interoperability to local, state, and federal entities in North Carolina, and stakeholders perceive it to be a reliable system.

The statewide interoperability offered by VIPER is important to stakeholders across North Carolina because it allows emergency responders to communicate both within their own counties and across county borders. For example, situations may arise in which law enforcement officers are in pursuit of a vehicle that crosses county borders or firefighters are in need of resources from a nearby local government. In such cases, interoperability provided by a unified system allows for quicker and easier communication among entities.

In the past few years, as VIPER's buildout nears completion and its software and hardware have been upgraded, the system has rapidly added capacity for new users and distributed a large number of IDs, primarily to local governments.[9] As shown in Exhibit 10, the VIPER system has grown by 46% since Fiscal Year 2014–15. Despite this rapid growth and a current maximum capacity of 128,000 IDs, the State Highway Patrol does not anticipate reaching full capacity in the coming years, provided that requested funding and upgrades are made available.

Exhibit 10

Number of VIPER IDs Increased By 46% Between FY14–15 and FY17–18[10]
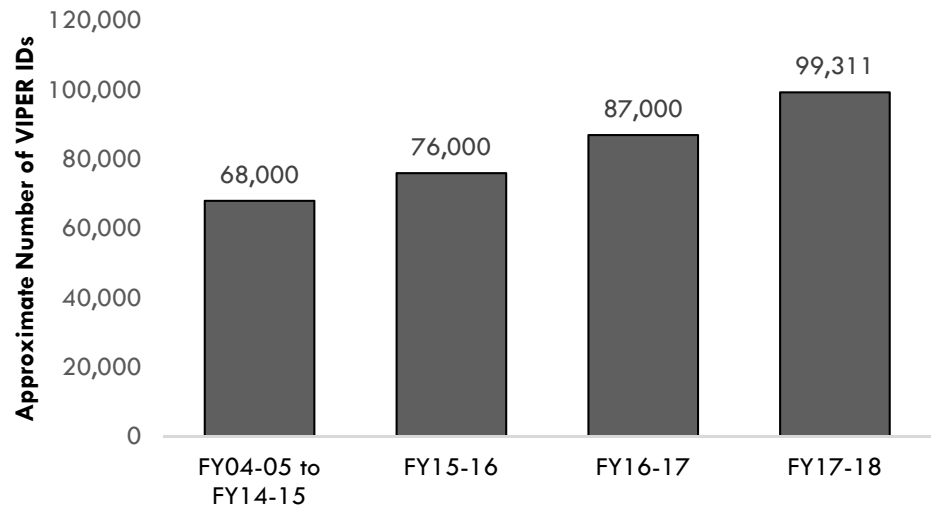
Note: The State Highway Patrol was unable to provide the number of IDs added by fiscal year prior to Fiscal Year 2015—16.

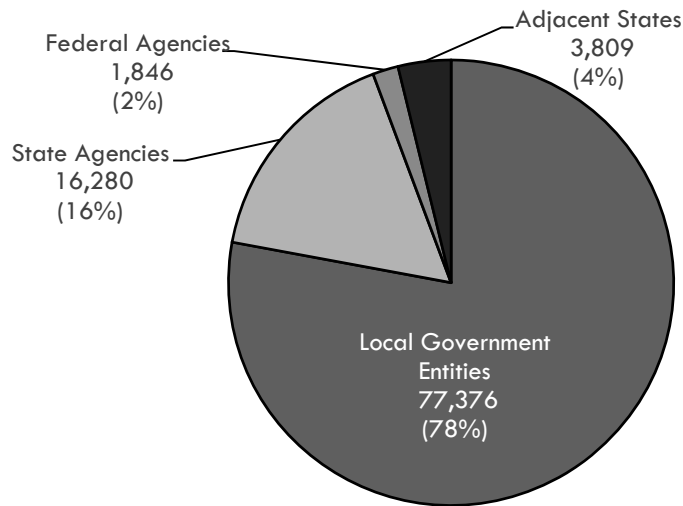*Source: Program Evaluation Division based on information from the State Highway Patrol.*

As of Fiscal Year 2017–18, the VIPER system has grown to distribute nearly 100,000 IDs across local, state, and federal entities in North Carolina and adjacent states. In order to obtain IDs for use on the VIPER system, each entity assigns a point of contact who receives blocks of IDs from the State Highway Patrol. Points of contact distribute IDs throughout their entity or county and annually report information on the number of active IDs to VIPER staff. Although the State Highway Patrol manages VIPER, it only assigns 5,227 (5.3%) of all distributed VIPER IDs to itself. Exhibit 11 shows the distribution of VIPER's total 99,311 IDs.

---

[9] VIPER IDs are assigned to compatible radios and allow users to access the VIPER network.
[10] Exhibit 10 reflects data that the State Highway Patrol provided to the Program Evaluation Division in September 2017. As of this report's release, VIPER has grown to distribute over 103,000 IDs.

Exhibit 11

Most of the VIPER System's 99,311 IDs Are Distributed to North Carolina Local Government Entities


Note: As of Fiscal Year 2017–18, for interoperability purposes, approximately 3,500 IDs were distributed to first responders in South Carolina and approximately 300 were distributed to first responders in Virginia.

Source: Program Evaluation Division based on information from the State Highway Patrol.

Approximately 78,000 (78%) of VIPER IDs are distributed across more than 1,500 local government entities. Although 10% of planned VIPER infrastructure remains to be built and some counties in the state have very limited VIPER service, points of contact in all 100 North Carolina counties have received at least a small number of VIPER IDs as of Fiscal Year 2017–18. Exhibit 12 shows the distribution of VIPER IDs to different categories of local government entities across North Carolina.

Exhibit 12: Most VIPER IDs Assigned to Local Governments Are Assigned to Law Enforcement and Fire Departments
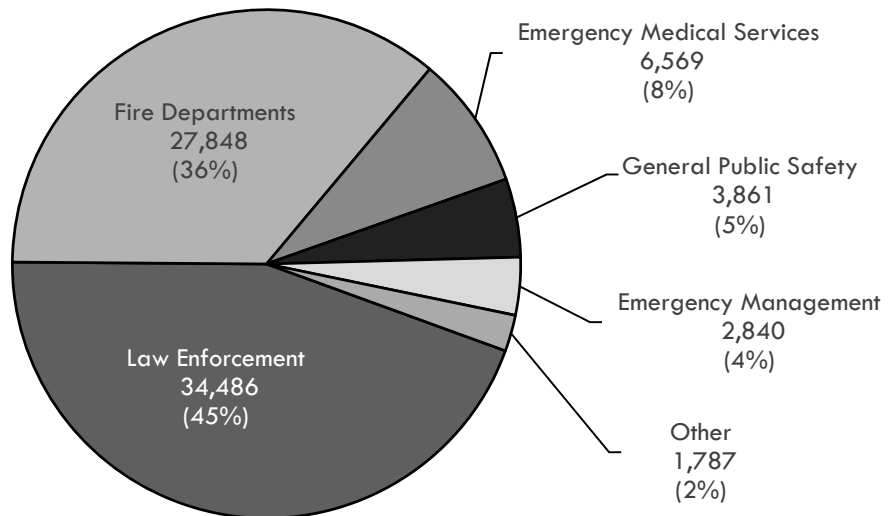
Note: The information displayed in this exhibit is maintained at the local level by county points of contact. The Program Evaluation Division collected and compiled this information and received a 100% response rate. The "General Public Safety" category refers to public safety agencies that did not fit into the other public safety categories. The "Other" category consists of IDs that county points of contact reported as being part of 911, communications, general government, or other.

Source: Program Evaluation Division based on information provided by the State Highway Patrol and VIPER county points of contact.

North Carolina counties can choose whether or not to adopt VIPER as their primary land mobile radio system. Currently, 26 counties use VIPER as their primary system with an additional 26 counties having some primary users at either the county or municipal level.[11] Of the 48 counties with no primary users of VIPER that use IDs for interoperability or backup purposes, 24 manage or partake in independent land mobile radio systems and the remaining 24 do not have unified, county-wide systems. Exhibit 13 shows the land mobile radio system status of each county in North Carolina.

---

[11] Some counties in this category have most users on VIPER as a primary system, with some fire and law enforcement entities on older UHF or VHF systems.

Exhibit 13: Types of Land Mobile Radio Systems in North Carolina, by County

Counties with no unified, county-wide radio system, with VIPER IDs assigned for interoperability or backup

Counties with independent land mobile radio systems, with VIPER IDs assigned for interoperability or backup

Counties with some county or municipal-level primary users of VIPER, with VIPER IDs assigned to others for interoperability or backup

Counties using VIPER as their primary land mobile radio system

Note: The cities of Asheville, Charlotte, Fayetteville, New Bern, and Rocky Mount also operate independent land mobile radio systems.

Source: Program Evaluation Division based on information from the State Highway Patrol.

Approximately 20% of all VIPER IDs are distributed to various state and federal agencies in North Carolina. The majority of VIPER IDs distributed to federal agencies are used by law enforcement agencies such as the United States Bureau of Alcohol, Tobacco, Firearms, and Explosives, the United States Drug Enforcement Agency, and Immigration and Customs Enforcement. VIPER IDs are also distributed to several North Carolina state agencies and divisions including the Department of Public Safety, the Department of Transportation, the Department of Health and Human Services, and several state universities.

The State Highway Patrol uses an internal benchmark to measure VIPER's performance and reliability. VIPER staff calculate the percentage of "busies" across the system by dividing the number of calls on the VIPER system resulting in a busy signal by the total number of push-to-talks attempted.[12] VIPER staff's internal benchmark dictates that if the average percentage of busy calls in any given time period remains under 3%, the system is operating reliably. Performance for individual sites is measured in the same manner and poor performance can initiate responses to troubleshoot potential problems. In calendar year 2017, VIPER's overall percentage of busies was .03%, far below its benchmark. Exhibit 14 demonstrates benchmarks for busies used by comparable land mobile radio systems in other jurisdictions. Although VIPER's benchmark is more lenient than benchmarks for comparable systems, its performance is similar to other systems.

Exhibit 14

Reliability Benchmarks and Performance of VIPER and Comparable Systems

Land Mobile Radio System	Approximate Number of IDs	Benchmark for Percentage of Busies	Most Recently Available Actual Percentage of Busies
VIPER (North Carolina)	100,000	3%	.034%
MARCS (Ohio)	55,000	2%	.005%
MPSCS (Michigan)	79,000	2%	(Not Available)
Wake County, NC	10,000	3%	.027%
Buncombe County, NC	3,000	1%	.070%

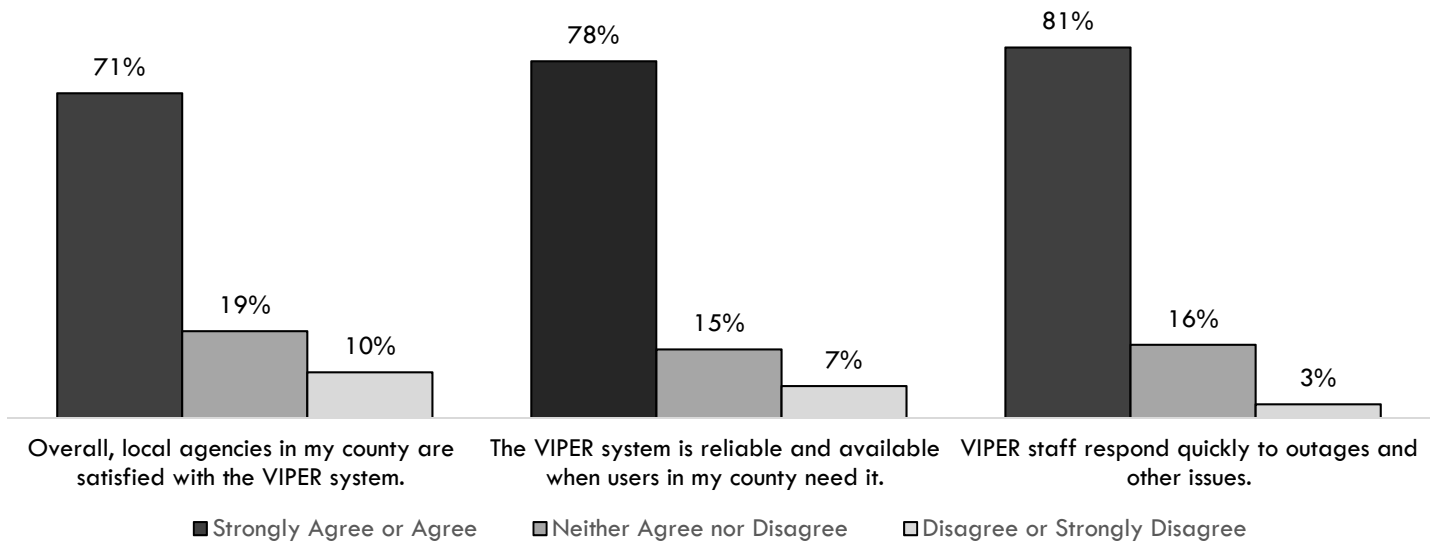*Source: Program Evaluation Division based on research of comparable land mobile radio systems.*

Most county points of contact perceive that users in their counties are satisfied with VIPER and that it is a reliable system. The Program Evaluation Division conducted a survey of VIPER points of contact in all 100 counties and asked for their perceptions of user satisfaction regarding various aspects of VIPER.[13] Appendix B contains a full list of questions and responses broken down by different geographic areas. Exhibit 15 shows that across the state, most VIPER points of contact perceived that users in their counties are satisfied with the system, its reliability, and its staff. When prompted for concerns and to provide reasons why some local

---

[12] A busy call results when a user presses the push-to-talk button on a radio but cannot initiate a voice transmission because all channels assigned to the tower site are being utilized by other users at that moment.

[13] The Program Evaluation Division received responses from all 100 North Carolina counties, a 100% response rate.

governments could not or chose not to use VIPER, responses generally involved high costs for radios, lack of service in some areas, and requests for better coverage indoors.

Exhibit 15: Most VIPER Points of Contact Perceive Satisfaction with the VIPER System

Source: Program Evaluation Division, based on a survey of VIPER county points of contact.

State and federal agencies using VIPER, as well as associations representing users of VIPER across North Carolina, perceive user satisfaction as generally high but suggest that collection of stakeholder input could be improved.[14] Representatives of associations also rated VIPER as a generally satisfactory and reliable system with suggestions for improvement including more training of end users as well as more formal representation for members. These representatives also highlighted the differences in geography and job responsibilities faced by VIPER users across the state and suggested that the creation of regional groups could allow for these differences to be better communicated to the State Highway Patrol.

A Program Evaluation Division query of 47 state and federal agencies using VIPER yielded 10 responses. Respondents reported high levels of satisfaction with the VIPER system with suggestions for improvement including more widespread service, more training for end users, and further hardening of the VIPER system.[15]

In summary, VIPER is a vital component of statewide interoperability for local, state, and federal entities. The system has grown rapidly over the last few years, and most of its IDs are distributed to local government entities that use VIPER as a primary or backup system. VIPER performs reliably when compared to other land mobile radio systems, and local government points of contact generally perceive that users are satisfied with the system.

---

[14] The Program Evaluation Division conducted interviews with and queries of five associations: the North Carolina Association of Chiefs of Police, North Carolina Sheriffs' Association, North Carolina Association of Fire Chiefs, North Carolina Association of Emergency Medical Services Administrators, and North Carolina Association of Rescue and Emergency Medical Services, Inc.
[15] Hardening refers to upgrading physical infrastructure to better withstand elements such as weather and natural disasters.

Finding 4. The VIPER system is supported by equipment purchases and in-kind contributions of infrastructure from local agencies; charging user fees could reduce participation in the network and diminish statewide interoperability.

Since its inception, VIPER has operated through partnerships between the state and local governments that use the system. In order to save on time and funds for land and equipment costs, the State Highway Patrol has shared resources with local governments when possible. Today, the VIPER system still relies heavily on monetary and in-kind contributions from local governments.

Users of VIPER are responsible for purchasing the radios that allow them to access the VIPER system. Whereas the Department of Public Safety pays for the upkeep of infrastructure and services provided by VIPER sites, entities that wish to use VIPER must obtain compatible radios themselves. Local governments across North Carolina have purchased these radios through their own appropriations or federal grants. A radio capable of accessing the VIPER system typically ranges in cost from $1,500 to $4,000. The cost of these radios can depend on the types of users and the durability needed; for example, firefighters may need more expensive radios that can withstand heat and smoke.

Non-state entities contribute infrastructure, land, or equipment to over two-thirds of VIPER sites. As of Fiscal Year 2017–18, only 65 of the VIPER system's 220 sites are fully state-owned. The remaining 155 sites include land, towers, buildings, and/or equipment that are provided by non-state entities at no cost to the State.[16] Exhibit 16 illustrates how these 155 sites are geographically distributed across North Carolina.

Exhibit 16: Approximately 70% of VIPER Sites Receive In-Kind Contributions from Non-State Entities
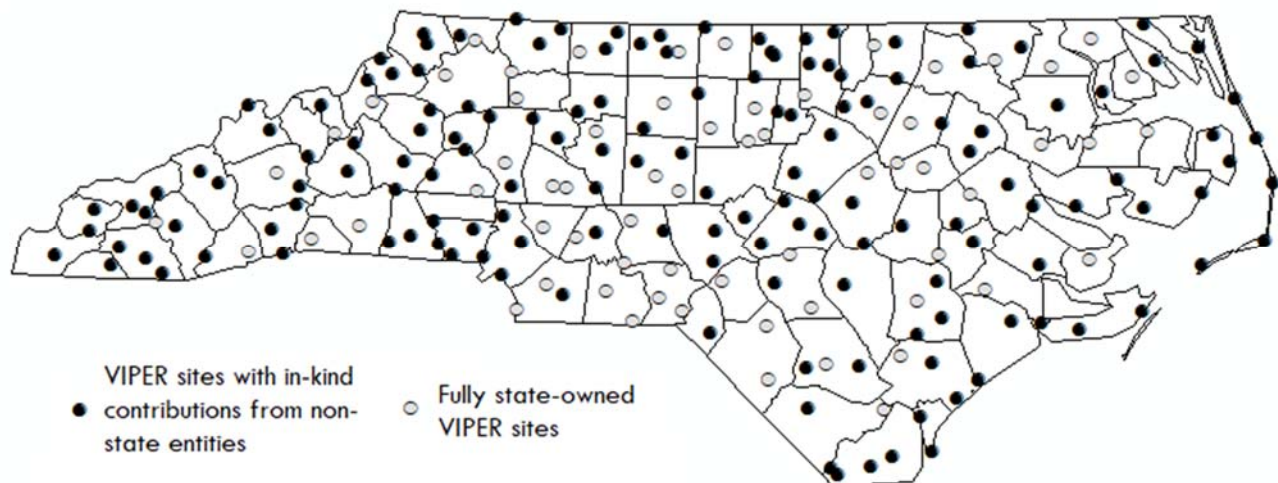
Source: Program Evaluation Division based on information provided by the State Highway Patrol.

The State Highway Patrol has not calculated the total value of in-kind contributions at all 155 sites, but VIPER staff calculated a small sample during the course of this evaluation. As shown in Exhibit 18, in-kind

---

[16] Non-state entities include local and federal governments, and non-governmental organizations.

contributions can include both physical space and funding. Currently, contributions from the five sample sites alone are estimated at $3.4 million.

Exhibit 18: Value of In-Kind Contributions by Non-State Entities at Five VIPER Sites

	Clemmons (Forsyth County)	Nakina (Columbus County)	Oak Hill (Granville County)	Tryon Peak (Polk County)	Valhalla (Chowan County)	Total Value by Type of Contribution
Funding (one time)	$329,324	$ 0	$500,000	$587,504	$ 874,472	**$2,291,300**
Land (2017 value)	632,700	97,202	54,825	0	264,150	**1,048,877**
Tower space (2017 value)	4,500	0	6,600	0	14,400	**25,500**
Total Value Contributed by County	**$966,524**	**$97,202**	**$561,425**	**$587,504**	**$1,153,022**	**$3,365,677**

Notes: Funding (one time) refers to federal grants transferred from local governments to the State. The five sample sites included in this exhibit were selected by VIPER staff to represent different regions in North Carolina.

Source: Program Evaluation Division based on information provided by the State Highway Patrol.

Various stakeholders of VIPER have noted that because of the range of in-kind contributions from local governments as well as the cost of radios, a decision by the State to charge user fees could result in users leaving the VIPER system. The 2004 VIPER Plan advised against charging fees to users of VIPER, suggesting that VIPER's success would depend on partnerships with state and local agencies as well as the sharing of existing resources such as infrastructure. The State Highway Patrol has operated VIPER without charging user fees for the system's entire history.

Representatives of associations for first responders have expressed concerns to the Program Evaluation Division that users would find fees financially prohibitive and that some users might choose not to use VIPER as a result. The Statewide Interoperability Executive Committee's 2018 Statewide Communications Interoperability Plan is also expected to contend that charging user fees would result in users leaving the VIPER system, leading to a reduction in North Carolina's statewide interoperability.

In summary, the VIPER system relies on partnerships between the State Highway Patrol and local, state, and federal entities. Users of VIPER are not required to pay user fees but are responsible for purchasing their own radios. Many non-state users of VIPER share infrastructure and other funding in order to support a statewide system.

Finding 5. Failure to upgrade VIPER's base stations and related software will adversely affect VIPER's continued reliability and interoperability.

The State Highway Patrol has upgraded and maintained VIPER software and hardware throughout its history to keep the system current and

reliable and to expand the reach and number of IDs in the system. In 2014, when the VIPER network reached a limit of 65,535 IDs, VIPER staff undertook an initiative to modernize and upgrade the system to Project 25 standards.[17] Staff completed this system-wide upgrade in 10 days and increased the maximum limit of VIPER IDs to 128,000.

The State Highway Patrol has identified base station upgrades as VIPER's most critical and immediate need because existing base stations have reached the end of their life cycles. Base stations act as the primary radio transmitter and receiver at VIPER sites. Currently, 187 VIPER sites are equipped with Quantar base stations that will reach the end of their life cycles on December 31, 2018. At that time, Motorola, VIPER's primary vendor, will no longer offer support, maintenance, or replacement parts for Quantar base stations. The State Highway Patrol has identified upgrading to Motorola's newer GTR base stations as the solution to this issue. The State Highway Patrol estimates that if it receives funding for GTR base stations for Fiscal Years 2018–19 and 2019–20, all remaining VIPER sites can be upgraded by the end of Fiscal Year 2019–20.

The VIPER system's functionality and reliability will begin to deteriorate if GTR base station upgrades are not funded. To maintain the VIPER system until base stations are upgraded, the State Highway Patrol's short-term plan is to purchase as many replacement parts for the current Quantar base stations as possible from Motorola or secondary sources while inventory is still available. As the Quantar base stations lose functionality over time and cannot be repaired due to a depleting stock of replacement parts, the State Highway Patrol may be forced to scale back the number of operational channels, potentially leading to more congested networks and busy signals.

Additional upgrades will be needed to complement GTR base stations and keep the VIPER system secure and up-to-date. As of Fiscal Year 2017–18, VIPER is operating with Release 7.14 software that is four years behind Motorola's most recent release. Because Motorola only provides ongoing support for systems up to four years behind its most recent release, VIPER's current software will soon lose the support it receives. Motorola currently offers Software Upgrade Assurance recurring maintenance at a cost of $2.5 million per year that includes technical support, regular software upgrades, infrastructure repair, network monitoring, and more. Motorola offers a 5% discount with a five-year Software Upgrade Assurance contract with an additional 1% for each additional year. If the Department of Public Safety entered into a 10-year contract for the Software Upgrade Assurance plan with a 10% discount, the State could save $250,000 per year, or $2.5 million over 10 years.

Furthermore, MOSCAD security upgrades, carrying a one-time cost of $1.3 million, are needed for compatibility with the GTR base stations and to increase the system's monitoring capabilities. Exhibit 19 summarizes the funding required for VIPER's most urgent upgrade needs. The State Highway Patrol requires $34.8 million in nonrecurring funds and $2.5 million in recurring funds to fully cover these upgrades. The nonrecurring funding for upgrading the base stations can be split over two fiscal years

---

[17] Project 25 is a modern set of standards for interoperable communications supported by national public safety organizations.

($14.3 million for each fiscal year) because the State Highway Patrol plans to install the upgrades over a 24-month time period.

Exhibit 19: Immediate VIPER Upgrade Needs Identified by the State Highway Patrol

Upgrade Description	Primary Reason for Upgrade	Nonrecurring Funding	Recurring Funding
GTR Base Stations (Hardware)	Motorola, the VIPER contractor, will cease support of the current Quantar base stations used at most VIPER sites effective December 31, 2018.	$28,500,530	$ 0
Service Upgrade Assurance Catch-Up (Software/firmware maintenance)	VIPER currently operates on software/firmware license version 7.14, which is four years behind the most recent version, and Motorola does not provide support for software that is more than four years behind its current release.	$ 5,000,000	$ 0
Service Upgrade Assurance Updates (Software/firmware maintenance)	Motorola provides updates for software/firmware used by VIPER under a long-term maintenance contract, and the State Highway Patrol needs funding to support this requirement.	$ 0	$ 2,250,000
MOSCAD Security Monitoring (Software/Hardware)	MOSCAD security monitoring must be upgraded for up-to-date security monitoring capabilities for the GTR base stations.	$ 1,300,000	$ 0
Total Funding Requirements		**$34,800,530**	**$ 2,250,000**

Source: Program Evaluation Division based on information provided by the State Highway Patrol.

Most VIPER site construction funding is committed to completing the system by Fiscal Year 2020–21 and replacing microwave radio equipment through Fiscal Year 2023–24. The Program Evaluation Division examined state funding for new VIPER site construction to determine whether any of this funding could be allocated for the needed upgrades. Exhibit 20 summarizes how the State Highway Patrol plans to use existing state appropriations through Fiscal Year 2023–24.

Exhibit 20: New Site Construction Funding Is Committed to Completing the VIPER System by Fiscal Year 2020–21 and Replacing Microwave Radio Equipment Through Fiscal Year 2023–24

Description	Fiscal Year 2018–19	Fiscal Year 2019–20	Fiscal Year 2020–21	Fiscal Year 2021–22	Fiscal Year 2022–23	Fiscal Year 2023–24	Fiscal Year 2024–25
Site Construction Schedule							
Number of sites	227	233	239	241	241	241	241
New site construction and replacement	6 (new)	6 (new)	2 (new)	1 (replace)	1 (replace)	1 (replace)	1 (replace)
Funding for Site Construction and Equipment Replacement							
State Highway Patrol recurring funding	$7,000,000	$7,000,000	$7,000,000	$7,000,000	$7,000,000	$7,000,000	$7,000,000
Site construction and replacement expense	(7,000,000)	(7,000,000)	(2,500,000)	(2,000,000)	(2,000,000)	(2,000,000)	(2,000,000)
Microwave radio equipment replacement expense	0	0	(4,500,000)	(4,500,000)	(4,500,000)	(4,500,000)	0
Uncommitted Funding	$ 0	$ 0	$ 0	$ 500,000	$ 500,000	$ 500,000	$5,000,000

Source: Program Evaluation Division based on information provided by the State Highway Patrol.

Allocating site construction funding to base station and software upgrades would delay the completion of the VIPER network. State appropriations for new site construction will support building remaining VIPER sites by the end of Fiscal Year 2020–21. After completing the buildout of the VIPER network, the State Highway Patrol will use site construction funding to replace microwave radio equipment that also needs to be upgraded. Waiting until site construction is completed to replace the microwave radio equipment means that the State Highway Patrol will not need additional state appropriations for this upgrade. Likewise, allocating any significant amount of the State Highway Patrol's $7 million site construction funding appropriation towards base station and software upgrades prior to Fiscal Year 2024–25 would necessitate delays in either the completion of the VIPER network buildout, the microwave radio equipment upgrades, or both.

In summary, equipment and software upgrades for the VIPER system are necessary to ensure ongoing reliability and interoperability. The State Highway Patrol needs $37.3 million to fully fund these upgrades. Recurring state appropriations for VIPER site construction are committed to completing the VIPER network and replacing microwave radio equipment through Fiscal Year 2023–24. Diverting existing state appropriations to partially fund the needed upgrades would delay completion of the VIPER network.

Recommendations

Recommendation 1. The General Assembly should direct the Department of Public Safety to increase its VIPER outreach efforts to improve the engagement of VIPER stakeholders.

As discussed in Finding 3, VIPER points of contact for North Carolina's 100 counties reported high user satisfaction when surveyed by the Program Evaluation Division. However, the State Highway Patrol does not have a formal system for engaging with VIPER system users and receiving feedback. Currently, the State Highway Patrol receives feedback and suggestions regarding VIPER through the State Interoperability Executive Committee and the Domestic Preparedness Regions communications subcommittee representatives to the State Interoperability Executive Committee.

In order to track and measure user satisfaction and feedback over time, the General Assembly should direct the Department of Public Safety to conduct an annual survey of local, state, and federal users of VIPER and report on the results to the Joint Legislative Oversight Committee on Justice and Public Safety. The Department of Public Safety should be directed to report the survey results annually to the Joint Legislative Oversight Committee on Justice and Public Safety by November 1 beginning in 2019. The questions created by the Program Evaluation Division that appear in Appendix B provide a potential template for this survey.

The General Assembly should also direct the Department of Public Safety to increase outreach to VIPER stakeholders beyond those that participate in the State Interoperability Executive Committee. By engaging VIPER stakeholders by zone or region via meetings or focus groups, the Department of Public Safety could become aware of and address VIPER issues and concerns that are unique to certain stakeholders. State Highway Patrol regional offices could potentially serve as a base for these groups or meetings.

Recommendation 2. The General Assembly should direct the Department of Public Safety to determine the value of in-kind contributions provided to the VIPER system.

As discussed in Finding 4, the State Highway Patrol relies on partnerships with local government entities, the federal government, and non-governmental entities to provide in-kind contributions to support the VIPER system. These in-kind contributions include funding, land, buildings, towers, and equipment for VIPER sites across North Carolina. The State Highway Patrol has not determined the total value of these in-kind contributions supporting the VIPER system.

The General Assembly should direct the Department of Public Safety to determine the value of in-kind contributions supporting the VIPER system and inform the General Assembly of its findings. The Department of Public Safety should report this information to the Joint Oversight Committee on Justice and Public Safety by July 1, 2019.

Recommendation 3. The General Assembly should consider appropriating funds to upgrade VIPER base stations and establish routine software updates.

As discussed in Finding 5, failure to upgrade VIPER's base stations and related software will adversely affect VIPER's continued reliability and interoperability. The VIPER system's functionality and reliability will begin to deteriorate if base station upgrades do not occur and the associated software is not maintained.

To ensure that the VIPER system's functionality and reliability are maintained, the General Assembly should consider appropriating state funds for VIPER base station upgrades and associated software updates. To fully fund these upgrades, the State Highway Patrol requires $34.8 million in nonrecurring appropriations and $2.3 million in recurring appropriations. Exhibit 21 summarizes the state appropriations requirements.

Exhibit 21

State Appropriations for VIPER System Upgrades Can Be Split Between Fiscal Years 2018–19 and 2019–20

Upgrade Description	Fiscal Year 2018—19		Fiscal Year 2019—20	
GTR Base Stations	$14,250,265	NR	$14,250,265	NR
Service Upgrade Assurance Catch-Up	5,000,000	NR	0	
MOSCAD Security Monitoring	1,300,000	NR	0	
Service Upgrade Assurance Updates	2,250,000	R	2,250,000	R
Total Appropriations	**$22,800,265**		**$16,500,265**	

Notes: NR stands for nonrecurring. R stands for recurring. The recurring appropriation for the Service Upgrade Assurance updates assumes that the State Highway Patrol would receive a 10% discount from Motorola, which would reduce state funding from $2,500,000 to $2,250,000 and save $250,000 annually.

Source: Program Evaluation Division based on information from the State Highway Patrol.

The nonrecurring funding for upgrading the base stations can be split over two fiscal years ($14.3 million each fiscal year) because the State Highway Patrol plans to install the upgrades over a 24-month time period.

Appendices

Appendix A: History of VIPER Buildout in North Carolina

Appendix B: Results of Survey of VIPER County Points of Contact

Agency Responses

A draft of this report was submitted to the Department of Public Safety and the Department of Information Technology to review. Their responses are provided following the report.

Program Evaluation Division Contact and Acknowledgments

For more information on this report, please contact Carol Shaw at Carol.Shaw@ncleg.net.
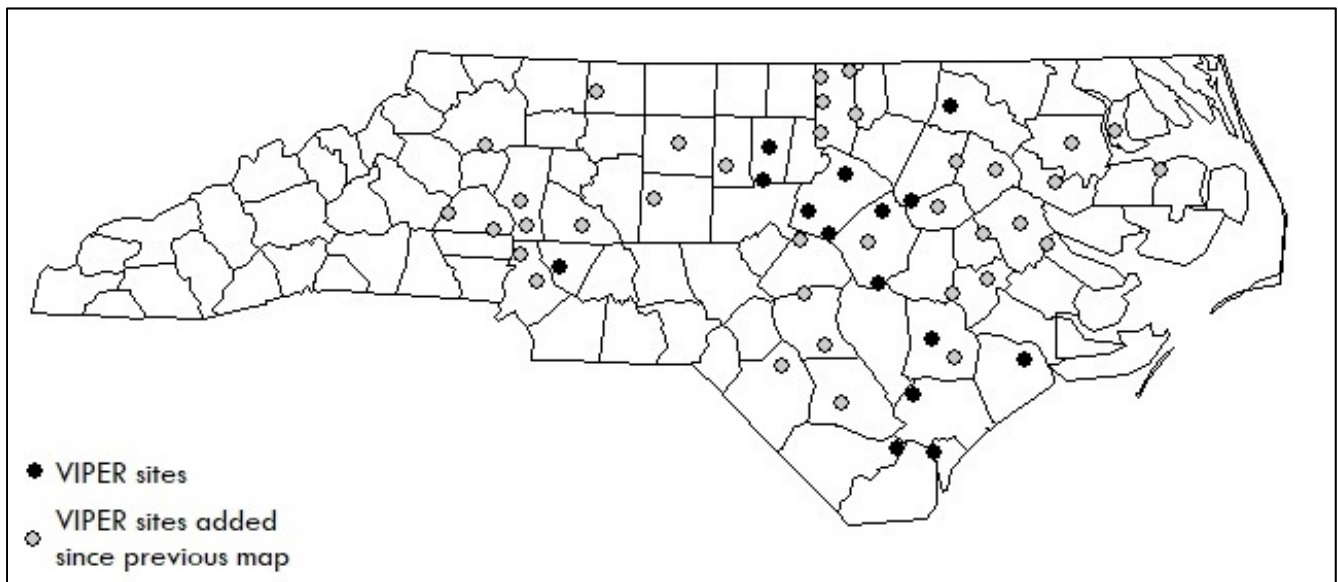
Pat Madej was the lead evaluator for this report. Staff members who made key contributions to this report include Justin Davis and Carol Shaw. John W. Turcotte is the director of the Program Evaluation Division.

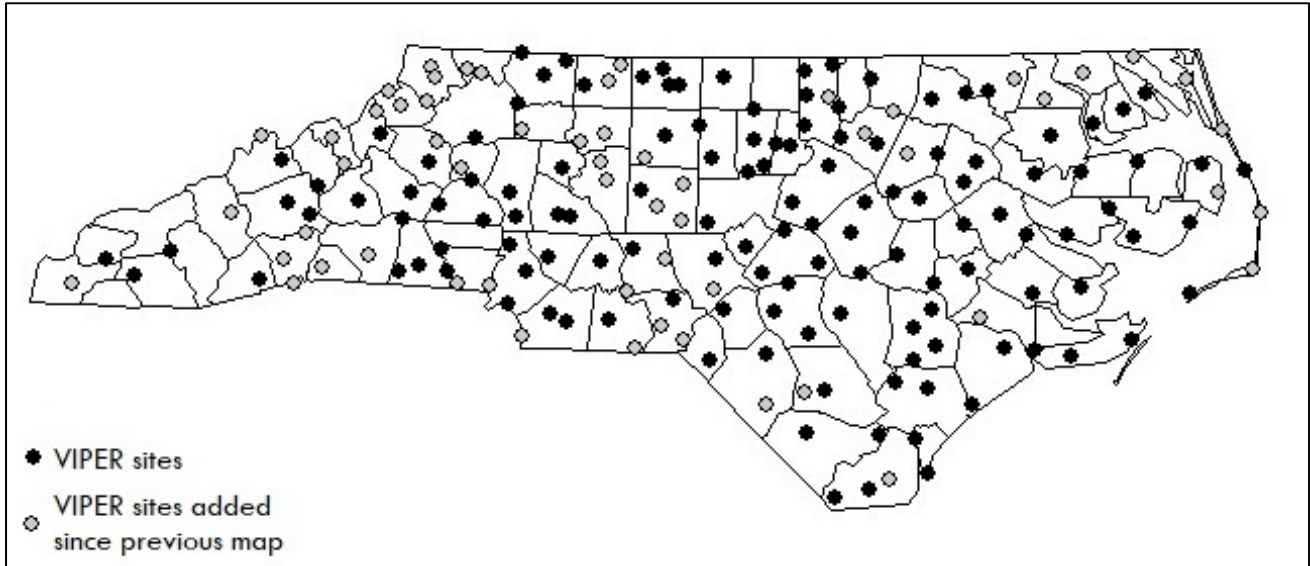## Appendix A: History of VIPER Buildout in North Carolina
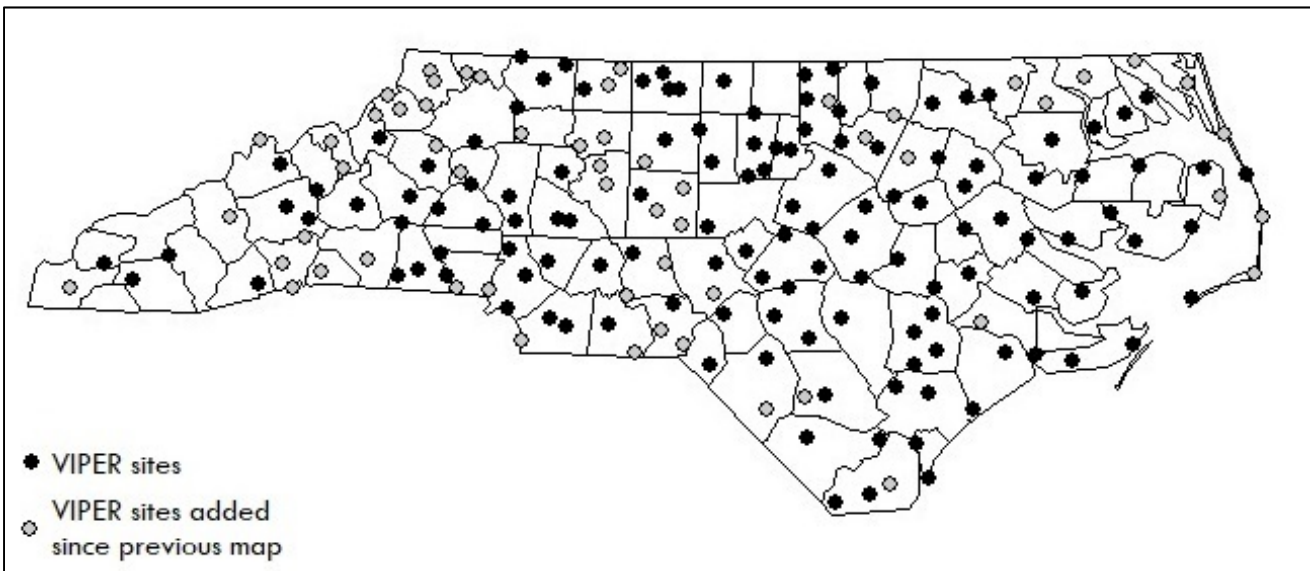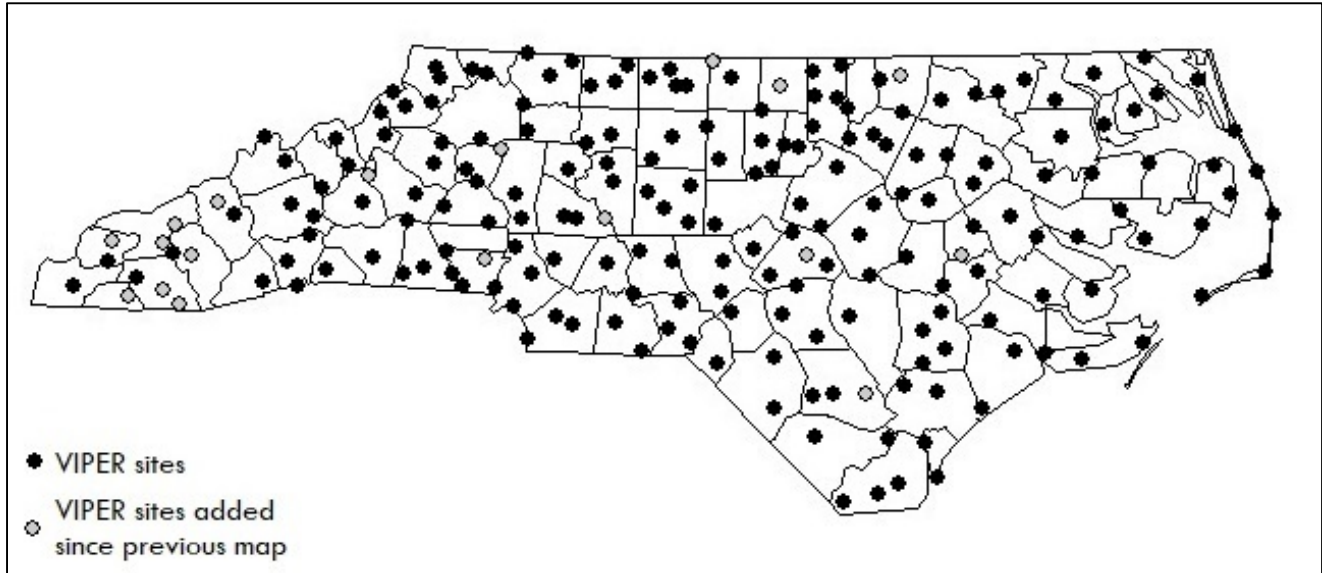
VIPER Network as of Fiscal Year 2002–03
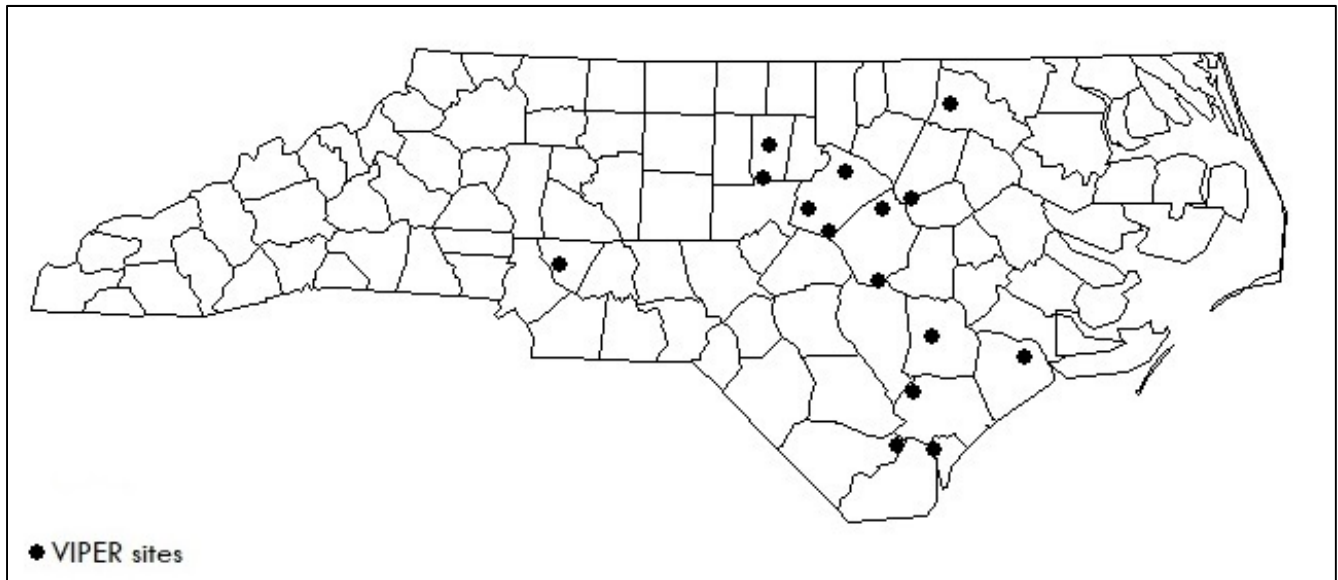
VIPER Network as of Fiscal Year 2005–06

VIPER Network as of Fiscal Year 2008–09

- ● VIPER sites
- ○ VIPER sites added since previous map

VIPER Network as of Fiscal Year 2011–12

- ● VIPER sites
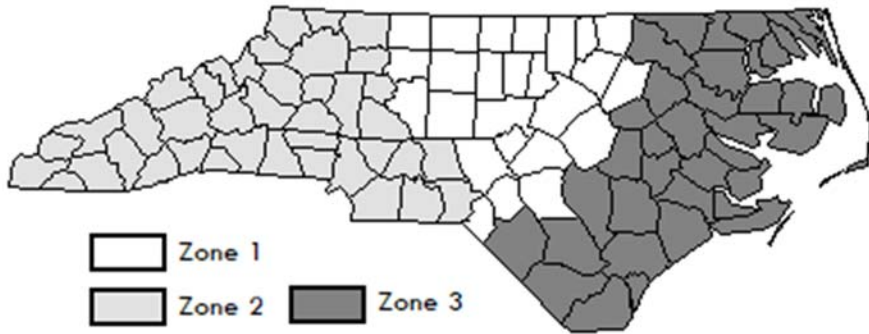- ○ VIPER sites added since previous map

VIPER Network as of Fiscal Year 2014–15

Planned VIPER Network as of June 30, 2018

Appendix B: Results of Survey of VIPER County Points of Contact

Zone 1
Zone 2
Zone 3
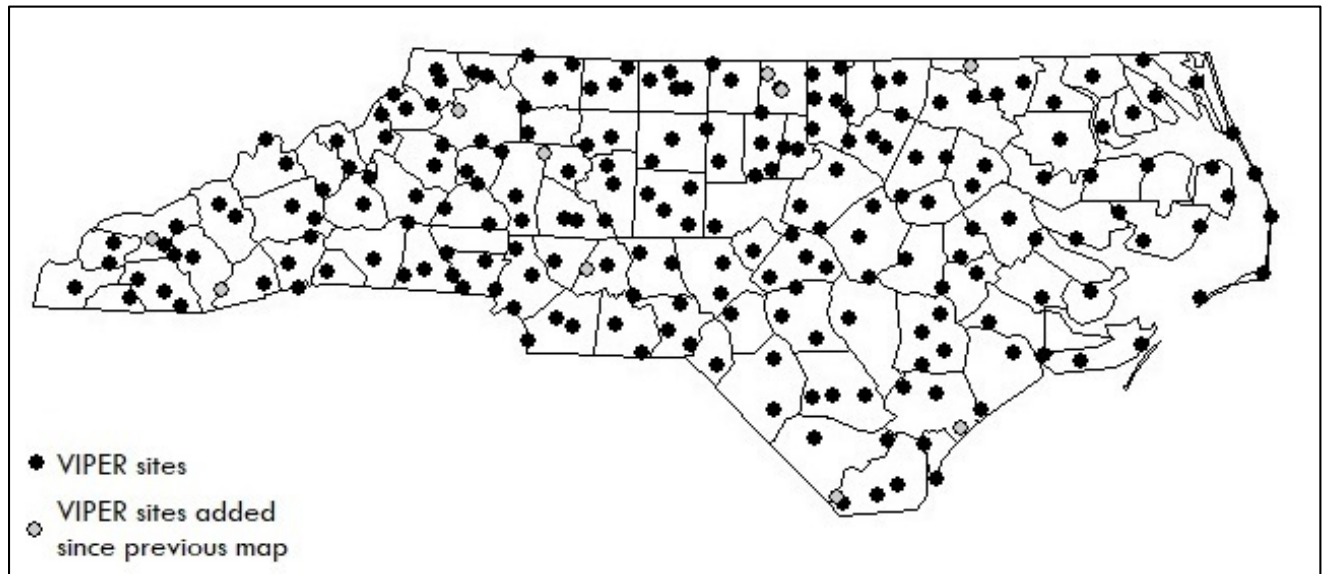
Overall, local agencies in my county are satisfied with the VIPER system.

Statewide (n=100): 71%, 19%, 10%
Zone 1 (n=25): 60%, 32%, 8%
Zone 2 (n=40): 75%, 10%, 15%
Zone 3 (n=35): 74%, 20%, 6%

■ Strongly Agree or Agree
■ Neither Agree nor Disagree
■ Disagree or Strongly Disagree
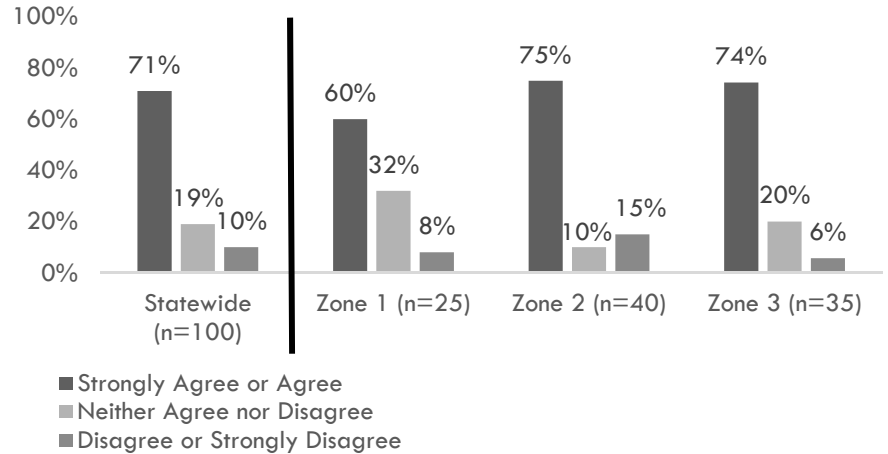
The VIPER system is reliable and available when users in my county need it.

Statewide (n=100): 78%, 15%, 7%
Zone 1 (n=25): 76%, 20%, 4%
Zone 2 (n=40): 78%, 13%, 10%
Zone 3 (n=35): 80%, 14%, 6%

■ Strongly Agree or Agree
■ Neither Agree nor Disagree
■ Disagree or Strongly Disagree
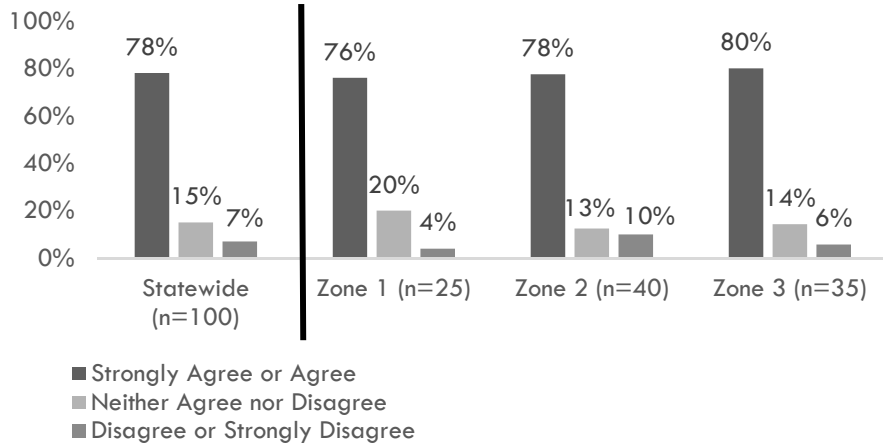
VIPER site infrastructure (e.g., towers and other equipment) are well-maintained.

Statewide (n=100): 84%, 14%, 2%
Zone 1 (n=25): 80%, 16%, 4%
Zone 2 (n=40): 85%, 13%, 3%
Zone 3 (n=35): 86%, 14%, 0%

■ Strongly Agree or Agree
■ Neither Agree nor Disagree
■ Disagree or Strongly Disagree
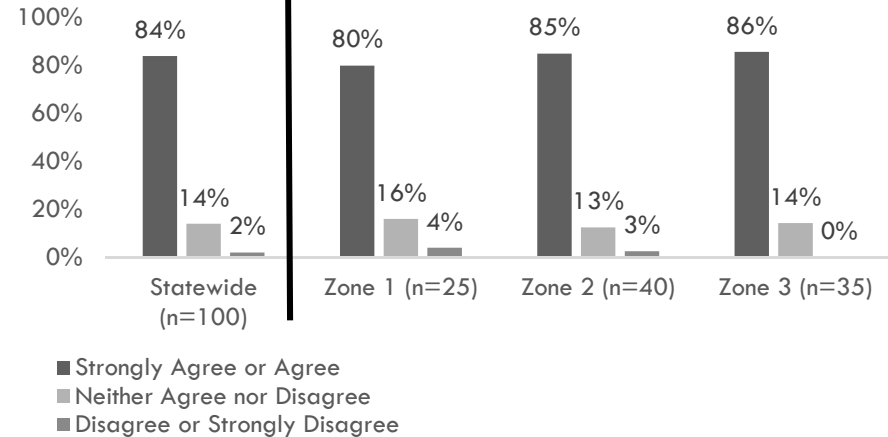
VIPER staff respond quickly to outages and other issues.

- Strongly Agree or Agree
- Neither Agree nor Disagree
- Disagree or Strongly Disagree

	Statewide (n=100)	Zone 1 (n=25)	Zone 2 (n=40)	Zone 3 (n=35)
Strongly Agree or Agree	81%	80%	78%	86%
Neither Agree nor Disagree	16%	20%	18%	11%
Disagree or Strongly Disagree	3%	0%	5%	3%
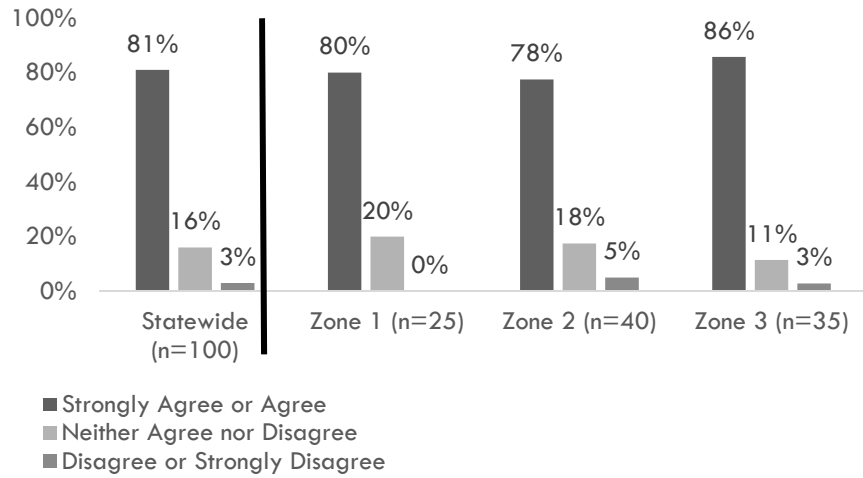
VIPER staff provide quality service and communication to local agencies using the system.
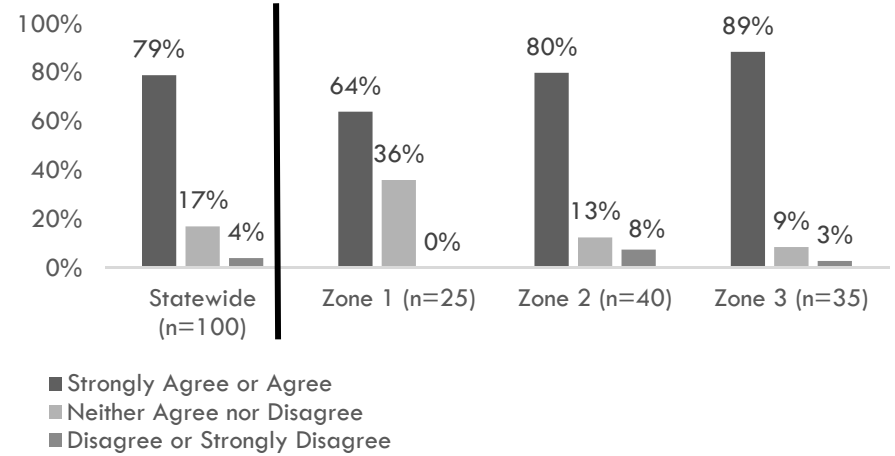
- Strongly Agree or Agree
- Neither Agree nor Disagree
- Disagree or Strongly Disagree

	Statewide (n=100)	Zone 1 (n=25)	Zone 2 (n=40)	Zone 3 (n=35)
Strongly Agree or Agree	79%	64%	80%	89%
Neither Agree nor Disagree	17%	36%	13%	9%
Disagree or Strongly Disagree	4%	0%	8%	3%

The VIPER system allows local agencies in my county to efficiently communicate with other agencies IN MY COUNTY.
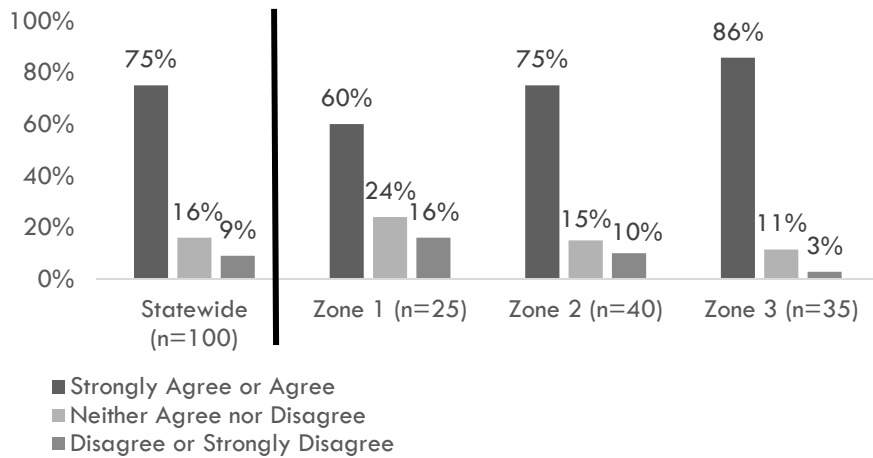
- Strongly Agree or Agree
- Neither Agree nor Disagree
- Disagree or Strongly Disagree

	Statewide (n=100)	Zone 1 (n=25)	Zone 2 (n=40)	Zone 3 (n=35)
Strongly Agree or Agree	75%	60%	75%	86%
Neither Agree nor Disagree	16%	24%	15%	11%
Disagree or Strongly Disagree	9%	16%	10%	3%

The VIPER system allows local agencies in my county to efficiently communicate with other agencies ACROSS THE STATE.
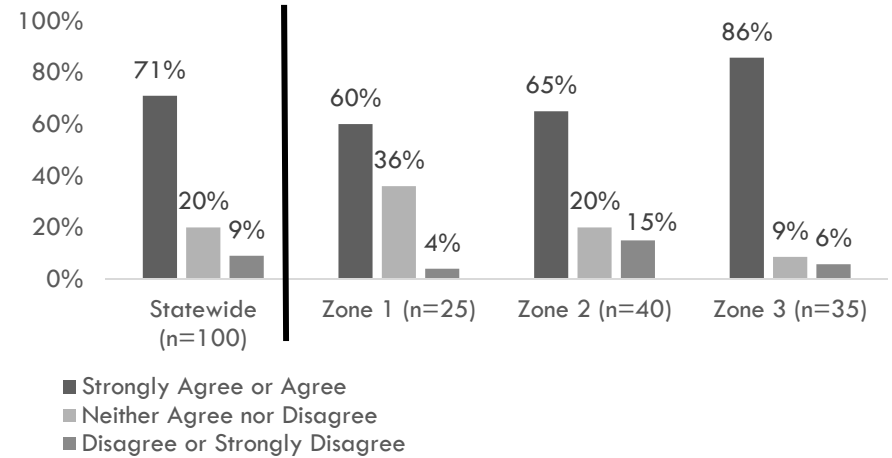
- Strongly Agree or Agree
- Neither Agree nor Disagree
- Disagree or Strongly Disagree

	Statewide (n=100)	Zone 1 (n=25)	Zone 2 (n=40)	Zone 3 (n=35)
Strongly Agree or Agree	71%	60%	65%	86%
Neither Agree nor Disagree	20%	36%	20%	9%
Disagree or Strongly Disagree	9%	4%	15%	6%

March 28, 2018

Mr. John W. Turcotte
Director, Program Evaluation Division
300 North Salisbury Street, Suite 100 LOB
Raleigh, NC 27603-5925

Dear Mr. Turcotte,

I want to take the opportunity to personally thank you and your team of professionals for allowing the North Carolina State Highway Patrol, Technical Services Unit, an opportunity to share their expertise regarding the **V**oice **I**nteroperability **P**lan for **E**mergency **R**esponders (VIPER) system. From the first meeting in September 2017, to the delivery of the draft report this month, your team has worked tirelessly to gather and understand a very complex voice, interoperable communications network. We appreciate the opportunity to review and respond to the Program Evaluation Division's (PED) report titled *"VIPER and FirstNet are Vital for Public Safety Interoperability, but VIPER Requires Upgrades."*

One of the main findings in the PED report is that VIPER and FirstNet have very different system functionality and services, and the two systems do not duplicate each other. The North Carolina Department of Public Safety has worked to help our public safety partners and stakeholders understand that although both two systems will be used by North Carolina first responders, they serve different purposes and uses different technologies. VIPER is a mobile radio system that provides interoperable voice communications. FirstNet is a wireless broadband system that will provide interoperable data communications capability. Having this distinction identified and documented by an agency outside of our department will greatly assist in our continued efforts to educate about the two systems.

The PED report also supports the department's position that users of the VIPER system should not be charges a user fee and confirms the need to identify funding for critical upgrades. The PED staff understands that implementing a user fee for VIPER would reduce the number of users on the network, thereby decreasing statewide interoperability for all emergency responders. Additionally, the PED staff recognizes that without upgrading VIPER base stations and associated software, the system reliability maybe impacted. We appreciate the report's findings in these two areas.

The North Carolina State Highway Patrol has discussed and is exploring ways to implement the recommendations made in the PED report. Specifically, the Patrol is looking at how to better engage VIPER stakeholders for feedback and information sharing and is also determining how to

MAILING ADDRESS:
4201 Mail Service Center
Raleigh, NC 27699-4201
www.ncdps.gov

An Equal Opportunity Employer

OFFICE LOCATION:
512 N. Salisbury Street
Raleigh, NC 27604
Telephone: (919) 733-2126

assess the value of in-kind contributions made to the system. The North Carolina Department of Public Safety welcomes these recommendations of the PED staff.

Again, thank you for the opportunity to share our knowledge of the VIPER system and our passion for what we do. The North Carolina Department of Public Safety appreciates the hard work and diligence the PED staff has provided with this report to the Legislature on VIPER. We feel that the report clearly defines the VIPER system and the critical role it plays in the daily lives of our first responders across the state.

Sincerely,

Erik A. Hooks
Secretary
North Carolina Department of Public Safety

March 29, 2018

Mr. John W. Turcotte, Director
N.C. General Assembly Legislative Services Office
Program Evaluation Division
300 N. Salisbury Street, Suite 100 LOB
Raleigh, NC 27603-5925

Dear Mr. Turcotte:

Thank you very much for your February 14, 2018, letter on the Program Evaluation Division's exit conference process, and for the opportunity to review the Division's report on VIPER and FirstNet.

The Department of Information Technology concurs with the Division's finding that no duplication exists between VIPER and FirstNet. We also concur with the Division's finding regarding the role of North Carolina's Statewide Interoperability Executive Committee. Our Broadband Infrastructure Office is providing your team with a number of technical corrections.

North Carolina's first responders and its citizens will benefit from a dedicated public safety data network. I am proud of the Broadband Infrastructure Office's work with public safety and information technology stakeholders to make sure that North Carolina voices were a part of the FirstNet process. We will all be safer once our first responders have the ability to remain connected.

I appreciate your team's close collaboration throughout the Division's study process. If you have any questions, please do not hesitate to contact me or DIT's legislative liaison Nate Denny at 919.397-2124 or nate.denny@nc.gov.

Sincerely,

J. Eric Boyette