COMMONWEALTH of VIRGINIA
Virginia 9-1-1 Services Board

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Office of the Governor
Advisor

Dorothy Spears-Dean
PSC Coordinator
(804) 416-6201

Terry D. Mayo
Board Administrative
Assistant
(804) 416-6197

PGC Meeting Agenda
August 29, 2019 1:00 pm
Monroe Building, 16th Floor Conference Room

1. Call Meeting of the Committee to Order ....Chair

2. Approval of the Minutes from the May 14, 2019 Meeting ....Chair

3. NG9-1-1 Funding Requests......................................PSAP Grant Program Manager

4. Text-to-911 Grant Applications ....PSAP Grant Program Manager

5. NG9-1-1 Deployment Update ....PSC Coordinator

6. Old Business

7. New Business

   - Contract Extension Requests

   - Progress Reports

   - On-Site Diversity Connectivity Costs

   - NG9-1-1 Funding Award Amendments

   - ESVA 9-1-1 Request

   - Travel Assistance for APCO Fall Conference

8. PGC Report to the Board ....PSC Coordinator

9. Public Comment ....Chair

10. Adjourn Meeting of the Committee ....Chair

Next Meeting – October 10, 2019

PSAP Grant Committee Meeting

August 29, 2019

Agenda

- Call Meeting to Order
- Minutes from June 25, 2019 Meeting
- NG9-1-1 Funding Requests
- Text-to-9-1-1 Grant Applications
- NG9-1-1 Deployment Update
- Old Business
- New Business
- PGC Report to Board
- Public Comment and Closing

NG9-1-1 Funding Requests

Latest Round of Funding Requests

PSAP	Primary Selective Router Regions	Amount Requested
Cumberland	Chester/Stuart	$317,294.01
Essex	Chester/Stuart	$382,521.18
Lancaster	Chester/Stuart	$512,670.40
Martinsville-Henry	Johnson City/Wytheville	$356,134.90
Spotsylvania	Fredericksburg/Winchester	$459,513.02
York	High Street/Jefferson	$245,437.04

Text-to-911 Grant Applications

- Any Virginia primary PSAP and secondary PSAP currently served by a selective router pair are eligible to apply for and receive funding from the Text-to-9-1-1 Program.

- Any PSAP that has already implemented Text-to-9-1-1 is not eligible for Text-to-9-1-1 Program funding. However, PSAPs with a TDD-based solution are eligible to apply for funding to replace their current solution with a web-based or direct IP solution.

Text-to-911 Grant Applications

- The PSAP Grant Program application cycle opens on Monday, July 1, 2019. The funding cycle for the Text-to-9-1-1 Grant Program begins on July 1, 2019 and will remain open throughout the NG9-1-1 deployment period.

PSAP	Amount Requested
Bland	$8,750.00
Nelson	$50,000.00
Twin County	$17,750.00
Wythe	$19,625.00

NG9-1-1 Deployment Update

New Developments

- VA Beach RFP
  - Letter of Intent issued

- Adjustments to the deployment schedule
  - Update to be provided at Sept Board meeting

- Interim, transitional SIP solution deployments

Old Business

New Business

New Business Items

- Contract Extension Requests

- Progress Reports

- On-Site Diversity Connectivity Costs

- NG9-1-1 Funding Award Amendments

- ESVA 9-1-1 Request

- Travel Assistance for VA APCO Fall Conference

Contract Extension Requests

- Contract deadline extended to Nov 20th
  - Amelia, Bath, Craig, Danville, Hopewell, Mecklenburg, and Sussex

- Contract deadline extended to Oct 10th
  - Giles, MWAA, and Staunton

Progress Reports

- Deadline to submit reports for open FY 18 and FY 19 grants is Aug 9th

- Ongoing Process for NG9-1-1 funding requests
  - Completed by RCs prior to each PGC meeting
  - Identify amendments

On-Site Diversity Connectivity Costs

- May be additional costs to PSAPs to connect to the ESInet

- Each PSAP needs two distinct paths for the two diverse broadband circuits

- Costs were not originally considered in Migration Proposals

- Estimate cost between $30K and $40K to bring second connection into the building

NG9-1-1 Award Amendments

- Alexandra

- Arlington

- Buckingham

- Fairfax

- Fauquier

- Loudoun

- Prince William

- Stafford

ESVA Request

- Allow inclusion of secondary PSAPs in consolidation projects funded through the PSAP Grant Program

- Currently funding only available to primary PSAPs

Travel Assistance 2019 VA APCO

- Travel Assistance -Per Diem Rate for the APCO Fall Conference is $143.00

- Although unlikely, any change as a result of GSA update prior to conference will be made administratively

Conclusion

- Committee Report to the Board

- Public Comment

- Next Meeting Date – October 10, 2019

- Adjourn

TEXT-TO-9-1-1
GRANT PROGRAM APPLICATION

TEXT-TO-9-1-1
GRANT PROGRAM APPLICATION

HOW TO APPLY/DEADLINE

The Virginia General Assembly adopted legislation that requires each Public Safety Answering Point (PSAP), by July 1, 2020, to be able to receive and process calls for emergency assistance sent via text message. The PSAP Grant Program provides funding to localities to implement Text-to-9-1-1. A grant application is available from the ISP website. Completed grant applications should be sent to the psapgrants@vita.virginia.gov electronic mailbox, along with any supporting documentation. Upon submission, an email receipt notification will be sent to the e-mail address listed on the application received. A Grant ID will be included in the grant award letter.

All funding requests **must** be submitted using the Text-to-9-1-1 grant application. The funding cycle for the Text-to-9-1-1 Program begins on July 1, 2019 and will remain open throughout the NG9-1-1 deployment period. Applications will be reviewed based on the NG9-1-1 submission deadlines provided on the NG9-1-1 Depoyment Webpage. Technical assistance is available from VITA's Public Safety Communications and Regional Outreach staff throughout the funding cycle.

ALL APPLICABLE SECTIONS MUST BE COMPLETED IN ITS ENTIRETY OR THE APPLICATION WILL BE CONSIDERED INCOMPLETE AND NOT ACCEPTED FOR CONSIDERATION.

TEXT-TO-9-1-1 GRANT APPLICATION

GRANT APPLICANT PROFILE/PROJECT CONTACT

PSAP/HOST PSAP NAME: Wythe County 911 Center
CONTACT TITLE: 911 Director
CONTACT FIRST NAME: Darlene
CONTACT LAST NAME: Lang
ADDRESS 1: 290 S 6th St
ADDRESS 2:
CITY: Wytheville
ZIP CODE: 24382
CONTACT EMAIL: dmlang@wytheco.org
CONTACT PHONE NUMBER: 276-223-4533
CONTACT MOBILE NUMBER: 276-613-3097
CONTACT FAX NUMBER: 276-227-0393
REGIONAL COORDINATOR: Tim Addington

GRANT TYPE IS INDIVIDAUL PSAP

FINANCIAL DATA (MAXIMUM AWARD $50,000)

Amount Requested: $ 19,625
Total Project Cost: $ 19,625

PROJECT DESCRIPTION

Provide a detailed description of the project for which funding is being sought, including the impact on operational services and consequences of not receiving funding; the relationship to local strategic and capital improvement plans; and sustainability:

Funding is being sought to enable Text 2 911 for the interim period between the legislatively mandated timeline and NG911 deployment. If funding is not received, the agency may not be able to deploy the Text 2 911 by the deadline. Text 2 911 will be part of the NG911 connectivity estimate. The jurisdictions are aware of the funding increase for NG911, and are incorporating the increase in the FY2023 budget process.

PROJECT GOAL

Describe how this project meets the legislative mandate, addresses locally identified need(s), and supports the Virginia 9-1-1 Comprehensive Plan:

The project enables the locality to implement the Text 2 911 prior to the July 1, 2020 deadline. It also will provide an additional means for local citizens, visitors and especially the hearing impaired community to reach 911. Enabling Text 2 911 is also recommended in the Virginia 9-1-1 Compreshensive Plan.

PROJECT OBJECTIVES

Describe the objectives that will support the goals identified above:

The objective are:
- To enable text to 911 for the geo-diverse Call Handling Equipment jurisdictions: Bland, Carroll, Galax, Grayson, Wythe, Wytheville with critical cellular carriers.
- To publicize the capability in the communities.

IMPLEMENTATION PLAN

For each applicable phase of the project, indicate the planned completion date.

PROJECT PHASE	PLANNED COMPLETION DATE
INITIATION – Project concept is documented, local board or governing authority approval or endorsement is received, Text-to-9-1-1 grant application is filed, local budgets are obtained, appropriated grant funds are approved, and budgetary estimates are obtained.	**09 / 30 / 19**
DESIGN/PLANNING - Requirements are documented, components to be purchased are identified, and general design is documented.	**01 / 01 / 20**
ACQUISITION - RFP (or other bid related processes) are drafted, proposals are evaluated, contract is signed, purchase orders are issued, and quotes are obtained.	**01 / 01 / 20**
IMPLEMENTATION - Purchased components are delivered and installed and training is performed	**03 / 31 / 20**
TESTING/COMPLETION - Performance of system/solution is validated and system/solution goes "live"	**06 / 30 / 20**

BUDGET AND BUDGET NARRATIVE

List the planned expenditures to be made with grant funds. Briefly explain the reason for each requested budget item and provide the basis for its cost. In addition, if contingency cost has been added, please identify the amount.

NOTE: In lieu of a line item breakdown, an itemized cost schedule or detailed vendor prepared quote may be submitted as an attachment, but a narrative is still required. However, budgetary quotes received from a particular vendor(s) during the application process do not commit the PSAP to use that vendor(s) once the grant is awarded.

The budget for the project includes:

- $1,250 for one-time integration fee
- $1,875 ITS Equipment (to provide redundancy for geo-diverse CHE)
- $1,800 per year for ITS Service (for up to 5 years)
- $1,500 per year for Text 2 911 recurring fee (for up to 5 years)

EVALUATION

How will the project as identified in the project description be evaluated and measured for achievement and success:

The project success criteria will be:
- Receipt of 911 test texts from the top 5 carriers and other cellular carriers utilized in the community.
- Receipt of 911 texts as part of the PSAP's routine operations.

TEXT-TO-9-1-1
GRANT PROGRAM APPLICATION

VIRGINIA INFORMATION

TECHNOLOGIES AGENCY

Integrated Services Division

TEXT-TO-9-1-1
GRANT PROGRAM APPLICATION

HOW TO APPLY/DEADLINE

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All funding requests **must** be submitted using the Text-to-9-1-1 grant application. The funding cycle for the Text-to-9-1-1 Program begins on July 1, 2019 and will remain open throughout the NG9-1-1 deployment period. Applications will be reviewed based on the NG9-1-1 submission deadlines provided on the NG9-1-1 Depoyment Webpage. Technical assistance is available from VITA's Public Safety Communications and Regional Outreach staff throughout the funding cycle.

ALL APPLICABLE SECTIONS MUST BE COMPLETED IN ITS ENTIRETY OR THE APPLICATION WILL BE CONSIDERED INCOMPLETE AND NOT ACCEPTED FOR CONSIDERATION.

TEXT-TO-9-1-1 GRANT APPLICATION

GRANT APPLICANT PROFILE/PROJECT CONTACT

PSAP/HOST PSAP NAME: Twin County 911

CONTACT TITLE: 911 Coordinator

CONTACT FIRST NAME: Jolena

CONTACT LAST NAME: Young

ADDRESS 1: 353 N Main St

ADDRESS 2: PO Box 510

CITY: Galax

ZIP CODE: 24333

CONTACT EMAIL: jyoung@galaxva.com

CONTACT PHONE NUMBER: 276-238-2550

CONTACT MOBILE NUMBER: 276-233-3231

CONTACT FAX NUMBER: 276-236-2956

REGIONAL COORDINATOR: Tim Addington

GRANT TYPE IS INDIVIDAUL PSAP

FINANCIAL DATA (MAXIMUM AWARD $50,000)

Amount Requested: $ 17,750

Total Project Cost: $ 17,750

PROJECT DESCRIPTION

Provide a detailed description of the project for which funding is being sought, including the impact on operational services and consequences of not receiving funding; the relationship to local strategic and capital improvement plans; and sustainability:

Funding is being sought to enable Text 2 911 for the interim period between the legislatively mandated timeline and NG911 deployment. If funding is not received, the agency may not be able to deploy the Text 2 911 by the deadline. Text 2 911 will be part of the NG911 connectivity estimate. The jurisdictions are aware of the funding increase for NG911, and are incorporating the increase in the FY2023.

PROJECT GOAL

Describe how this project meets the legislative mandate, addresses locally identified need(s), and supports the Virginia 9-1-1 Comprehensive Plan:

The project enables the locality to implement the Text 2 911 prior to the July 1, 2020 deadline. It also will provide an additional means for local citizens, visitors and especially the hearing impaired community to reach 911. Enabling Text 2 911 is also recommended in the Virginia 9-1-1 Compreshensive Plan.

PROJECT OBJECTIVES

Describe the objectives that will support the goals identified above:

The objective are:
- To enable text to 911 for the geo-diverse Call Handling Equipment jurisdictions: Bland, Carroll, Galax, Grayson, Wythe, Wytheville with critical cellular carriers.
- To publicize the capability in the communities.

IMPLEMENTATION PLAN

For each applicable phase of the project, indicate the planned completion date.

PROJECT PHASE	PLANNED COMPLETION DATE
INITIATION – Project concept is documented, local board or governing authority approval or endorsement is received, Text-to-9-1-1 grant application is filed, local budgets are obtained, appropriated grant funds are approved, and budgetary estimates are obtained.	09 / 30 / 19
DESIGN/PLANNING - Requirements are documented, components to be purchased are identified, and general design is documented.	01 / 01 / 20
ACQUISITION - RFP (or other bid related processes) are drafted, proposals are evaluated, contract is signed, purchase orders are issued, and quotes are obtained.	01 / 01 / 20
IMPLEMENTATION - Purchased components are delivered and installed and training is performed	03 / 31 / 20
TESTING/COMPLETION - Performance of system/solution is validated and system/solution goes "live"	06 / 30 / 20

BUDGET AND BUDGET NARRATIVE

List the planned expenditures to be made with grant funds. Briefly explain the reason for each requested budget item and provide the basis for its cost. In addition, if contingency cost has been added, please identify the amount.

NOTE: In lieu of a line item breakdown, an itemized cost schedule or detailed vendor prepared quote may be submitted as an attachment, but a narrative is still required. However, budgetary quotes received from a particular vendor(s) during the application process do not commit the PSAP to use that vendor(s) once the grant is awarded.

The budget for the project includes:

- $1,250 for one-time integration fee
- $1,800 per year for ITS Service (for up to 5 years)
- $1,500 per year for Text 2 911 recurring fee (for up to 5 years)

EVALUATION

How will the project as identified in the project description be evaluated and measured for achievement and success:

The project success criteria will be:
- Receipt of 911 test texts from the top 5 carriers and US Cellular.
- Receipt of 911 texts as part of the PSAP's routine operations.

TXT29-1-1

for

Twin County Regional 911 Commission, VA

(**Direct Sale)**

Quote Number: 30495

Version: 3

July 09, 2019

Summary All Sites - 5 Years

Item	Cost
Twin County Node A	$19,625.00
Wythe County Node B	$19,625.00
Bland County Remote	$8,750.00
Total:	**$48,000.00**

Year	Systems	Professional Services	Recurring Services	Maintenance Services	Totals
Year 1	$3,750.00	$3,750.00	$8,100.00		**$15,600.00**
Year 2			$8,100.00		**$8,100.00**
Year 3			$8,100.00		**$8,100.00**
Year 4			$8,100.00		**$8,100.00**
Year 5			$8,100.00		**$8,100.00**
Totals	**$3,750.00**	**$3,750.00**	**$40,500.00**		**$48,000.00**

July 09, 2019

Summary - 5 Years - Twin County Node A

Item	Cost
Systems	$1,875.00
Services	$1,250.00
Recurring Services	$16,500.00
Total:	**$19,625.00**

Year	Systems	Professional Services	Recurring Services	Maintenance Services	Totals
Year 1	$1,875.00	$1,250.00	$3,300.00		**$6,425.00**
Year 2			$3,300.00		**$3,300.00**
Year 3			$3,300.00		**$3,300.00**
Year 4			$3,300.00		**$3,300.00**
Year 5			$3,300.00		**$3,300.00**
Totals	**$1,875.00**	**$1,250.00**	**$16,500.00**		**$19,625.00**

July 09, 2019

Configuration Parameters - Twin County Node A

Site Configuration

Total Positions			4		

Model#	Description	Qty	List Price	Selling Price	Total
TXT29-1-1 Setup Fees					
ITXTOTF2	TXT29-1-1 P911 Integrated One-time-fee per PSAP (1-4 seats)	1	$1,250.00	$1,250.00	$1,250.00
P10063	ITS Equipment	1	$1,875.00	$1,875.00	$1,875.00
				Subtotal	**$3,125.00**
TXT29-1-1 Recurring Services					
P10062	ITS Service (Annual) Year 1	1	$1,800.00	$1,800.00	$1,800.00
ITXTARF1	TXT29-1-1 P911 Integrated Annual Recurring Fee per PSAP (1-4 Seats) Year 1	1	$1,500.00	$1,500.00	$1,500.00
P10062	ITS Service (Annual) Year 2	1	$1,800.00	$1,800.00	$1,800.00
ITXTARF1	TXT29-1-1 P911 Integrated Annual Recurring Fee per PSAP (1-4 Seats) Year 2	1	$1,500.00	$1,500.00	$1,500.00
P10062	ITS Service (Annual) Year 3	1	$1,800.00	$1,800.00	$1,800.00
ITXTARF1	TXT29-1-1 P911 Integrated Annual Recurring Fee per PSAP (1-4 Seats) Year 3	1	$1,500.00	$1,500.00	$1,500.00
P10062	ITS Service (Annual) Year 4	1	$1,800.00	$1,800.00	$1,800.00
ITXTARF1	TXT29-1-1 P911 Integrated Annual Recurring Fee per PSAP (1-4 Seats) Year 4	1	$1,500.00	$1,500.00	$1,500.00
P10062	ITS Service (Annual) Year 5	1	$1,800.00	$1,800.00	$1,800.00
ITXTARF1	TXT29-1-1 P911 Integrated Annual Recurring Fee per PSAP (1-4 Seats) Year 5	1	$1,500.00	$1,500.00	$1,500.00
				Subtotal	**$16,500.00**
				Total	**$19,625.00**

July 09, 2019

Summary - 5 Years - Wythe County Node B

Item	Cost
Systems	$1,875.00
Services	$1,250.00
Recurring Services	$16,500.00
Total:	**$19,625.00**

Year	Systems	Professional Services	Recurring Services	Maintenance Services	Totals
Year 1	$1,875.00	$1,250.00	$3,300.00		**$6,425.00**
Year 2			$3,300.00		**$3,300.00**
Year 3			$3,300.00		**$3,300.00**
Year 4			$3,300.00		**$3,300.00**
Year 5			$3,300.00		**$3,300.00**
Totals	**$1,875.00**	**$1,250.00**	**$16,500.00**		**$19,625.00**

July 09, 2019

Configuration Parameters - Wythe County Node B

Site Configuration

Total Positions				4	

Model#	Description	Qty	List Price	Selling Price	Total
TXT29-1-1 Setup Fees					
ITXTOTF2	TXT29-1-1 P911 Integrated One-time-fee per PSAP (1-4 seats)	1	$1,250.00	$1,250.00	$1,250.00
P10063	ITS Equipment	1	$1,875.00	$1,875.00	$1,875.00
				Subtotal	**$3,125.00**
TXT29-1-1 Recurring Services					
P10062	ITS Service (Annual) Year 1	1	$1,800.00	$1,800.00	$1,800.00
ITXTARF1	TXT29-1-1 P911 Integrated Annual Recurring Fee per PSAP (1-4 Seats) Year 1	1	$1,500.00	$1,500.00	$1,500.00
P10062	ITS Service (Annual) Year 2	1	$1,800.00	$1,800.00	$1,800.00
ITXTARF1	TXT29-1-1 P911 Integrated Annual Recurring Fee per PSAP (1-4 Seats) Year 2	1	$1,500.00	$1,500.00	$1,500.00
P10062	ITS Service (Annual) Year 3	1	$1,800.00	$1,800.00	$1,800.00
ITXTARF1	TXT29-1-1 P911 Integrated Annual Recurring Fee per PSAP (1-4 Seats) Year 3	1	$1,500.00	$1,500.00	$1,500.00
P10062	ITS Service (Annual) Year 4	1	$1,800.00	$1,800.00	$1,800.00
ITXTARF1	TXT29-1-1 P911 Integrated Annual Recurring Fee per PSAP (1-4 Seats) Year 4	1	$1,500.00	$1,500.00	$1,500.00
P10062	ITS Service (Annual) Year 5	1	$1,800.00	$1,800.00	$1,800.00
ITXTARF1	TXT29-1-1 P911 Integrated Annual Recurring Fee per PSAP (1-4 Seats) Year 5	1	$1,500.00	$1,500.00	$1,500.00
				Subtotal	**$16,500.00**
				Total	**$19,625.00**

July 09, 2019

Summary - 5 Years - Bland County Remote

Item	Cost
Services	$1,250.00
Recurring Services	$7,500.00
Total:	**$8,750.00**

Year	Systems	Professional Services	Recurring Services	Maintenance Services	Totals
Year 1		$1,250.00	$1,500.00		**$2,750.00**
Year 2			$1,500.00		**$1,500.00**
Year 3			$1,500.00		**$1,500.00**
Year 4			$1,500.00		**$1,500.00**
Year 5			$1,500.00		**$1,500.00**
Totals		**$1,250.00**	**$7,500.00**		**$8,750.00**

July 09, 2019

Configuration Parameters - Bland County Remote

Site Configuration

Total Positions	2

Model#	Description	Qty	List Price	Selling Price	Total
TXT29-1-1 Setup Fees					
ITXTOTF2	TXT29-1-1 P911 Integrated One-time-fee per PSAP (1-4 seats)	1	$1,250.00	$1,250.00	$1,250.00
				Subtotal	**$1,250.00**
TXT29-1-1 Recurring Services					
ITXTARF1	TXT29-1-1 P911 Integrated Annual Recurring Fee per PSAP (1-4 Seats) Year 1	1	$1,500.00	$1,500.00	$1,500.00
ITXTARF1	TXT29-1-1 P911 Integrated Annual Recurring Fee per PSAP (1-4 Seats) Year 2	1	$1,500.00	$1,500.00	$1,500.00
ITXTARF1	TXT29-1-1 P911 Integrated Annual Recurring Fee per PSAP (1-4 Seats) Year 3	1	$1,500.00	$1,500.00	$1,500.00
ITXTARF1	TXT29-1-1 P911 Integrated Annual Recurring Fee per PSAP (1-4 Seats) Year 4	1	$1,500.00	$1,500.00	$1,500.00
ITXTARF1	TXT29-1-1 P911 Integrated Annual Recurring Fee per PSAP (1-4 Seats) Year 5	1	$1,500.00	$1,500.00	$1,500.00
				Subtotal	**$7,500.00**
				Total	**$8,750.00**

July 09, 2019

Notes

1 ITS provides an alternative to customers that have not purchased our platinum level A9-1-1 Routing Service which provides 9-1-1 calls and signaling over redundant diverse MPLS links between the West Safety Solutions Corp. Data Center and the customer facility. The ITS solution establishes a secure VPN between the customer facility and the West Safety Solutions Corp. Data Center over a VPN utilizing the customer's Public IP connection.

Please note that the Installation services are already included and are based on the following part numbers:
- 950104 – Professional Services (Per Day)
- 960575 – Living Expenses (Per Day)
- 960580 – Travel Fee (Per Person)

2 West Safety Solutions, Corp's fully integrated Text to 9-1-1 solution is incorporated into the Power 9-1-1 display complete with drop down text. Text messages "ring" just like 9-1-1 calls coming in and are routed under the same routing/ACD rules applied by the PSAP. Text sessions can be transferred to any enabled user on the Viper system. All wireless carriers currently enabling text messaging can be reached through this system.

Pricing is based on the number of positions and PSAPs in the quote. The only variable cost is related to connectivity and the network engineering hours needed to configure the connectivity based upon the PSAP's requirements. Connectivity is available via the A9-1-1 ESInet or the PSAP's internet interface, which will be secured by West Safety Solutions, Corp.

TXT29-1-1 services will be provided in accordance with the applicable Service Guide at https://www.west.com/legal-privacy/terms/#call-handling.

PSAP billing will begin upon completion of deployment and text readiness delivery from West to the PSAP. Completion is defined as the PSAP being able to accept text messages.

Billing and the term commencement for the services will begin when the Services are first made available for Customer's use, and will continue for the designated number of months as stated in this Quote.

July 09, 2019

Terms

VENDOR NAME

West Safety Solutions Corp
1601 Dry Creek Drive
Longmont, CO 80503

Include quote number and customer EIN/Tax Identification Number on P.O.

SUBMIT P.O.

ordermanagement.safetyservices@west.com

PRICING

All prices are in USD
Taxes, if applicable, are extra.
Handling and Shipping charges are extra unless specified on the quote.

SHIPPING TERMS

FCA (Montreal), INCOTERMS 2010

PAYMENT

Per Contract

DELIVERY

TBD

VALIDITY

Quote expires on November 06, 2019. However, part numbers beginning with Q, such as QXXXXX, constitute unique third-party components. These components, including model and price, (i) may be subject to change at any time; and (ii) are non-cancellable, non-refundable, and non-exchangeable at any time.

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30495 v3- Twin County Regional 911
Commission, VA

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July 09, 2019

TEXT-TO-9-1-1
GRANT PROGRAM APPLICATION

VIRGINIA INFORMATION

TECHNOLOGIES AGENCY

Integrated Services Division

TEXT-TO-9-1-1
GRANT PROGRAM APPLICATION

HOW TO APPLY/DEADLINE

The Virginia General Assembly adopted legislation that requires each Public Safety Answering Point (PSAP), by July 1, 2020, to be able to receive and process calls for emergency assistance sent via text message. The PSAP Grant Program provides funding to localities to implement Text-to-9-1-1. A grant application is available from the ISP website. Completed grant applications should be sent to the psapgrants@vita.virginia.gov electronic mailbox, along with any supporting documentation. Upon submission, an email receipt notification will be sent to the e-mail address listed on the application received. A Grant ID will be included in the grant award letter.

All funding requests **must** be submitted using the Text-to-9-1-1 grant application. The funding cycle for the Text-to-9-1-1 Program begins on July 1, 2019 and will remain open throughout the NG9-1-1 deployment period. Applications will be reviewed based on the NG9-1-1 submission deadlines provided on the NG9-1-1 Depoyment Webpage. Technical assistance is available from VITA's Public Safety Communications and Regional Outreach staff throughout the funding cycle.

ALL APPLICABLE SECTIONS MUST BE COMPLETED IN ITS ENTIRETY OR THE APPLICATION WILL BE CONSIDERED INCOMPLETE AND NOT ACCEPTED FOR CONSIDERATION.

TEXT-TO-9-1-1 GRANT APPLICATION

GRANT APPLICANT PROFILE/PROJECT CONTACT

PSAP/HOST PSAP NAME: Nelson County Emergency Communications
CONTACT TITLE: Director of Information Systems
CONTACT FIRST NAME: Susan
CONTACT LAST NAME: Rorrer
ADDRESS 1: 84 Courthouse Square
ADDRESS 2: PO Box 336
CITY: Lovingston
ZIP CODE: 22949
CONTACT EMAIL: srorrer@nelsoncounty.org
CONTACT PHONE NUMBER: 434-263-7120
CONTACT MOBILE NUMBER: 434-989-6347
CONTACT FAX NUMBER: 494-263-7004
REGIONAL COORDINATOR: Melissa Parsons

GRANT TYPE IS INDIVIDAUL PSAP

FINANCIAL DATA (MAXIMUM AWARD $50,000)

Amount Requested: $ $50,000.00
Total Project Cost: $ 56,832.09

PROJECT DESCRIPTION

Provide a detailed description of the project for which funding is being sought, including the impact on operational services and consequences of not receiving funding; the relationship to local strategic and capital improvement plans; and sustainability:

The proposed Text to 911 project will implement the Vesta SMS Text to 911 solution as detailed in the attached quotes from Century Link. The County anticipates the use of West as the TCC provider and will provide the required internet connectivity to the West TCC's.

The solution will improve 911 call handling capabilities in the 911 center by providing citizens with an alternative means of communicating their emergency to 911 call handlers.

Without funding through the VITA Text to 911 Grant implementation may be delayed until such time as NG911 is deployed.

This project will assist the County in meeting the strategic goals of the Nelson ECC. The County is committed to maintaing the solution and covering any costs of operation for which grant funding is unavailable for the life of the service.

PROJECT GOAL

Describe how this project meets the legislative mandate, addresses locally identified need(s), and supports the Virginia 9-1-1 Comprehensive Plan:

This project will deploy the equipment, products, and services necessary or appropriate to enable the PSAP to receive and process calls for emergency assistance sent via Short Message Service (SMS) text messages as required by the Commonwealth of Virginia.

The project supports the vision of the Virginia 9-1-1 Comprehensive Plan by providing the public with an alternative to traditional voice communications for communicating emergency information to aid in the delivery of a rapid, reliable and accurate emergency response.

PROJECT OBJECTIVES

Describe the objectives that will support the goals identified above:

1) Purchase and install equipment to support the Text to 911 solution.
2) Notify carriers of request to receive Text to 911 messages.
3) Provide internet access to vendor for access to TCC's.
4) Complete steps 1 and 2 and test to ensure proper delivery of messages.
5) Train users.

IMPLEMENTATION PLAN

For each applicable phase of the project, indicate the planned completion date.

PROJECT PHASE	PLANNED COMPLETION DATE
INITIATION – Project concept is documented, local board or governing authority approval or endorsement is received, Text-to-9-1-1 grant application is filed, local budgets are obtained, appropriated grant funds are approved, and budgetary estimates are obtained.	09 / 30 / 19
DESIGN/PLANNING - Requirements are documented, components to be purchased are identified, and general design is documented.	09/ 30 / 19
ACQUISITION - RFP (or other bid related processes) are drafted, proposals are evaluated, contract is signed, purchase orders are issued, and quotes are obtained.	10 / 31 / 19
IMPLEMENTATION - Purchased components are delivered and installed and training is performed	01 / 31 / 20
TESTING/COMPLETION - Performance of system/solution is validated and system/solution goes "live"	04 / 30 / 20

BUDGET AND BUDGET NARRATIVE

List the planned expenditures to be made with grant funds. Briefly explain the reason for each requested budget item and provide the basis for its cost. In addition, if contingency cost has been added, please identify the amount.

NOTE: In lieu of a line item breakdown, an itemized cost schedule or detailed vendor prepared quote may be submitted as an attachment, but a narrative is still required. However, budgetary quotes received from a particular vendor(s) during the application process do not commit the PSAP to use that vendor(s) once the grant is awarded.

See attached quotes.

The attached quotes detail the equipment and services required to implement and operate a 5 position Vesta Text to 911 solution including two years of TCC provider support .

The quote also includes an option to provide for redundancy.

EVALUATION

How will the project as identified in the project description be evaluated and measured for achievement and success:

Following the installation, testing will be completed to determine that the solution is performing to the agreed upon specifications and that the integration with other systems is working properly.

BUDGETARY QUOTE

CenturyLink® Business

Customer:	E911 Nelson County
Quote #:	VA-CTL77382
Project Name:	SMS TXT2911 Implementation
Created On:	5/14/2019
Expiration Date:	7/13/2019
Account Manager:	Jason Bruce
Sales Engineer:	Steve Deloach
Customer Notes:	This quote is to implement TXT2911. TCC Charges are not included in this quote. County would need to select TCC provider for Integrated TXT2911 with the Vesta. Additional firewalls included for High Availability.

Catalog Number	Description	Unit Price	Qty	Total Price	Contract Term (Months)
LOCATION: Host - Nelson Co SO					
Materials					
03800-03060	FIREWALL 60E	$ 721.52	2	$ 1,443.04	
Support					
809810-00102	V911 ADV DATA LVL 1 ANNUAL SUB	$ -	1	$ -	48
809810-00102	V911 ADV DATA LVL 1 ANNUAL SUB	$ -	1	$ -	48
809810-00102	V911 ADV DATA LVL 1 ANNUAL SUB	$ -	1	$ -	48
809810-00102	V911 ADV DATA LVL 1 ANNUAL SUB	$ -	1	$ -	48
03800-03064	WARR FIREWALL 60E 4YR	$ 836.71	2	$ 1,673.42	48
Implementation					
QINTR-AIRBUS	Integration	$ 9,079.40	1	$ 9,079.40	
809800-00201	VPN CFG SVCS	$ 253.16	2	$ 506.32	
809800-SMSSVCS-E	VESTA SMS IMP SVCS - EXPRESS	$ 12,527.85	1	$ 12,527.85	
000001-06806	E-LEARN V9-1-1 SMS AGENT DELTA TRNG	$ 373.42	2	$ 746.84	
Shipping and					
Shipping & Handling	Shipping & Handling	$ 50.00	1	$ 50.00	
		Location Sub-Total	$	26,026.87	
LOCATION: Remote - Wintergreen					
Implementation					
809800-17006-SMS	FIELD ENG-EXPRESS SMS-Config	$ 92.41	16	$ 1,478.56	
809800-17006-SMS	FIELD ENG-EXPRESS SMS-PM	$ 92.41	16	$ 1,478.56	
		Materials Total		**$1,443.04**	
		Support Services Total		**$1,673.42**	
		Implementation Total		**$25,817.53**	

		Shipping and Handling Total			$50.00	
		Grand Total Price to Customer			**$28,983.99**	

Note: This is a budgetary quote. Changes to configuration may result in pricing changes. This quote also excludes sales tax, which will be added to the invoice.

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Customer: E911 Nelson County
Quote #: VA-CTL77382
Project Name: SMS TXT2911 Implementation-TCC
Created On: 6/19/2019
Expiration Date: 8/18/2019
Account Manager: Jason Bruce
Sales Engineer: Steve Deloach

CenturyLink®
Business

Customer Notes: This quote is to implement TXT2911. TCC Charges are included in this quote. County would utilize West as TCC provider for Integrated TXT2911 with the Vesta. Customer will need to provide Internet Access to the West TCC's. Quote is for only 24 months of service.

Catalog Number	Description	Unit Price	Qty	Total Price	Contract Term (Months)
LOCATION: Nelson County-TCC					
Materials					
ATXTOTF2	TXT29-1-1 Integrated One-time-fee per PSAP- (5-10 seats)	$ 4,113.92	1	$ 4,113.92	
P10063	ITS Equipment	$ 2,373.42	1	$ 2,373.42	
Support					
P10062	ITS Service (Annual) Year 1	$ 2,278.48	1	$ 2,278.48	12
ATXTARF2	TXT29-1-1 AirBus Integrated Annual Recurring Fee per PSAP (5-10 Seats) Year 1	$ 4,936.71	1	$ 4,936.71	12
P10062	ITS Service (Annual) Year 1	$ 2,278.48	1	$ 2,278.48	12
ATXTARF2	TXT29-1-1 AirBus Integrated Annual Recurring Fee per PSAP (5-10 Seats) Year 1	$ 4,936.71	1	$ 4,936.71	12
			Location Sub-Total $	20,917.72	
LOCATION: Nelson County-TCC-Redundancy - Optional					
Materials					
P10063	ITS Equipment	$ 2,373.42	1	$ 2,373.42	
Support					
P10062	ITS Service (Annual)-Year 1	$ 2,278.48	1	$ 2,278.48	12
P10062	ITS Service (Annual)-Year 2	$ 2,278.48	1	$ 2,278.48	12
Implementation					
Shipping and Handling					
Shipping & Handling	Shipping & Handling	$ -	1	$ -	
			Location Sub-Total $	6,930.38	
		Grand Total Price to Customer		**$27,848.10**	

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Note: Changes to configuration may result in pricing changes. This quote also excludes sales tax, which will be added to the invoice. Any expedite fees incurred after quote acceptance will be added to the invoice.

This quote is subject to the agreement currently in force between CenturyLink and Customer under which Customer has agreed to the terms and conditions for purchase of equipment and any associated installation and maintenance (the "Agreement"). This quote will not become effective unless and until CenturyLink and Customer have executed the Agreement referenced in this section.

Customer Representative: _____

Customer Signature: _____

Job Title: _____

Date: _____

CenturyLink Representative: _____

CenturyLink Signature: _____

Job Title: _____

Date: _____

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TEXT-TO-9-1-1
GRANT PROGRAM APPLICATION

VIRGINIA INFORMATION

TECHNOLOGIES AGENCY

Integrated Services Division

TEXT-TO-9-1-1 GRANT APPLICATION

TEXT-TO-9-1-1
GRANT PROGRAM APPLICATION

HOW TO APPLY/DEADLINE

The Virginia General Assembly adopted legislation that requires each Public Safety Answering Point (PSAP), by July 1, 2020, to be able to receive and process calls for emergency assistance sent via text message. The PSAP Grant Program provides funding to localities to implement Text-to-9-1-1. A grant application is available from the ISP website. Completed grant applications should be sent to the psapgrants@vita.virginia.gov electronic mailbox, along with any supporting documentation. Upon submission, an email receipt notification will be sent to the e-mail address listed on the application received. A Grant ID will be included in the grant award letter.

All funding requests **must** be submitted using the Text-to-9-1-1 grant application. The funding cycle for the Text-to-9-1-1 Program begins on July 1, 2019 and will remain open throughout the NG9-1-1 deployment period. Applications will be reviewed based on the NG9-1-1 submission deadlines provided on the NG9-1-1 Depoyment Webpage. Technical assistance is available from VITA's Public Safety Communications and Regional Outreach staff throughout the funding cycle.

ALL APPLICABLE SECTIONS MUST BE COMPLETED IN ITS ENTIRETY OR THE APPLICATION WILL BE CONSIDERED INCOMPLETE AND NOT ACCEPTED FOR CONSIDERATION.

TEXT-TO-9-1-1 GRANT APPLICATION

GRANT APPLICANT PROFILE/PROJECT CONTACT

PSAP/HOST PSAP NAME: Bland County

CONTACT TITLE: 911/Emergency Services Coordinator

CONTACT FIRST NAME: Jenna

CONTACT LAST NAME: Dunn

ADDRESS 1: 612 Main St # 203

ADDRESS 2: *Click here to enter text*

CITY: Bland

ZIP CODE: 24315

CONTACT EMAIL: jdunn@bland.org

CONTACT PHONE NUMBER: 276-688-4641

CONTACT MOBILE NUMBER: 276-613-2764

CONTACT FAX NUMBER: 276-688-9758

REGIONAL COORDINATOR: Tim Addington

GRANT TYPE IS INDIVIDAUL PSAP

FINANCIAL DATA (MAXIMUM AWARD $50,000)

Amount Requested: $ 8,750

Total Project Cost: $ 8,750

PROJECT DESCRIPTION

Provide a detailed description of the project for which funding is being sought, including the impact on operational services and consequences of not receiving funding; the relationship to local strategic and capital improvement plans; and sustainability:

Funding is being sought to enable Text 2 911 for the interim period between the legislatively mandated timeline and NG911 deployment. If funding is not received, the agency may not be able to deploy the Text 2 911 by the deadline. Text 2 911 will be part of the NG911 connectivity estimate. The jurisdiction is aware of the funding increase for NG911, and is building the increase into the FY2023 budget process.

PROJECT GOAL

Describe how this project meets the legislative mandate, addresses locally identified need(s), and supports the Virginia 9-1-1 Comprehensive Plan:

The project enables the locality to implement the Text 2 911 prior to the July 1, 2020 deadline. It also will provide an additional means for local citizens, visitors and especially the hearing impaired community to reach 911. Enabling Text 2 911 is also recommended in the Virginia 9-1-1 Compreshensive Plan.

PROJECT OBJECTIVES

Describe the objectives that will support the goals identified above:

The objective are:
- To enable text to 911 for the geo-diverse Call Handling Equipment jurisdictions: Bland, Carroll, Galax, Grayson, Wythe, Wytheville with critical cellular carriers.
- To publicize the capability in the communities.

IMPLEMENTATION PLAN

For each applicable phase of the project, indicate the planned completion date.

PROJECT PHASE	PLANNED COMPLETION DATE
INITIATION – Project concept is documented, local board or governing authority approval or endorsement is received, Text-to-9-1-1 grant application is filed, local budgets are obtained, appropriated grant funds are approved, and budgetary estimates are obtained.	**09 / 30 / 19**
DESIGN/PLANNING - Requirements are documented, components to be purchased are identified, and general design is documented.	**01 / 01 / 20**
ACQUISITION - RFP (or other bid related processes) are drafted, proposals are evaluated, contract is signed, purchase orders are issued, and quotes are obtained.	**01 / 01 / 20**
IMPLEMENTATION - Purchased components are delivered and installed and training is performed	**03 / 31 / 20**
TESTING/COMPLETION - Performance of system/solution is validated and system/solution goes "live"	**06 / 30 / 20**

BUDGET AND BUDGET NARRATIVE

List the planned expenditures to be made with grant funds. Briefly explain the reason for each requested budget item and provide the basis for its cost. In addition, if contingency cost has been added, please identify the amount.

NOTE: In lieu of a line item breakdown, an itemized cost schedule or detailed vendor prepared quote may be submitted as an attachment, but a narrative is still required. However, budgetary quotes received from a particular vendor(s) during the application process do not commit the PSAP to use that vendor(s) once the grant is awarded.

The budget for the project includes:

- $1,250 for one-time integration fee
- $1,500 per year for Text 2 911 recurring fee (for up to 5 years)

EVALUATION

How will the project as identified in the project description be evaluated and measured for achievement and success:

The project success criteria will be:
- Receipt of 911 test texts from the top 5 carriers and US Cellular.
- Receipt of 911 texts as part of the PSAP's routine operations.

NG9-1-1 Funding Award Amendment Requests
September 12, 2019 Meeting of the 9-1-1 Services Board

PSAP	Item	Amount to Add		Total to Add		Original Award		New Total Award
Alexandria	Legacy 9-1-1 transition costs	$	31,160.70					
	CHE upgrade	$	30,000.00					
	"Whole Dollar" on app - already in line items but not in total	$	0.12					
	TOTAL			$	61,160.82	$	80,191.00	$ 141,351.82
Arlington	Legacy 9-1-1 transition costs	$	111,482.10					
	CHE upgrade	$	30,000.00					
	TOTAL			$	141,482.10	$	31,000.00	$ 172,482.10
Fairfax	Legacy 9-1-1 transition costs	$	295,074.00					
	CHE upgrade	$	30,000.00					
	TOTAL			$	325,074.00	$	1,401,896.56	$ 1,726,970.56
Fauquier	Legacy 9-1-1 transition costs	$	8,526.30					
	CHE upgrade	$	30,000.00					
	TOTAL			$	38,526.30	$	321,568.24	$ 360,094.54
Loudoun	Legacy 9-1-1 transition costs	$	76,678.50					
	CHE upgrade	$	15,000.00					
	TOTAL			$	91,678.50	$	497,257.04	$ 588,935.54
Prince William	Legacy 9-1-1 transition costs	$	52,059.90					
	CHE upgrade	$	30,000.00					
	TOTAL			$	82,059.90	$	1,034,686.72	$ 1,116,746.62
Stafford	Legacy 9-1-1 transition costs	$	12,134.70					
	CHE upgrade	$	15,000.00					
	Additional On-Site Connectivity Placement	$	41,636.54					
	Total approved previously $0.05 too low		$0.05					
	TOTAL			$	68,771.29	$	327,448.81	$ 396,220.10

	Total to Add			**$ 808,752.91**	

Virginia Information Technologies Agency

VITA

9-1-1

Commonwealth of Virginia
Next Generation 9-1-1

York-Poquoson-Williamsburg
PSAP/GIS Specific
NG9-1-1 Migration Proposal

www.vita.virginia.gov

Executive Summary

This migration proposal is being prepared for the **York-Poquoson-Williamsburg PSAP** based on the Fairfax County contract with **AT&T**. **Terry Hall** shall be the primary contact.

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, capabilities and functionality of an 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 aid that decision, the 9-1-1 Services Board (the Board) adopted the Virginia NG9-1-1 Deployment Plan in January 2018. That plan proposed the methodology and process to guide the 9-1-1 Services 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. Though the Board is recommending the Fairfax County contract with AT&T for NG9-1-1 services since it was awarded through a competitive process, each locality will need to determine the most appropriate path. 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.

A Migration Proposal is being developed for each locality (or groups of localities if served by a consolidated public safety answering point or PSAP) to provide information about the AT&T solution, prerequisite work needed within the PSAP and the expected costs and funding provided by the Board. The goal of this document is to provide each PSAP/locality with all of the information needed to evaluate the AT&T solution and determine whether it will meet the local needs. No locality should feel obligated to accept this proposal as they may use an appropriate procurement process for these services. This is simply to provide more information about services that are already available through an existing contract.

The Commonwealth's goal is to have all PSAPs fully deployed with the National Emergency Number Association (NENA) i3 standard. This standard states that all 9-1-1 calls are delivered to the PSAP on IP circuits with associated caller location data. If the equipment or GIS data in the PSAP is not capable of supporting the NENA i3 standard, interim solutions are available. These solutions allow calls to be delivered to the PSAP as IP, but then be converted back to analog for interface with the PSAP's systems. This interim solution established the PSAP's connection to the ESInet and will serve as the initial migration to NG9-1-1. After system and/or GIS data upgrades are complete the PSAP will be able to reach a full i3, NG9-1-1 environment. While AT&T will conduct a more exhaustive assessment after the PSAP executes a participation agreement, the review ISP performed for this proposal indicates that the **York-Poquoson-Williamsburg PSAP** will be able to implement the full NENA i3 standard without the need for any interim or transitional steps. Some work on their GIS data will be required, but it should not impact the deployment schedule.

Solution Overview

AT&T is offering their Next Generation ESInet solution throughout Virginia as a solution that will facilitate a transition from legacy 9-1-1 networks to networks capable of supporting the growing demands of a mobile society. AT&T's solution supports key NENA i3 capabilities today, while forming the basis of a true NG9-1-1 platform that will support multimedia emergency services as standards are solidified in the industry.

The AT&T ESInet™ solution is a combination of a world class IP network and the NG9-1-1 components. Their ESInet solution (delivered as a service) comes complete with a full suite of advanced features, management services and tools to help ensure they provide the best possible service to each PSAP and ultimately the citizens they serve.

The AT&T ESInet™ solution provides the public safety community with an i3 architecture built from the ground up. AT&T's commitment to the NENA i3 standard is based on years of contributions to NENA standards committees and understanding the evolving needs and requirements of the Public Safety community. The AT&T solution is not just "i3 like," or "i3 aligned." As elements of the i3 standard continue to be ratified, updated and enhanced—AT&T will continue its commitment to i3. The AT&T ESInet™ services will provide Virginia everything needed to deliver the critical foundational components of an industry standard i3 solution delivered over the worlds most advanced IP network.

AT&T ESInet™ Included Features

- Initial build-out with expandable capacity
- Nationally distributed, geographically diverse and redundant service architecture
- Pre-deployed ESInet Call Processing Centers in AT&T datacenters across US
- Aggregation Centers (AGC) in AT&T Central Offices across the US to easily augment growth capacity
- Initial call processing capacity more than twice current US E9-1-1 call volumes
- NENA i3 compliant
- High availability design (99.999% availability)
- 6 core redundant architecture
- Redundant ALI database
- Interoperable with neighboring PSAPs
- Defense in depth security
- Text to 911 – National TCC Provider
- IPV6 capable
- Reporting Suite
- Full lifecycle management
- End to end management and monitoring
- Fully resourced team to install and support
- Full Business Continuity/Disaster Recovery organization
- Dedicated Program / Service Manager

The proposed solution provides a secure IP-based network with no single point of failure. With no single point of failure, the solution includes six ESInet data centers located at AT&T facilities throughout the country. The ESInet will provide the core for a robust emergency services IP network that assures call delivery. The AT&T solution enables call delivery into a legacy PSAP environment, an IP-enabled 9-1-1 PSAP, or to peer ESInets. AT&T and West Corporation have deep security and support provisions in

place. AT&T has demonstrated experience in cybersecurity. All of this is backed by AT&T's 24/7/365 Resolution Center, AT&T Labs, AT&T's world class project management and service delivery organizations.

Additional information about the AT&T solutions and the contract with Fairfax County can be found at:

https://www.fairfaxcounty.gov/cregister/ContractDetails.aspx?contractNumber=4400007825

PSAP Call Handling Systems and Applications

Each PSAP system and application that interfaces with the 9-1-1 call must be assessed to determine if it will be compatible with NG9-1-1. This section of the migration proposal identifies each major system, assesses its readiness and outlines any upgrades that must or could be implemented with NG9-1-1.

Call Handling Equipment

Obviously, the PSAP's call handling equipment (CHE) is the primary system that interfaces with the 9-1-1 network. As such, it is likely the one that will require the deepest assessment and potential upgrades to operate with the NG9-1-1 network. CHE that is non-vendor supported (NVS) (or will become NVS during the transition period) or cannot be upgraded to be NG9-1-1 capable will be identified for replacement, but will be subject to the funding limits currently in place for the PSAP grant program ($150,000 individual or $200,000 shared services). This may also apply to technology refreshes of hardware due to becoming NVS or operating systems becoming end-of-support. The current CHE in the PSAP has been identified as:

- CHE manufacturer: **Motorola**
- CHE model: **Vesta 9-1-1**
- CHE version number (clients): **6.1**
- CHE version number (server): **6.1**
- CHE maintenance provider (channel): **Motorola**
- CHE Geodiversity: **No**
- Number of positions: **16**
- SIP capable: **Yes**

This CHE has been determined to be SIP capable, but will require an upgrade to version 7.2 to implement the full i3 interface. This upgrade from version 6.1 should be at no cost, but will require the purchase of two firewalls to connect to the ESInet. However, if the PSAP deploys text to 9-1-1 with the integrated solution prior to NG9-1-1 migration, these firewalls will already have been purchased and can be used for both purposes.

Text to 9-1-1

Text to 9-1-1 can be deployed web-based on a separate computer or integrated with the CHE. While the former is typically at no cost, the latter tends to have a cost associated with it. Though text to 9-1-1 will be a base feature of NG9-1-1, the passage of Senate Bill 418 in the 2018 General Assembly requires all PSAPs to implement text to 9-1-1 by July 1, 2020. Prior to this requirement, the PSAP has implemented the web-based solution for text to 9-1-1. While this meets the legislative requirement, the PSAP will be upgraded to the direct IP solution with the implementation of NG9-1-1. The new CHE version will be capable of the text to 9-1-1 direct IP solution.

Computer-Aided Dispatch

A computer-aided dispatch (CAD) system usually receives 9-1-1 location information (ALI) through an interface with the CHE. As a result, the change to NG9-1-1 should not have an impact on a CAD system. However, an assessment is made to determine if that is the case and if any options are available from the CAD vendor that could improve operations after NG9-1-1 is deployed. Any required upgrades would be funded through the Board, but any options to improve operations would be at the PSAP's expense. Additionally, as a reminder, CAD system replacement is no longer funded through the PSAP grant program so PSAPs need to plan for its replacement locally. The current CAD system has been identified as follows:

- CAD vendor: **Motorola**
- CAD software version: **Premier One V4.2**
- CAD interfaces: **ALI data interface to CAD**
- Method of data transfer: **IP**

This CAD system has been determined to not require any upgrade or modification with the deployment of NG9-1-1.

Mapping Display System

Similar to a CAD system, a mapping display system usually receives 9-1-1 location information (ALI) through an interface with the CHE or is part of the CHE or CAD. As a result, the change to NG9-1-1 should not have an impact on a mapping display system. However, an assessment is made to determine if that is the case and if any options are available from the mapping vendor that could improve operations after NG9-1-1 is deployed. The current mapping display system has been identified as follows:

- Dispatch Mapping Vendor: **Motorola**
- Dispatch Mapping Software Version: **Premier One V4.2**
- Method of data transfer: **Through CAD**

This mapping display system has been determined to not require any upgrade or modification with the deployment of NG9-1-1.

Voice Logging and Recording

Typically, the audio recorded by a voice logging recorder is generated by the CHE. Though not a best practice, it is possible to record audio directly from the incoming 9-1-1 trunks so an assessment must be performed to ensure that audio from 9-1-1 calls will still be recorded after the deployment of NG9-1-1. The current logging system has been identified as follows:

- Logging Recorder Vendor: **Applied Digital Solutions/Dictaphone/NICE**
- Logging Recorder Model: **Nice**
- Logging Recorder Software Version: **3.1**
- Audio Origination Point: **Both trunk-based or position-based.**

This voice logging recorder system has been determined to not require any upgrade or modification with the deployment of NG9-1-1. It is important to note that while trunk-based recording is possible with NG9-1-1, it will not mirror current functionality. Currently, with analog trunks, trunk-based recording allows the audio to be captured before the call is answered by the call taker and the call is still in queue. With an IP connection, the audio is not present on the circuit until the CHE responds with an answer code. This is usually not until it is answered by a call taker, though it could be earlier if an audio

message is played for the caller (which technically requires the CHE to answer the call to play the message).

Data Analytics

Though the ECaTS data analytics application is provided to all PSAPs by the 9-1-1 Services Board, some PSAPs still use a second application, native to the CHE, for data analytics in the PSAP. While the Board will directly fund the upgrade to ECaTS to handle NG9-1-1, the local data analytics application may also need to be upgraded. The current data analytics application has been identified as follows:

- Primary Data Analytics System: **Motorola**
- Data Analytics Vendor: **Aurora / Analytics 2.4 Build 515.0**

This data analytics system has been determined to not require any upgrade or modification with the deployment of NG9-1-1.

Outcall Notification Systems

The PSAP currently uses **Vesta Alert** as their outcall notification system. AT&T will provide quarterly subscriber data for use in this system at no cost. It is important to note that this data's use is limited to the outcall notification system and cannot be used for other purposes.

Other Systems or Applications

No other systems, that interface with the 9-1-1 call flow have been identified that will impact the PSAP's readiness for NG9-1-1.

Rack Space

The AT&T solution requires four units (4U) of rack space in the PSAP equipment/computer room for networking equipment. The rack must also have available electrical connections and be properly grounded. The PSAP has confirmed that this space is currently or will be available.

Coordination with Open Grants

The PSAP currently has no open grants, as of June 30, 2018, that would impact NG9-1-1 deployment.

GIS Data Preparation

GIS Data Sources

Currently, the **York-Poquoson-Williamsburg PSAP** maintains all of the GIS data for the PSAP and will be the source for all GIS data required for NG9-1-1 geospatial routing; however, other departments within the locality may contribute data or manage various processes. It is the responsibility of the PSAP to aggregate the GIS data required for the PSAP and NG9-1-1.

Locality GIS Data Readiness

Geospatial data drives the routing of NG9-1-1 calls. It is imperative that road centerline and address point data layers are highly accurate and well maintained. In 2016, VITA conducted an analysis of these data against the existing automatic location identification (ALI) database and master street address guide (MSAG) to help determine readiness and provided a report to each PSAP of the results. This analysis has been repeated making adjustment to the logic to ensure it matches the methodology used by AT&T in their analysis. The goal is to have 98% of all addresses in the current ALI database geocode against the locality's road centerline data layer. Once the 98% threshold recommended by NENA is met, the PSAP is ready to deploy NG9-1-1. Since matching to the address point is more accurate, VITA is recommending the additional goal of matching 98% of ALI database addresses when geocoded against

the address point data layer. If either of these goals in not achieved, then GIS data work must be completed to meet or exceed these goals. While financial support from the PSAP grant program may be available to fund this work, localities with GIS programs will be encouraged to make the necessary corrections in house if resources and time before deployment permits.

These are preliminary results based on expected data criteria of AT&T, and will be retested directly by AT&T after the execution of the participation agreement. This analysis provides the PSAP and their GIS support with an estimate of the extent of potential errors and helps identify the issues that need to be resolved. ISP staff including a GIS analyst and/or regional coordinator will begin working with the GIS data maintenance provider (internal or external) to identify and correct the GIS data or ALI data and achieve a higher match rate and thus more accurate geospatial routing.

Though there are other types of errors that may exist in the GIS data used by the PSAP (such as parity or cartography errors), these do not usually impact the routing of a 9-1-1 call. As a result, as part of this effort, only corrections that impact routing the 9-1-1 call will be required. PSAPs, in coordination with their GIS support, are encouraged to look more broadly at their data and work to improve its overall quality as well.

The 2018 MSAG/ALI/GIS analysis for the PSAP determined the current match rate to be as follows:

PSAP	Road Centerline (RCL)	Address Point
York County	75.7%	82.2%
City of Poquoson	99.5%	98.1%
City of Williamsburg	94.8%	95.5%

The primary issue with the RCL data is differences in street names between the ALI and GIS data. Correcting the street names so they match would increase the match rate for RCL to **81.2%** in **York County**. The analysis also determined that no more than ten addresses were responsible for many of the address point discrepancies. Resolving no more than ten addresses in **York County** will increase the result to **98.9%**. During July 2018, VITA will send each PSAP and GIS manager a report detailing this analysis, and identifying the specific ALI records that could not be matched to the RCL or address point data. To resolve these ALI address discrepancies, there are potentially four actions that will need to take place:

1. **Add a record to the GIS** – When the ALI database has correct addresses that have not been added to the GIS data, the addition of data needs to occur. This may entail adding a road segment to the RCL or a point to the address points.
2. **Change attribution in the GIS** – When an ALI record has a correct address but the RCL or address point attribution is incorrect the discrepancy in the GIS data must be resolved. A common issue is a difference with the street name or street type between the ALI and the GIS data. Often, this issue can be corrected using a batch script process. VITA staff can assist.
3. **Change attribution in the ALI database** – When the RCL or address point has the correct address but the ALI record is incorrect, the discrepancy in the ALI database may need to be resolved. Again, this is often caused by differences in the street name or street type between the records. If necessary, AT&T can make batch changes as they load the ALI database into the ESInet.
4. **Determine that the discrepancy is not an error** – There are often ALI records associated with telephone numbers that can never actually dial 9-1-1. They could be pilot numbers for a multi-line telephone system, foreign exchanges or shell records for wireless calls. While many of those records were filtered out of the analysis, some may still be within the data.

These ALI records need to be identified and removed from the match rate calculation. VITA staff will assist with this process.

In addition to the requirement for ALI address matches, there are five GIS data reviews that AT&T conducts on the GIS data to ensure there are no errors that would cause issues or uncertainty routing a 9-1-1 call. As an example, duplicate GIS data could cause a search for an address to result in two or more matches. Since certainty of a location is important, checks are performed to ensure no duplicate data exist. The following is a list of the additional analyses performed and the number of records that were found to be in error that will need to be corrected:

- Road centerline has duplicate address ranges - **29**
- Road centerline has right or left side overlapping address range - **32**
- Road centerline has street name attributes not meeting Virginia, USPS, & NENA standard - **217**
- Address point Is duplicate, has no street name, or no address number - **705**
- Address point street name and road centerline street name mismatch - **597**

All of these errors will be also included in the analysis delivered to the PSAP and GIS Manager in July 2018. This includes geospatial data identifying each specific error that can be viewed in ArcMap. Utilizing this information will assist in error identification and correction.

Regardless of how they are resolved, the **York-Poquoson-Williamsburg PSAP** will need to resolve these issues through internal resources at least 3 months prior to the targeted deployment date.

PSAP Boundary

This is a GIS polygon data layer that defines the area of responsibility for each PSAP. The PSAP boundary must be agreed to by all adjoining PSAPs, thus its development must be a regional effort. VITA ISP will support the regional development and maintenance of a statewide PSAP boundary. This PSAP boundary layer is essential to routing 9-1-1 calls based on caller location by either civic address or coordinate location. This layer must not have gaps or overlaps to ensure correct call routing. VITA will develop a best practice to guide each PSAP through this process, which can also be facilitated by the VITA ISP regional coordinator.

Authoritative GIS Data Source Boundary

This polygon layer defines the area of authoritative GIS data sources, with no unintentional gaps or overlaps. The boundary must be agreed to by all adjoining data provisioning providers. Edge-matching conformance is ensuring that one and only one entity is responsible for maintaining each piece of GIS data within a PSAP. Within a PSAP boundary, there may be multiple sources for authoritative GIS data as a combination of cities and counties. The GIS sources within the PSAP need a common and agreed-upon understanding for the maintenance of each feature and the provisioning boundary of responsibility. Edge-matching conformance addresses boundaries between GIS sources within a PSAP and between neighboring PSAPs to ensure that there are no overlaps or gaps in the maintenance of GIS data. GIS features need to meet at the agreed upon boundary for geometric continuity and attribute consistency.

MSAG transition/confirmation

In order to accommodate originating service providers (OSP) that are not fully i3 capable, AT&T will maintain a master street address guide (MSAG) as part of the NG9-1-1 solution. While the existing MSAG can be used and maintained, generating a new MSAG from local GIS data is the end-state goal for full i3 implementation since existing GIS data is generally of superior quality than the MSAG. To use GIS data to generate the MSAG, an emergency service number (ESN) data layer must exist or be created. The PSAP has **three** ESNs for their area of responsibility. The **York-Poquoson-Williamsburg PSAP** does

not maintain an ESN boundary layer depicting this area so it will need to be created to utilize a GIS generated MSAG with the migration to NG9-1-1.

Ultimately, ESN and community name need to be attribute fields in the address points and road centerlines layers to support call routing until the OSP can transition to i3. If these attributes are not part of a locality's existing maintenance workflow or GIS database, they can be created by building a separate polygon layer and transferring these values to the centerline segments (commonly referred to as a spatial join). The spatial join method can be implemented as part of the workflow for preparing to transfer GIS data to AT&T to ensure these fields are accurately populated.

GIS Ingest Readiness

Localities may choose to implement AT&T's tools and workflows for ongoing maintenance of GIS data, or may choose to continue using internal workflows or third-party support services. As GIS data is updated, regardless of the tool set or service provider, the GIS datasets must be provided to the spatial interface (SI). The SI provisions the updated GIS data to drive location validation and call routing functions in the ESInet.

Localities choosing to adopt or transition to the AT&T toolset will have a defined workflow for providing GIS data to the AT&T Spatial Interface. Localities wishing to use existing internal tools, acquire third-party tools, or rely on a service provider will need to ensure the workflows are in place to review and resolve error and discrepancy reports within the timeframe required by AT&T and periodically provide updated GIS datasets to the AT&T spatial interface. This section will establish the path and milestones for completing this work.

Data maintenance Workflow/Procedures

The quality of GIS data diminishes over time unless it is properly maintained. It is important localities document GIS data maintenance workflows to ensure maintenance activities engage all responsible entities. It is equally important to ensure GIS maintenance workflows and procedures are updated to be compatible with discrepancy management required to support NG9-1-1. NG9-1-1 will introduce additional maintenance issues such as periodically reviewing conformance of edge matching of GIS data at shared boundaries. VITA has confirmed that the GIS organizations supporting the PSAP have appropriate internal data maintenance procedures/discrepancy management workflows.

Call Routing

The ultimate goal for all PSAPs is to use geospatial (i3) routing for all 9-1-1 calls. This solution uses all the NENA i3 standards for delivering voice and data directly into the PSAP's CHE. 9-1-1 call routing is based on the PSAP-provided GIS data. The ESInet router hands off the call to the PSAP networking equipment (router or firewall). The PSAP's CHE must be able to receive the voice call via SIP. Location data delivered via SIP using PIDF-LO, and would perform all the i3 protocols such as LoST and HELD.

If the PSAP's CHE is not NG9-1-1 capable or the geospatial data is not ready for deployment, a PSAP can still connect to the ESInet with an interim solution for call delivery. This will allow the PSAP to migrate on schedule, and they can implement geospatial (i3) routing when the GIS data is suitable for this use and the CHE is i3 capable.

The two interim solutions are as follows:

> **Legacy PSAP Gateway** - This solution allows the PSAP to be connected to the ESInet through a network gateway. In this call delivery configuration, the call is routed with the legacy MSAG and ALI data, however this is done over the IP network. Once the call reaches the gateway, the voice

data is converted to analog and processed over an analog voice circuit to the PSAP's CHE. This does not require any upgrade to the CHE and as mentioned uses a legacy ALI lookup. The ALI lookup would use a standard serial connection (in this case to the legacy PSAP gateway placed in the PSAP) to retrieve location information.

Transitional SIP - This solution uses an IP (SIP) connection to get the voice call directly into the PSAP's CHE. The ESInet router passes the call to the PSAP networking equipment (router or firewall). The PSAP's CHE must be capable of receiving the voice call via SIP. The CHE would still use a legacy ALI lookup. The ALI lookup would use the standard serial connection (in this case to the ESInet routers) to retrieve location information. MSAG and ALI are still used to conduct the routing.

Again, the ultimate goal for all PSAPs is to geospatially route all 9-1-1 calls. If the geospatial data meets the accuracy goals, a PSAP should be able to deploy NG9-1-1 with geospatial routing. If for some reason, this cannot be accomplished, interim solutions are available to allow the PSAP to deploy on schedule, and they can convert to geospatial routing later.

Based on an assessment of the CHE and GIS data, geospatial routing can be implemented initially with NG9-1-1 and no interim solution will be necessary. While some GIS data correction must take place, the PSAP is committed to correcting those issues well in advance of the required milestone and to maintain that data through the transition period.

Call Transfers

During the transition to NG9-1-1, the AT&T ESInet will be interconnected with all selective routers from Verizon and CenturyLink to ensure that calls received by PSAPs that have deployed NG9-1-1 can be transferred to PSAPs on the legacy E9-1-1 network and vice versa. No ability to transfer calls will be lost during the transition when neighboring PSAPs may be on different networks.

Post deployment, all Virginia PSAPs should be on an ESInet and should be able to transfer calls among PSAPs with accompanying location data. Even if more than one ESInet is deployed from different solution providers, the goal is that they are interconnected and calls can be transferred between them.

Network

The NG9-1-1 solution offered by AT&T is a service; therefore, the network is provided as part of that service. However, there are several issues impacting the network that may be outside of this service that must be considered. The configuration of the PSAP's connection to the network will be based on the legacy E9-1-1 network information as follows:

- Legacy E9-1-1 service provider: **Verizon**
- ALI database provider: **Verizon**
- Selective router pair(s): **High Street/Jefferson Avenue**
- Trunk counts (all): **62**
    - Wireline: **6**
    - Wireless: **12**
    - Administrative: **44**

The NG9-1-1 network will be designed to support the same number of concurrent 9-1-1 calls as can be supported on the legacy network (wireline and wireless trunks). The PSAP can designate what happens to calls that exceed this number. This setting is determined in the PSAP CHE, but the options will be

discussed with AT&T during system configuration. The options include providing the caller with a fast busy signal, routing the call to another PSAP, or overflowing the call to another line. As a best practice, VITA ISP recommends routing the call to a fast busy signal or rerouting calls to another PSAP.

Redundancy and Diversity

In order to provide 99.999% availability of the NG9-1-1 service, each PSAP must have diverse and redundant IP connections to the ESInet. Having redundant connectivity means having two connections, but they could be co-located or follow the same path. Having diversity means that those redundant connections follow different paths that never touch from origin to destination. To achieve the 99.999% availability, diverse connectivity is planned for all PSAPs. There is a chance the diversity is simply not available to all PSAPs. AT&T has conducted a diversity study for each PSAP and the results for the **York-Poquoson-Williamsburg PSAP** are as follows (since the CHE is geodiverse a drawing is provided for each location):
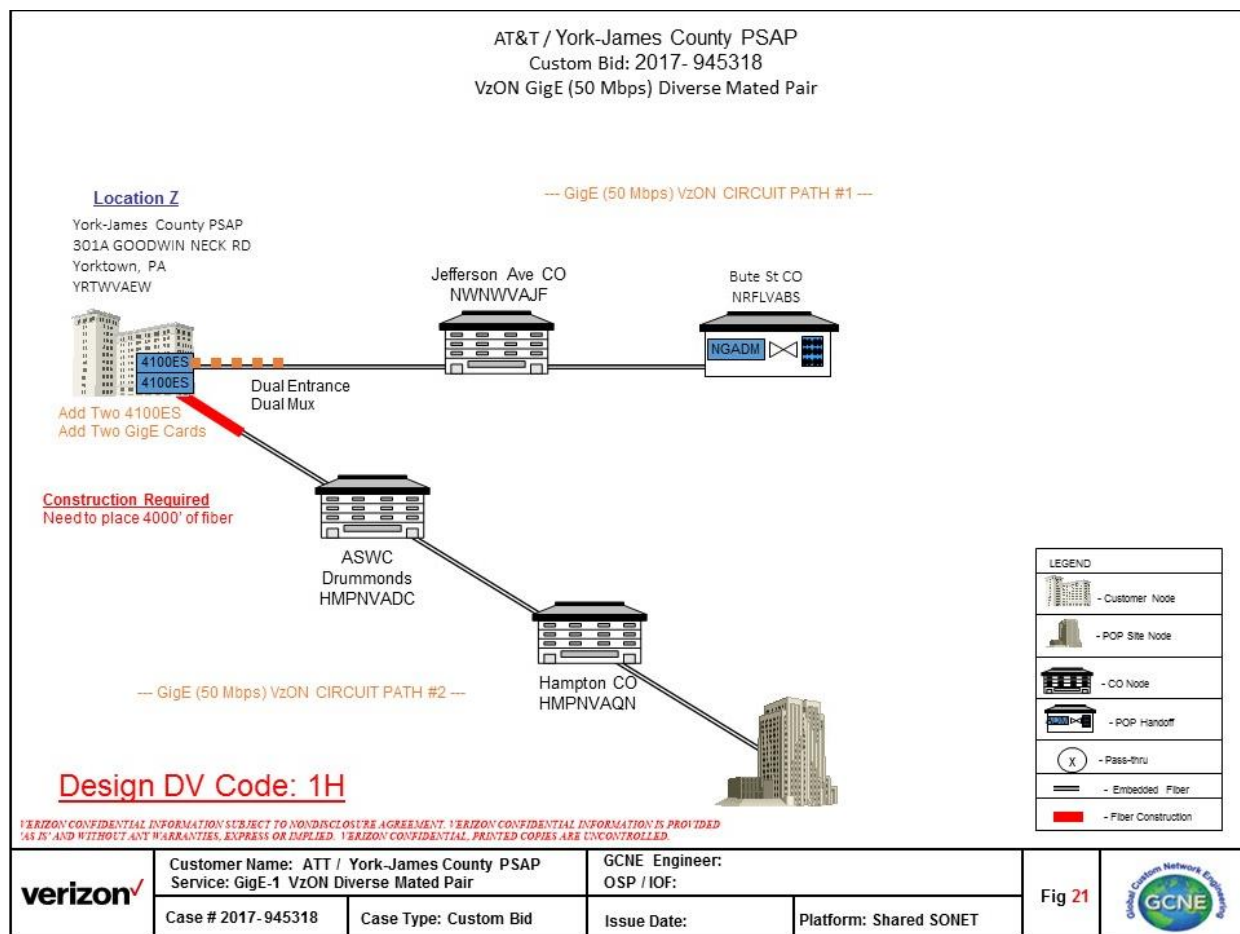
The total cost for this diverse connectivity is **$ 47,219.52,** which will be provided by the Board as part of the PSAP's funding submission. The timing of the implementation of the diverse connectivity may not be completed until after initial NG9-1-1 deployment.

Disaster Recovery

Though the NG9-1-1 solution is designed to provide 99.999% availability, disaster recovery plans still need to be in place for instances when the network becomes unavailable or the PSAP is otherwise inoperable (evacuation, structural damage, etc.). Broadly, when the PSAP must be abandoned, there are two approaches to disaster recovery, a) having a backup PSAP within the locality or b) partnering with a

neighboring PSAP to take the calls. Additionally, if only the network is impacted and the PSAP is still operable, 9-1-1 calls can be forwarded to a 10-digit telephone number in the same PSAP. Location data is lost, but that call can still be answered and processed.

Currently, the PSAP has a disaster recovery plan, which states that if the PSAP must be evacuated for any reason, the calls all transferred to the **James City County PSAP**. Should just the network be unavailable and the PSAP can still be occupied, calls are rerouted to a 10-digit number within the PSAP.

Based on the current disaster recovery plan, no additional steps must be taken in order for this plan to continue to be viable with NG9-1-1. The PSAP need only inform AT&T of their disaster recovery plan during the detailed planning after the participation agreement is signed. AT&T will then build those routes in the configuration files both for during the transition and post-migration to NG9-1-1.

While support will be available to maintain the current disaster recovery capability for the PSAP, it is important to note that there are aspects of disaster recovery that are beyond the scope of this migration proposal. As an example, while the NG9-1-1 network can be configured to route calls to a neighboring PSAP in the event of a PSAP evacuation, getting the 9-1-1 call to another PSAP to be answered is only part of the dispatching process. The call for service then needs to be sent to first responders through a radio channel or mobile data. Assuming that capability already exists, nothing about the deployment of NG9-1-1 should impact that. In cases were disaster recovery does not exist currently, this migration proposal only deals with getting the 9-1-1 call routed to another PSAP (backup or neighboring) and does not address radio or CAD interoperability needed to effect the dispatch of first responders. VITA ISP can assist with that process, but outside of NG9-1-1 deployment. Additionally, VITA ISP can assist with the exercising of disaster recovery plans, which should be done at least once a year to make sure they are fully functional when needed.

Secondary PSAP

There are no secondary PSAP(s) identified within the service area of the primary PSAP.

Network Security

AT&T employs a defense-in-depth security strategy to protect sensitive information. Security mechanisms are deployed throughout the service in addition to the multi-layered security provided by the network itself, in order to provide seamless and effective security. AT&T's world-class experience in both IP and Telephony Security provides the following key security elements.

- Availability of the VoIP Service: Stop denial or deterioration of service functionality
- Integrity of the VoIP environment: Prevent system functions or data from being corrupted
- Confidentiality and Data Privacy in VoIP: Keep information secure and private

The AT&T IP/MPLS Converged Network deploys the same attention to state-of-the-art security measures as have been provided on traditional PSTN networks:

- AT&T Security Policy and Requirements (ASPR) and AT&T OneProcess provide the security foundation.
- AT&T Internet Protect helps protect against worm/virus attacks and offers DoS (denial of service) protection.
- A 24x7 Security Network Operations Center (SNOC).
- AT&T MPLS Voice Aware Network provides security and QoS.
- AT&T Global Fraud Management System protects AT&T VoIP against fraud.

- AT&T hub-and-spoke MPLS VoIP VPN for customer access helps to provide security and QoS for AT&T.

In the AT&T MPLS network, customer services are provisioned on specific interfaces of an MPLS VPN by using known IP addresses. This approach enables AT&T to authenticate users and traffic. Rather than supporting signaling or voice encryption, AT&T relies on the MPLS security and secured IP tunnels to provide confidentiality for signaling and voice.

The data privacy and data integrity of an MPLS VPN is not dependent on encryption or address space-based access controls. AT&T protects the core network against compromise by:

- Hardening the routers and turning off unnecessary services.
- Implementing TACACS+ authentication, authorization and accounting for router access/commands.
- Automated provisioning of router configuration driven from ordering systems, to minimize human error, complimented by daily discord reports and investigation.
- 24/7 monitoring and DoS mitigation tools.
- Route dampening and/or limiting total number of routers learned to protect routing stability.
- Firewalls, IDS, token based authentication, encrypted remote access for network and service management systems/work centers.

The AT&T security culture assures that these architectural protections are enforced by audits, employee awareness training, penetration testing and enforcement of architectural principles and policy.

In addition, AT&T MPLS VPN service is a transport only service, with the data integrity and data privacy protection as described above. AT&T monitors the core network for traffic anomalies and shared resource consumption thresholds to protect the core network and assure that traffic storms do not impact the performance of other customers. AT&T network management and service management systems are hardened, require authentication and authorization control, and are instrumented with intrusion detection to assure that they are not compromised, and cannot serve as a vector to attack the network or customers.

Schedule for Deployment

A clear and accurate schedule is essential to ensure cost effective and coordinated deployment throughout the Commonwealth. For that reason, this section identifies all milestones that must be met in order to successfully deploy. To manage costs, a six-month deployment window has been established for each selective router pair regardless of whether the PSAPs choose the AT&T or another NG9-1-1 solution. The following chart identifies the deployment periods for each selective router pair:

Selective Routers	9-1-1 Service Provider	Population	Time Period
Fairfax/Alexandria	Verizon	2,494,184	January 2019 – June 2019
High St Portsmouth/Jefferson	**Verizon**	**1,662,247**	**July 2019 – December 2019**
Stuart/Chester	Verizon	1,660,182	January 2020 – June 2020
Charlottesville/Farmville	CenturyLink	403,369	July 2020 – December 2020
Fredericksburg/Winchester	Verizon	343,031	July 2020 – December 2020
Danville/Lynchburg Church St	Verizon	320,247	July 2020 – December 2020
Staunton/Salem	Verizon	453,065	January 2021 – June 2021
Shenandoah County ECC	Shentel	43,175	January 2021 – June 2021

Covington	Ntelos	21,556	January 2021 – June 2021
New Castle	TDS Telecom	5,158	January 2021 – June 2021
Floyd County	Citizens	15,651	January 2021 – June 2021
Monterey-Highland Telephone	Highland Telephone	2,216	January 2021 – June 2021
Blacksburg/Norton	Verizon	340,101	July 2021 – December 2021
Johnson City/Wytheville	CenturyLink	338,311	July 2021 – December 2021

The **York-Poquoson-Williamsburg PSAP's** deployment window will be **July 2019 – December 2019**. A specific date will be determined after all PSAPs have made the NG9-1-1 decision and AT&T develops the master schedule. Regardless of the specific date, any CHE upgrades, diverse connectivity enhancements and GIS data corrections must be completed at least **three months** before the deployment date. If they are not completed by this date, migration can still occur on schedule, but it will require the deployment of an interim solution instead of full i3.

Cost Estimates for NG9-1-1 Funding

The 9-1-1 Services Board has committed to funding the transitional costs for NG9-1-1 deployment so it is important that all such costs are identified and made part of the overall budget. It is also important that the funding be provided on a fair basis across all PSAPs in Virginia. While most costs will be fully funded, others like replacement of non-vendor supported CHE will continue to be funded at the same levels as has been provided through the PSAP grant program in prior years. Based on all of the information provided in this migration proposal, the following budget is for your deployment of NG9-1-1:

Category	Amount	Notes
NG9-1-1 non-recurring cost	$4,000	Flat rate from AT&T
CHE upgrade	$30,000	Firewalls for ESInet
Text to 9-1-1	$30,000	Text to 9-1-1
CAD upgrade	$0	Not required
Mapping upgrade	$0	Not required
Voice logging upgrade	$0	Not required
ECaTS Data analytics expansion	$1,000	i3 logging and text to 9-1-1
Other system upgrades	$0	Not required
Rack space	$0	Not required
Diverse connectivity costs	$47,219.52	
Disaster recovery upgrade	$0	Not required
Secondary PSAPs	$0	None
GIS data preparation	$0	Not required
Legacy 9-1-1 transition costs	$9,428.40	Verizon costs
Project management assistance	$0	None requested
Total	$121,647.92	

The monthly recurring cost for the AT&T solution is **$13,157.88,** which is set for the ten-year term of the Fairfax County contract. The current monthly recurring cost for the legacy E9-1-1 solution is approximately **$8,000.00**. The estimated monthly increase to the PSAP after deployment is approximately **$5,157.88**. This increase will be covered by the Board for a period of 24 months after deployment is complete. At the end of this period, the entire cost will be the responsibility of the PSAP.

Copies of invoices from the current 9-1-1 service provider must be provided to substantiate the current monthly cost. This will be the basis for determining whether monthly funding is provided and in what amount.

The monthly recurring cost is impacted by the bandwidth into the PSAP. Bandwidth is primarily impacted by the number of concurrent calls each PSAP wants to be able to process. As the PSAP grows and adds bandwidth to handle more concurrent calls, the increased monthly cost will be the obligation of the PSAP even if during the 24 months following transition. Additionally, the recurring maintenance costs for PSAP equipment and GIS data will remain the responsibility of the PSAP.

Projected Board Funding

The Board will begin awarding funding for NG9-1-1 in late 2018. Until the Board approves the funding request from the PSAP, all funding levels shown are just projected. Based on the funding guidelines approved by the Board (or will be approved by the Board), the following funding would be awarded to the PSAP:

Type of Funding	Amount
Non-recurring	$121,647.92
Recurring (over 24 months)	$123,789.12
Data Analytics (monthly)	$415.12

The funding amount shown is based on estimates at this point. As binding quotes are received, the budget will be adjusted. The approval from the Board will be for the specific equipment or services and contingency funding will be available should the final cost be slightly higher so long as the original scope of the effort does not change. Similarly, if the final cost is lower, the budget will be adjusted lower. That additional funding cannot be shifted to another part of the project.

Commonwealth of Virginia
Next Generation 9-1-1

Proposal Acceptance Letter
(PAL)

Purpose

The Proposal Acceptance Letter (PAL) functions as the funding request for the NG9-1-1 Migration Program.   Primary PSAPs and secondary PSAPs currently served by a selective router pair are eligible to submit a PAL and request funding from the 9-1-1 Services Board (the "Board"). The PAL confirms a PSAP's acceptance of the information contained in their NG9-1-1 Migration Proposal (MP) and signals their intent to deploy NG9-1-1. The PAL should be submitted to the electronic mailbox for the PSAP Grant Program - psapgrants@vita.virginia.gov.

The funding cycle for the NG9-1-1 Migration Program starts on July 1, 2018 and remains open throughout the NG9-1-1 deployment period. The 9-1-1 Services Board will review funding requests received no later than 45 calendar days in advance of each regularly scheduled meeting. A Grant ID and email receipt notification will be sent to the e-mail address listed on the PAL.

The funding amount requested in the PAL should not exceed the recurring and non-recurring cost estimates contained in the MP. After reviewing a PSAP's MP and PAL, the Board will approve funding for specific equipment and services. Contingency funding will be available should the final cost be slightly higher so long as the original scope of the effort does not change. Similarly, if the final cost is lower, the budget will be adjusted lower. This additional funding cannot be shifted to another part of the project. Also, if a PSAP's MP needs to be revised for a material change after it has been approved by the Board, an additional PAL would need to be submitted to obtain any additional funding.

When the Board approves a PSAP's funding request, the PSAP will be expected to execute a contract vehicle with a NG9-1-1 solutions provider within three months of the award date. If a PSAP needs additional time to execute this contract, the PSAP will need to request an extension from the Board. The PSAP will also be expected to complete all identified NG9-1-1 ready implementation steps within three months of the scheduled deployment date. Funding for approved equipment and services may not be immediately available to a PSAP. ISP staff will provide a spending plan, specific to a PSAP's deployment schedule, that details in which year of the deployment period funding will for available to the PSAP.

Local Project Manager (Contact)

PSAP/HOST PSAP NAME: York-Poquoson-Williamsburg

CONTACT TITLE: Director

CONTACT FIRST NAME: Terry

CONTACT LAST NAME: Hall

ADDRESS 1: 301 Goodwin Neck Road

ADDRESS 2: Suite A

CITY: Yorktown

ZIP CODE: 23692

CONTACT EMAIL: hallt@yorkcounty.gov

CONTACT PHONE NUMBER: 757-890-3620

CONTACT MOBILE NUMBER: 757-871-9110

CONTACT FAX NUMBER: 757-890-3608

Financial Information

Amount Requested: $245,437.04

Date of Completed Migration Proposal: November 1, 2018

PSAP preference for Board payment on behalf of PSAP for incurred eligible NG9-1-1 expenses:

☒ Yes   ☐ No

Commonwealth of Virginia
Next Generation 9-1-1

Spotsylvania County
PSAP/GIS Specific
NG9-1-1 Migration Proposal

Executive Summary

This migration proposal is being prepared for the **Spotsylvania County PSAP** based on the Fairfax County contract with **AT&T**. **Keith Pusso** shall be the primary contact.

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, capabilities and functionality of an 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 aid that decision, the 9-1-1 Services Board (the Board) adopted the Virginia NG9-1-1 Deployment Plan in January 2018. That plan proposed the methodology and process to guide the 9-1-1 Services 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. Though the Board is recommending the Fairfax County contract with AT&T for NG9-1-1 services since it was awarded through a competitive process, each locality will need to determine the most appropriate path. 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.

A Migration Proposal is being developed for each locality (or groups of localities if served by a consolidated public safety answering point or PSAP) to provide information about the AT&T solution, prerequisite work needed within the PSAP and the expected costs and funding provided by the Board. The goal of this document is to provide each PSAP/locality with all of the information needed to evaluate the AT&T solution and determine whether it will meet the local needs. No locality should feel obligated to accept this proposal as they may use an appropriate procurement process for these services. This is simply to provide more information about services that are already available through an existing contract.

The Commonwealth's goal is to have all PSAPs fully deployed with the National Emergency Number Association (NENA) i3 standard. This standard states that all 9-1-1 calls are delivered to the PSAP on IP circuits with associated caller location data. If the equipment or GIS data in the PSAP is not capable of supporting the NENA i3 standard, interim solutions are available. These solutions allow calls to be delivered to the PSAP as IP, but then be converted back to analog for interface with the PSAP's systems. This interim solution established the PSAP's connection to the ESInet and will serve as the initial migration to NG9-1-1. After system and/or GIS data upgrades are complete the PSAP will be able to reach a full i3, NG9-1-1 environment. While AT&T will conduct a more exhaustive assessment after the PSAP executes a participation agreement, the review ISP performed for this proposal indicates that the **Spotsylvania County PSAP** will need to upgrade their current Vesta 911 software or have in place an i3 functional CHE that has been approved on the AT&T ESInet™ to be able to implement the full NENA i3 standard without the need for any interim or transitional steps. Some work on their GIS data will be required, but it should not impact the deployment schedule.

Solution Overview

AT&T is offering their Next Generation ESInet solution throughout Virginia as a solution that will facilitate a transition from legacy 9-1-1 networks to networks capable of supporting the growing demands of a mobile society. AT&T's solution supports key NENA i3 capabilities today, while forming the basis of a true NG9-1-1 platform that will support multimedia emergency services as standards are solidified in the industry.

The AT&T ESInet™ solution is a combination of a world class IP network and the NG9-1-1 components. Their ESInet solution (delivered as a service) comes complete with a full suite of advanced features, management services and tools to help ensure they provide the best possible service to each PSAP and ultimately the citizens they serve.

The AT&T ESInet™ solution provides the public safety community with an i3 architecture built from the ground up. AT&T's commitment to the NENA i3 standard is based on years of contributions to NENA standards committees and understanding the evolving needs and requirements of the Public Safety community. The AT&T solution is not just "i3 like," or "i3 aligned." As elements of the i3 standard continue to be ratified, updated and enhanced—AT&T will continue its commitment to i3. The AT&T ESInet™ services will provide Virginia everything needed to deliver the critical foundational components of an industry standard i3 solution delivered over the worlds most advanced IP network.

AT&T ESInet™ Included Features

- Initial build-out with expandable capacity
- Nationally distributed, geographically diverse and redundant service architecture
- Pre-deployed ESInet Call Processing Centers in AT&T datacenters across US
- Aggregation Centers (AGC) in AT&T Central Offices across the US to easily augment growth capacity
- Initial call processing capacity more than twice current US E9-1-1 call volumes
- NENA i3 compliant
- High availability design (99.999% availability)
- 6 core redundant architecture
- Redundant ALI database
- Interoperable with neighboring PSAPs
- Defense in depth security
- Text to 911 – National TCC Provider
- IPV6 capable
- Reporting Suite
- Full lifecycle management
- End to end management and monitoring
- Fully resourced team to install and support
- Full Business Continuity/Disaster Recovery organization
- Dedicated Program / Service Manager

The proposed solution provides a secure IP-based network with no single point of failure. With no single point of failure, the solution includes six ESInet data centers located at AT&T facilities throughout the country. The ESInet will provide the core for a robust emergency services IP network that assures call delivery. The AT&T solution enables call delivery into a legacy PSAP environment, an IP-enabled 9-1-1 PSAP, or to peer ESInets. AT&T and West Corporation have deep security and support provisions in

place. AT&T has demonstrated experience in cybersecurity. All of this is backed by AT&T's 24/7/365 Resolution Center, AT&T Labs, AT&T's world class project management and service delivery organizations.

Additional information about the AT&T solutions and the contract with Fairfax County can be found at: https://www.fairfaxcounty.gov/cregister/ContractDetails.aspx?contractNumber=4400007825

PSAP Call Handling Systems and Applications

Each PSAP system and application that interfaces with the 9-1-1 call must be assessed to determine if it will be compatible with NG9-1-1. This section of the migration proposal identifies each major system, assesses its readiness and outlines any upgrades that must or could be implemented with NG9-1-1.

Call Handling Equipment

Obviously, the PSAP's call handling equipment (CHE) is the primary system that interfaces with the 9-1-1 network. As such, it is likely the one that will require the deepest assessment and potential upgrades to operate with the NG9-1-1 network. CHE that is non-vendor supported (NVS) (or will become NVS during the transition period) or cannot be upgraded to be NG9-1-1 capable will be identified for replacement, but will be subject to the funding limits currently in place for the PSAP grant program ($150,000 individual or $200,000 shared services). This may also apply to technology refreshes of hardware due to becoming NVS or operating systems becoming end-of-support. The current CHE in the PSAP has been identified as:

- CHE manufacturer: **Motorola**
- CHE model: **VESTA 911**
- CHE version number (clients): **7.0**
- CHE version number (server): **7.0**
- CHE maintenance provider (channel): **Carousel Industries**
- CHE Geodiversity: **Yes (B side at 9104 Courthouse Rd. Spotsylvania, Va)**
- Number of positions: **10**
- SIP capable: **Yes**

This CHE will require an upgrade to Vesta 7.2 to implement the full i3 interface. This upgrade will require the purchase of two firewalls to connect to the ESInet. However, if the PSAP deploys text to 9-1-1 with the direct IP solution prior to NG9-1-1 migration, these firewalls will already have been purchased and can be used for both purposes.

The PSAP indicates the planned replacement of their CHE in **July 2022**. This is after their planned NG9-1-1 migration. Any new CHE will need to be tested and i3 functional on the AT&T ESInet.

Text to 9-1-1

Text to 9-1-1 can be deployed web-based on a separate computer or integrated with the CHE. While the former is typically at no cost, the latter tends to have a cost associated with it. Though text to 9-1-1 will be a base feature of NG9-1-1, the passage of Senate Bill 418 in the 2018 General Assembly requires all PSAPs to implement text to 9-1-1 by July 1, 2020. The **Spotsylvania County PSAP** currently has a grant to deploy a text to 9-1-1 solution and plans to do so by June 2020. No additional upgrade or change is required with the deployment of NG9-1-1.

Computer-Aided Dispatch

A computer-aided dispatch (CAD) system usually receives 9-1-1 location information (ALI) through an interface with the CHE. As a result, the change to NG9-1-1 should not have an impact on a CAD system.

However, an assessment is made to determine if that is the case and if any options are available from the CAD vendor that could improve operations after NG9-1-1 is deployed. Any required upgrades would be funded through the Board, but any options to improve operations would be at the PSAP's expense. Additionally, as a reminder, CAD system replacement is no longer funded through the PSAP grant program so PSAPs need to plan for its replacement locally. The current CAD system has been identified as follows:

- CAD vendor: **Securus Systems (transitioning to Sungard)**
- CAD software version: **XCAD 8.5**
- CAD interfaces: **Not at this time but will be set up in the future**
- Method of data transfer: **Will be a serial connection**

This CAD system has been determined to not require any upgrade or modification with the deployment of NG9-1-1.

Mapping Display System

Similar to a CAD system, a mapping display system usually receives 9-1-1 location information (ALI) through an interface with the CHE or is part of the CHE or CAD. As a result, the change to NG9-1-1 should not have an impact on a mapping display system. However, an assessment is made to determine if that is the case and if any options are available from the mapping vendor that could improve operations after NG9-1-1 is deployed. The current mapping display system has been identified as follows:

- Dispatch Mapping Vendor: **MSAG Data Consultants, Inc**
- Dispatch Mapping Software Version: **Eagle v6.5**
- Method of data transfer: **Serial**

This mapping display system has been determined to not require any upgrade or modification with the deployment of NG9-1-1.

Voice Logging and Recording

Typically, the audio recorded by a voice logging recorder is generated by the CHE. Though not a best practice, it is possible to record audio directly from the incoming 9-1-1 trunks so an assessment must be performed to ensure that audio from 9-1-1 calls will still be recorded after the deployment of NG9-1-1. The current logging system has been identified as follows:

- Logging Recorder Vendor: **Exacom**
- Logging Recorder Model: **Hindsight G2 Platform**
- Logging Recorder Software Version: **10.1.0.5**
- Audio Origination Point: **Positions**

It is important to note that with an IP connection, audio is not present on the circuit until the CHE responds with an answer code. This is usually not until it is answered by a call taker, though it could be earlier if an audio message is played for the caller (which technically requires the CHE to answer the call to play the message). This voice logging recorder system has been determined to not require any upgrade or modification with the deployment of NG9-1-1.

Data Analytics

Though the ECaTS data analytics application is provided to all PSAPs by the 9-1-1 Services Board, some PSAPs still use a second application, native to the CHE, for data analytics in the PSAP. While the Board

will directly fund the upgrade to ECaTS to handle NG9-1-1, the local data analytics application may also need to be upgraded. The current data analytics application has been identified as follows:

- Primary Data Analytics System: **Vesta Analytics 3.1**
- Data Analytics Vendor: **Motorola**

Any updates required to the local data analytics system in support of i3, will be the responsibility of the PSAP.

Outcall Notification Systems
The PSAP currently uses Everbridge as their outcall notification system. AT&T will provide quarterly subscriber data for use in this system at no cost. It is important to note that this data's use is limited to the outcall notification system and cannot be used for other purposes.

Other Systems or Applications
No other systems, that interface with the 9-1-1 call flow have been identified that will impact the PSAP's readiness for NG9-1-1.

Rack Space
The AT&T solution requires four units (4U) of rack space in the PSAP equipment/computer room for networking equipment. The rack must also have available electrical connections and be properly grounded. The PSAP has confirmed that this space is currently available.

Coordination with Open Grants
The PSAP currently has one open grant:

1. **FY19 – CHE Text to 9-1-1 - $65,054**

GIS Data Preparation

GIS Data Sources
Currently, the **Spotsylvania County GIS** maintains all of the GIS data for the PSAP and will be the source for all GIS data required for NG9-1-1 geospatial routing; however, other departments within the locality may contribute data or manage various processes. It is the responsibility of **Spotsylvania County GIS** to aggregate the GIS data required for the PSAP and NG9-1-1.

Locality GIS Data Readiness
Geospatial data drives the routing of NG9-1-1 calls. It is imperative that road centerline and address point data layers are highly accurate and well maintained. In 2016, VITA conducted an analysis of these data against the existing automatic location identification (ALI) database and master street address guide (MSAG) to help determine readiness and provided a report to each PSAP of the results. This analysis has been repeated making adjustment to the logic to ensure it matches the methodology used by AT&T in their analysis. The goal is to have 98% of all addresses in the current ALI database geocode against the locality's road centerline data layer. Once the 98% threshold recommended by NENA is met, the PSAP is ready to deploy NG9-1-1. Since matching to the address point is more accurate, VITA is recommending the additional goal of matching 98% of ALI database addresses when geocoded against the address point data layer. If either of these goals in not achieved, then GIS data work must be completed to meet or exceed these goals. While financial support from the PSAP grant program may be available to fund this work, localities with GIS programs will be encouraged to make the necessary corrections in house if resources and time before deployment permits.

These are preliminary results based on expected data criteria of AT&T, and will be retested directly by AT&T after the execution of the participation agreement. This analysis provides the PSAP and their GIS support with an estimate of the extent of potential errors and helps identify the issues that need to be resolved. ISP staff including a GIS analyst and/or regional coordinator will begin working with the GIS data maintenance provider (internal or external) to identify and correct the GIS data or ALI data and achieve a higher match rate and thus more accurate geospatial routing.

Though there are other types of errors that may exist in the GIS data used by the PSAP (such as parity or cartography errors), these do not usually impact the routing of a 9-1-1 call. As a result, as part of this effort, only corrections that impact routing the 9-1-1 call will be required. PSAPs, in coordination with their GIS support, are encouraged to look more broadly at their data and work to improve its overall quality as well.

The 2018 MSAG/ALI/GIS analysis for the PSAP determined the current match rate to be as follows:

- Road Centerline (RCL) – **96.3%**
- Address Point – **94.1%**

The primary issue with the RCL data is differences in street names between the ALI and GIS data. Correcting the street names so they match would increase the match rate for RCL to **99.4%**. The analysis also determined that no more than ten addresses were responsible for many of the address point discrepancies. Resolving no more than ten addresses will increase the result to **97.8%**. During July 2018, VITA will send each PSAP and/or GIS manager a report detailing this analysis, and identifying the specific ALI records that could not be matched to the RCL or address point data. To resolve these ALI address discrepancies, there are potentially four actions that will need to take place:

1. **Add a record to the GIS** – When the ALI database has correct addresses that have not been added to the GIS data, the addition of data needs to occur. This may entail adding a road segment to the RCL or a point to the address points.
2. **Change attribution in the GIS** – When an ALI record has a correct address but the RCL or address point attribution is incorrect the discrepancy in the GIS data must be resolved. A common issue is a difference with the street name or street type between the ALI and the GIS data. Often, this issue can be corrected using a batch script process. VITA staff can assist.
3. **Change attribution in the ALI database** – When the RCL or address point has the correct address but the ALI record is incorrect, the discrepancy in the ALI database may need to be resolved. Again, this is often caused by differences in the street name or street type between the records. If necessary, AT&T can make batch changes as they load the ALI database into the ESInet.
4. **Determine that the discrepancy is not an error** – There are often ALI records associated with telephone numbers that can never actually dial 9-1-1. They could be pilot numbers for a multi-line telephone system, foreign exchanges or shell records for wireless calls. While many of those records were filtered out of the analysis, some may still be within the data. These ALI records need to be identified and removed from the match rate calculation. VITA staff will assist with this process.

In addition to the requirement for ALI address matches, there are five GIS data reviews that AT&T conducts on the GIS data to ensure there are no errors that would cause issues or uncertainty when routing a 9-1-1 call. As an example, duplicate GIS data could cause a search for an address to result in two or more matches. Since certainty of a location is important, checks are performed to ensure no duplicate data exist. The following is a list of the additional analyses performed and the number of records that were found to be in error that will need to be corrected:

- Road centerline has duplicate address ranges - **369**
- Road centerline has right or left side overlapping address range - **132**
- Road centerline has street name attributes not meeting Virginia, USPS, & NENA standard - **8**
- Address point Is duplicate, has no street name, or no address number - **180**
- Address point street name and road centerline street name mismatch - **12**

All of these errors will be also included in the analysis delivered to the PSAP and GIS Manager in July 2018. This includes geospatial data identifying each specific error that can be viewed in ArcMap. Utilizing this information will assist in error identification and correction.

Regardless of how they are resolved, **Spotsylvania County GIS** will need to resolve these issues through internal resources, at least three months prior to the targeted deployment date

PSAP Boundary

This is a GIS polygon data layer that defines the area of responsibility for each PSAP. The PSAP boundary must be agreed to by all adjoining PSAPs, thus its development must be a regional effort. VITA ISP will support the regional development and maintenance of a statewide PSAP boundary. This PSAP boundary layer is essential to routing 9-1-1 calls based on caller location by either civic address or coordinate location. This layer must not have gaps or overlaps to ensure correct call routing. VITA will develop a best practice to guide each PSAP through this process, which can also be facilitated by the VITA ISP regional coordinator.

Authoritative GIS Data Source Boundary

This polygon layer defines the area of authoritative GIS data sources, with no unintentional gaps or overlaps. The boundary must be agreed to by all adjoining data provisioning providers. Edge-matching conformance is ensuring that one and only one entity is responsible for maintaining each piece of GIS data within a PSAP. Within a PSAP boundary, there may be multiple sources for authoritative GIS data as a combination of cities and counties. The GIS sources within the PSAP need a common and agreed-upon understanding for the maintenance of each feature and the provisioning boundary of responsibility. Making sure there is agreement of that point and ensuring each locality is only providing data where they are the authoritative GIS data source are the purpose of this assessment. External edge-matching conformance addresses boundaries between neighboring PSAPs to ensure that there are no overlaps or gaps in the maintenance of GIS data. Geometric features need to meet at the agreed upon boundary.

MSAG transition/confirmation

In order to accommodate originating service providers (OSP) that are not fully i3 capable, AT&T will maintain a master street address guide (MSAG) as part of the NG9-1-1 solution. While the existing MSAG can be used and maintained, generating a new MSAG from local GIS data is a better solution since existing GIS data is generally of superior quality than the MSAG. To use GIS data to generate the MSAG, an emergency service number (ESN) data layer must exist or be created. The PSAP has **2 ESNs** for their area of responsibility. **Spotsylvania County** does not currently have an ESN boundary layer depicting this area, but will work on developing one. When complete, they will utilize a GIS generated MSAG with the migration to NG9-1-1.

Ultimately, ESN and community name need to be attribute fields in the address points and road centerlines layers to support call routing until the OSP can transition to i3. If these attributes are not part of a locality's existing maintenance workflow or GIS database, they can be created by building a separate polygon layer and transferring these values to the centerline segments (commonly referred to as a spatial join). The spatial join method can be implemented as part of the workflow for preparing to transfer GIS data to AT&T to ensure these fields are accurately populated.

GIS Ingest Readiness

Localities may choose to implement AT&T's tools and workflows for ongoing maintenance of GIS data, or may choose to continue using internal workflows or third-party support services. As GIS data is updated, regardless of the tool set or service provider, the GIS datasets must be provided to the spatial interface (SI). The SI provisions the updated GIS data to drive location validation and call routing functions in the ESInet.

Localities choosing to adopt or transition to the AT&T toolset will have a defined workflow for providing updated GIS data. Localities wishing to use existing tools, acquire third-party tools, or rely on a service provider will need to ensure the workflows are in place to accept and resolve discrepancy calls (formalized requests to update GIS datasets), and periodically transfer updated GIS datasets to the AT&T spatial interface. This section will establish the path and milestones for completing this work.

Data maintenance Workflow/Procedures

The quality of GIS data diminishes over time unless it is properly maintained. It is important that localities document GIS data maintenance workflows and validations to ensure synchronization across GIS layers. This can include periodically ensuring conformance of edge matching of GIS data at shared boundaries. VITA has confirmed that the GIS organizations supporting the PSAP have appropriate internal data maintenance procedures/discrepancy management workflows.

Call Routing

The ultimate goal for all PSAPs is to use geospatial (i3) routing for all 9-1-1 calls. This solution uses all the NENA i3 standards for delivering voice and data directly into the PSAP's CHE. 9-1-1 call routing is based on the PSAP-provided GIS data. The ESInet router hands off the call to the PSAP networking equipment (router or firewall). The PSAP's CHE must be able to receive the voice call via SIP. Location data delivered via SIP using PIDF-LO, and would perform all the i3 protocols such as LoST and HELD.

If the PSAP's CHE is not NG9-1-1 capable or the geospatial data is not ready for deployment, a PSAP can still connect to the ESInet with an interim solution for call delivery. This will allow the PSAP to migrate on schedule, and they can implement geospatial (i3) routing when the GIS data is suitable for this use and the CHE is i3 capable.

The two interim solutions are as follows:

> **Legacy PSAP Gateway** - This solution allows the PSAP to be connected to the ESInet through a network gateway. In this call delivery configuration, the call is routed with the legacy MSAG and ALI data, however this is done over the IP network. Once the call reaches the gateway, the voice data is converted to analog and processed over an analog voice circuit to the PSAP's CHE. This does not require any upgrade to the CHE and as mentioned uses a legacy ALI lookup. The ALI lookup would use a standard serial connection (in this case to the legacy PSAP gateway placed in the PSAP) to retrieve location information.

> **Transitional SIP** - This solution uses an IP (SIP) connection to get the voice call directly into the PSAP's CHE. The ESInet router passes the call to the PSAP networking equipment (router or firewall). The PSAP's CHE must be capable of receiving the voice call via SIP. The CHE would still use a legacy ALI lookup. The ALI lookup would use the standard serial connection (in this case to the ESInet routers) to retrieve location information. MSAG and ALI are still used to conduct the routing.

Again, the ultimate goal for all PSAPs is to geospatially route all 9-1-1 calls. If the geospatial data meets the accuracy goals, a PSAP should be able to deploy NG9-1-1 with geospatial routing. If for some reason, this cannot be accomplished, interim solutions are available to allow the PSAP to deploy on schedule, and they can convert to geospatial routing later.

Based on an assessment of the CHE and GIS data, geospatial routing can be implemented initially with NG9-1-1 and no interim solution will be necessary. While some GIS data correction must take place, the PSAP is committed to correcting those issues well in advance of the required milestone and to maintain that data through the transition period.

Call Transfers

During the transition to NG9-1-1, the AT&T ESInet will be interconnected with all selective routers from Verizon and CenturyLink to ensure that calls received by PSAPs that have deployed NG9-1-1 can be transferred to PSAPs on the legacy E9-1-1 network and vice versa. No ability to transfer calls will be lost during the transition when neighboring PSAPs may be on different networks.

Post deployment, all Virginia PSAPs should be on an ESInet and should be able to transfer calls among PSAPs with accompanying location data. Even if more than one ESInet is deployed from different solution providers, the goal is that they are interconnected and calls can be transferred between them.

Network

The NG9-1-1 solution offered by AT&T is a service; therefore, the network is provided as part of that service. However, there are several issues impacting the network that may be outside of this service that must be considered. The configuration of the PSAP's connection to the network will be based on the legacy E9-1-1 network information as follows:

- Legacy E9-1-1 service provider: **Verizon**
- ALI database provider: **Verizon**
- Selective router pair(s): **Fredericksburg/Winchester**
- Trunk counts (all): **23**
    - Wireline: **12**
    - Wireless: **4**
    - SIP: **0**
    - Administrative: **7**

The NG9-1-1 network will be designed to support the same number of concurrent 9-1-1 calls as can be supported on the legacy network (wireline and wireless trunks). The PSAP can designate what happens to calls that exceed this number. This setting is determined in the PSAP CHE, but the options will be discussed with AT&T during system configuration. The options include providing the caller with a fast busy signal, routing the call to another PSAP, or overflowing the call to another line. As a best practice, VITA ISP recommends routing the call to a fast busy signal or rerouting calls to another PSAP.

Redundancy and Diversity

In order to provide 99.999% availability of the NG9-1-1 service, each PSAP must have diverse and redundant IP connections to the ESInet. Having redundant connectivity means having two connections, but they could be co-located or follow the same path. Having diversity means that those redundant connections follow different paths that never touch from origin to destination. To achieve the 99.999% availability, diverse connectivity is planned for all PSAPs. There is a chance the diversity is simply not available to all PSAPs. AT&T has conducted a diversity study for each PSAP and the results for the

current location of the **Spotsylvania County** PSAP are as follows (since the CHE is geodiverse a drawing is provided for each location):
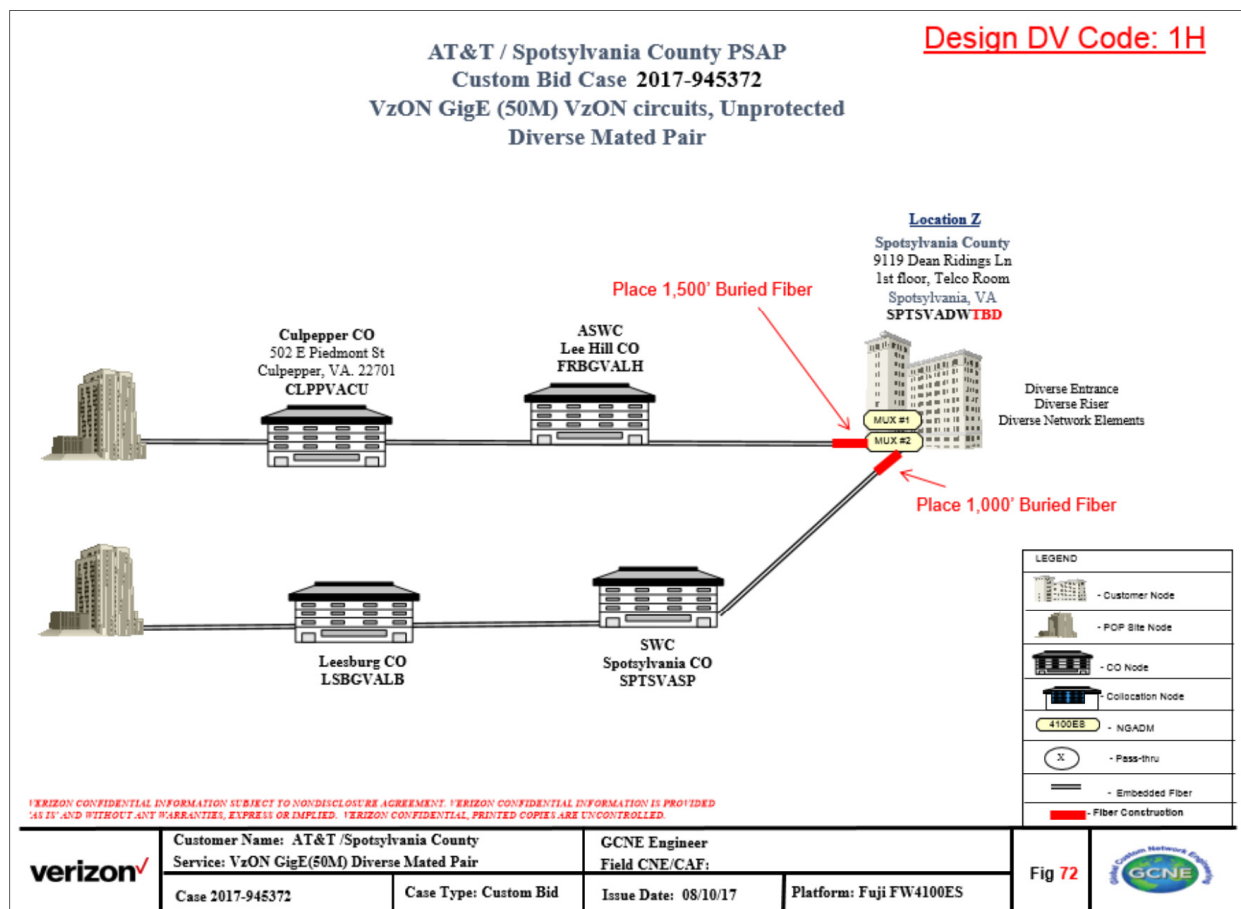
B side location showing one redundant circuit:
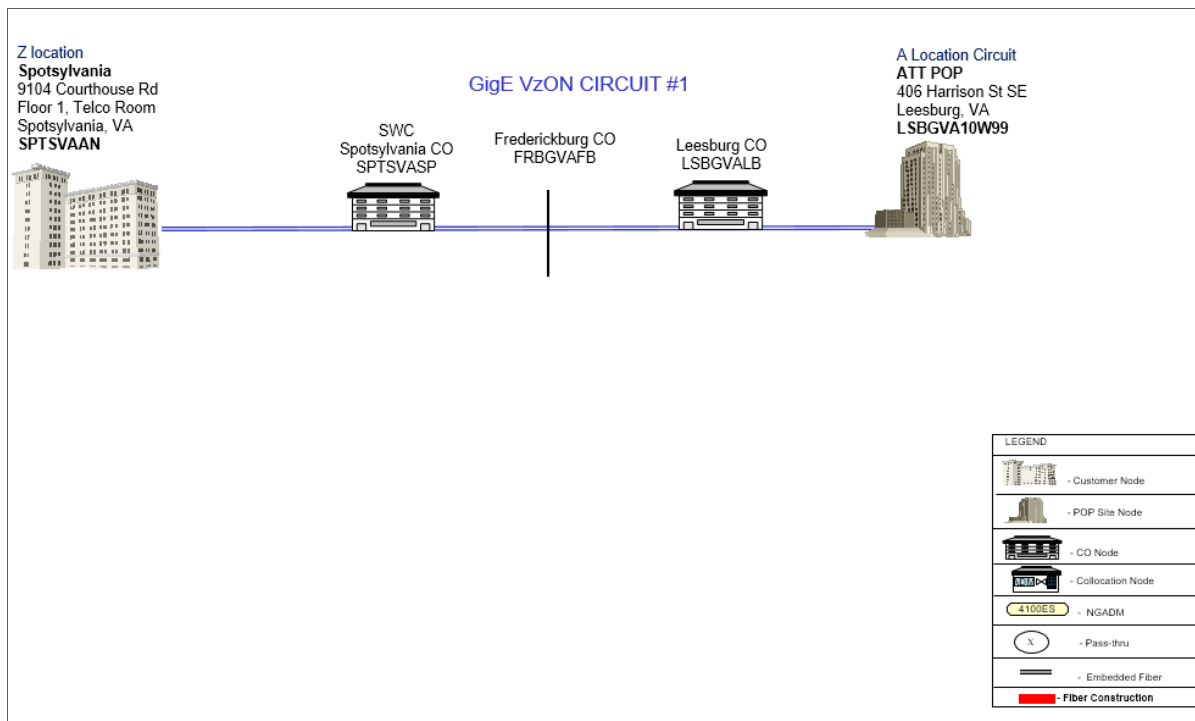
The total cost for this diverse connectivity is **$61,774.14** for the primary location, which will be provided by the Board as part of the PSAP's funding submission. The timing of the implementation of the diverse connectivity may not be completed until after initial NG9-1-1 deployment. There is no cost for redundant connectivity to the geodiverse (B side) site.

Disaster Recovery

Though the NG9-1-1 solution is designed to provide 99.999% availability, disaster recovery plans still need to be in place for instances when the network becomes unavailable or the PSAP is otherwise inoperable (evacuation, structural damage, etc.). Broadly, when the PSAP must be abandoned, there are two approaches to disaster recovery, a) having a backup PSAP within the locality or b) partnering with a neighboring PSAP to take the calls. Additionally, if only the network is impacted and the PSAP is still operable, 9-1-1 calls can be forwarded to a 10-digit telephone number in the same PSAP. Location data is lost, but that call can still be answered and processed.

Currently, the PSAP does not have a disaster recovery plan for if the PSAP must be evacuated. Should just the network be unavailable and the PSAP can still be occupied, calls are rerouted to the **Fredericksburg PSAP**.

Based on the current disaster recovery plan, no additional steps must be taken in order for this plan to continue to be viable with NG9-1-1. The PSAP need only inform AT&T of their disaster recovery plan during the detailed planning after the participation agreement is signed. AT&T will then build those routes in the configuration files both for during the transition and post-migration to NG9-1-1.

While support will be available to maintain the current disaster recovery capability for the PSAP, it is important to note that there are aspects of disaster recovery that are beyond the scope of this migration proposal. As an example, while the NG9-1-1 network can be configured to route calls to a neighboring PSAP in the event of a PSAP evacuation, getting the 9-1-1 call to another PSAP to be answered is only part of the dispatching process. The call for service then needs to be sent to first responders through a radio channel or mobile data. Assuming that capability already exists, nothing about the deployment of NG9-1-1 should impact that. In cases were disaster recovery does not exist currently, this migration proposal only deals with getting the 9-1-1 call routed to another PSAP (backup or neighboring) and does not address radio or CAD interoperability needed to effect the dispatch of first responders. VITA ISP can assist with that process, but outside of NG9-1-1 deployment. Additionally, VITA ISP can assist with the exercising of disaster recovery plans, which should be done at least once a year to make sure they are fully functional when needed.

Secondary PSAP

There are no secondary PSAP(s) identified within the service area of the primary PSAP.

Network Security

AT&T employs a defense-in-depth security strategy to protect sensitive information. Security mechanisms are deployed throughout the service in addition to the multi-layered security provided by the network itself, in order to provide seamless and effective security. AT&T's world-class experience in both IP and Telephony Security provides the following key security elements.

- Availability of the VoIP Service: Stop denial or deterioration of service functionality
- Integrity of the VoIP environment: Prevent system functions or data from being corrupted
- Confidentiality and Data Privacy in VoIP: Keep information secure and private

The AT&T IP/MPLS Converged Network deploys the same attention to state-of-the-art security measures as have been provided on traditional PSTN networks:

- AT&T Security Policy and Requirements (ASPR) and AT&T OneProcess provide the security foundation.
- AT&T Internet Protect helps protect against worm/virus attacks and offers DoS (denial of service) protection.
- A 24x7 Security Network Operations Center (SNOC).
- AT&T MPLS Voice Aware Network provides security and QoS.
- AT&T Global Fraud Management System protects AT&T VoIP against fraud.
- AT&T hub-and-spoke MPLS VoIP VPN for customer access helps to provide security and QoS for AT&T.

In the AT&T MPLS network, customer services are provisioned on specific interfaces of an MPLS VPN by using known IP addresses. This approach enables AT&T to authenticate users and traffic. Rather than supporting signaling or voice encryption, AT&T relies on the MPLS security and secured IP tunnels to provide confidentiality for signaling and voice.

The data privacy and data integrity of an MPLS VPN is not dependent on encryption or address space-based access controls. AT&T protects the core network against compromise by:

- Hardening the routers and turning off unnecessary services.
- Implementing TACACS+ authentication, authorization and accounting for router access/commands.
- Automated provisioning of router configuration driven from ordering systems, to minimize human error, complimented by daily discord reports and investigation.
- 24/7 monitoring and DoS mitigation tools.
- Route dampening and/or limiting total number of routers learned to protect routing stability.
- Firewalls, IDS, token based authentication, encrypted remote access for network and service management systems/work centers.

The AT&T security culture assures that these architectural protections are enforced by audits, employee awareness training, penetration testing and enforcement of architectural principles and policy.

In addition, AT&T MPLS VPN service is a transport only service, with the data integrity and data privacy protection as described above. AT&T monitors the core network for traffic anomalies and shared resource consumption thresholds to protect the core network and assure that traffic storms do not impact the performance of other customers. AT&T network management and service management systems are hardened, require authentication and authorization control, and are instrumented with intrusion detection to assure that they are not compromised, and cannot serve as a vector to attack the network or customers.

Schedule for Deployment

A clear and accurate schedule is essential to ensure cost effective and coordinated deployment throughout the Commonwealth. For that reason, this section identifies all milestones that must be met in order to successfully deploy. To manage costs, a six-month deployment window has been established for each selective router pair regardless of whether the PSAPs choose the AT&T or another NG9-1-1 solution. The following chart identifies the deployment periods for each selective router pair:

Selective Routers	9-1-1 Service Provider	Population	Time Period
Fairfax/Alexandria	Verizon	2,494,184	January 2019 – June 2019

High St Portsmouth/Jefferson	Verizon	1,662,247	July 2019 – December 2019
Stuart/Chester	Verizon	1,660,182	January 2020 – June 2020
Charlottesville/Farmville	CenturyLink	403,369	July 2020 – December 2020
Fredericksburg/Winchester	**Verizon**	**343,031**	**July 2020 – December 2020**
Danville/Lynchburg Church St	Verizon	320,247	July 2020 – December 2020
Staunton/Salem	Verizon	453,065	January 2021 – June 2021
Shenandoah County ECC	Shentel	43,175	January 2021 – June 2021
Covington	Ntelos	21,556	January 2021 – June 2021
New Castle	TDS Telecom	5,158	January 2021 – June 2021
Floyd County	Citizens	15,651	January 2021 – June 2021
Monterey-Highland Telephone	Highland Telephone	2,216	January 2021 – June 2021
Blacksburg/Norton	Verizon	340,101	July 2021 – December 2021
Johnson City/Wytheville	CenturyLink	338,311	July 2021 – December 2021

The **Spotsylvania County PSAP's** deployment window will be **July 2020 – December 2020**. A specific date will be determined after all PSAPs have made the NG9-1-1 decision and AT&T develops the master schedule. Regardless of the specific date, any CHE upgrades, diverse connectivity enhancements and GIS data corrections must be completed at least **three months** before the deployment date. If they are not completed by this date, migration can still occur on schedule, but it will require the deployment of an interim solution instead of full i3.

Cost Estimates for NG9-1-1 Funding

The 9-1-1 Services Board has committed to funding the transitional costs for NG9-1-1 deployment so it is important that all such costs are identified and made part of the overall budget. It is also important that the funding be provided on a fair basis across all PSAPs in Virginia. While most costs will be fully funded, others like replacement of non-vendor supported CHE will continue to be funded at the same levels as has been provided through the PSAP grant program in prior years. Based on all of the information provided in this migration proposal, the following budget is for your deployment of NG9-1-1:

Category	Amount	Notes
NG9-1-1 non-recurring cost	$4,000	Flat rate from AT&T
CHE upgrade	$30,000	i3 licenses and services
CHE replacement	$0	Replacement planned in FY23
Text-to-911	$0	Currently using grant funds
CAD upgrade	$0	Not required
Mapping upgrade	$0	Not required
Voice logging upgrade	$0	Not required
ECaTS Data analytics expansion	$1,000	i3 logging and text to 9-1-1
Other system upgrades	$0	Not required
Rack space	$0	Rack space is available
Diverse connectivity costs	$61,774.14	
Disaster recovery upgrade	$0	Not required
Secondary PSAPs	$0	None
GIS data preparation	$0	Not required
Legacy 9-1-1 transition costs	$10,825.20	Verizon costs
Project management assistance	$0	None requested

Total	$107,599.34	

The monthly recurring cost for the AT&T solution is **$19,074.89** which is set for the ten-year term of the Fairfax County contract. The current monthly recurring cost for the legacy E9-1-1 solution is approximately **$4,411.82**. The estimated monthly increase to the PSAP after deployment is approximately **$14,663.07**. This increase will be covered by the Board for a period of 24 months after deployment is complete. At the end of this period, the entire cost will be the responsibility of the PSAP. Copies of invoices from the current 9-1-1 service provider must be provided to substantiate the current monthly cost. This will be the basis for determining whether monthly funding is provided and in what amount.

The monthly recurring cost is impacted by the bandwidth into the PSAP. Bandwidth is primarily impacted by the number of concurrent calls each PSAP wants to be able to process. As the PSAP grows and adds bandwidth to handle more concurrent calls, the increased monthly cost will be the obligation of the PSAP even if during the 24 months following transition. Additionally, the recurring maintenance costs for PSAP equipment and GIS data will remain the responsibility of the PSAP.

Projected Board Funding

The Board will begin awarding funding for NG9-1-1 in late 2018. Until the Board approves the funding request from the PSAP, all funding levels shown are just projected. Based on the funding guidelines approved by the Board (or will be approved by the Board), the following funding would be awarded to the PSAP:

Type of Funding	Amount
Non-recurring	$107,599.34
Recurring (over 24 months)	$351,913.68
Data Analytics (monthly)	$415.12

The funding amount shown is based on estimates at this point. As binding quotes are received, the budget will be adjusted. The approval from the Board will be for the specific equipment or services and contingency funding will be available should the final cost be slightly higher so long as the original scope of the effort does not change. Similarly, if the final cost is lower, the budget will be adjusted lower. That additional funding cannot be shifted to another part of the project.

Commonwealth of Virginia
Next Generation 9-1-1

Proposal Acceptance Letter
(PAL)

Purpose

The Proposal Acceptance Letter (PAL) functions as the funding request for the NG9-1-1 Migration Program. Primary PSAPs and secondary PSAPs currently served by a selective router pair are eligible to submit a PAL and request funding from the 9-1-1 Services Board (the "Board"). The PAL confirms a PSAP's acceptance of the information contained in their NG9-1-1 Migration Proposal (MP) and signals their intent to deploy NG9-1-1. The PAL should be submitted to the electronic mailbox for the PSAP Grant Program - psapgrants@vita.virginia.gov.

The funding cycle for the NG9-1-1 Migration Program starts on July 1, 2018 and remains open throughout the NG9-1-1 deployment period. The 9-1-1 Services Board will review funding requests received no later than 45 calendar days in advance of each regularly scheduled meeting. A Grant ID and email receipt notification will be sent to the e-mail address listed on the PAL.

The funding amount requested in the PAL should not exceed the recurring and non-recurring cost estimates contained in the MP. After reviewing a PSAP's MP and PAL, the Board will approve funding for specific equipment and services. Contingency funding will be available should the final cost be slightly higher so long as the original scope of the effort does not change. Similarly, if the final cost is lower, the budget will be adjusted lower. This additional funding cannot be shifted to another part of the project. Also, if a PSAP's MP needs to be revised for a material change after it has been approved by the Board, an additional PAL would need to be submitted to obtain any additional funding.

When the Board approves a PSAP's funding request, the PSAP will be expected to execute a contract vehicle with a NG9-1-1 solutions provider within three months of the award date. If a PSAP needs additional time to execute this contract, the PSAP will need to request an extension from the Board. The PSAP will also be expected to complete all identified NG9-1-1 ready implementation steps within three months of the scheduled deployment date. Funding for approved equipment and services may not be immediately available to a PSAP. ISP staff will provide a spending plan, specific to a PSAP's deployment schedule, that details in which year of the deployment period funding will for available to the PSAP.

Local Project Manager (Contact)

PSAP/HOST PSAP NAME: Spotsylvania County

CONTACT TITLE: IS Division Director Public Safety

CONTACT FIRST NAME: Keith

CONTACT LAST NAME: Pusso

ADDRESS 1: 9119 Dean Ridings Ln

ADDRESS 2: Click here to enter text

CITY: Spotsylvania

ZIP CODE: 22553

CONTACT EMAIL: kpusso@spotsylvania.va.us

CONTACT PHONE NUMBER: 5405077508

CONTACT MOBILE NUMBER: 5407607835

CONTACT FAX NUMBER: Click here to enter text

Financial Information

Amount Requested: $ 459,513.02

Date of Completed Migration Proposal: November 1, 2018

PSAP preference for Board payment on behalf of PSAP for incurred eligible NG9-1-1 expenses:

☒ Yes   ☐ No

Commonwealth of Virginia
Next Generation 9-1-1

Martinsville - Henry
PSAP/GIS Specific
NG9-1-1 Migration Proposal

Executive Summary

This migration proposal is being prepared for the **Martinsville - Henry PSAP** based on the Fairfax County contract with **AT&T**. **J.R. Powell** shall be the primary contact.

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, capabilities and functionality of an 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 aid that decision, the 9-1-1 Services Board (the Board) adopted the Virginia NG9-1-1 Deployment Plan in January 2018. That plan proposed the methodology and process to guide the 9-1-1 Services 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. Though the Board is recommending the Fairfax County contract with AT&T for NG9-1-1 services since it was awarded through a competitive process, each locality will need to determine the most appropriate path. 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.

A Migration Proposal is being developed for each locality (or groups of localities if served by a consolidated public safety answering point or PSAP) to provide information about the AT&T solution, prerequisite work needed within the PSAP and the expected costs and funding provided by the Board. The goal of this document is to provide each PSAP/locality with all of the information needed to evaluate the AT&T solution and determine whether it will meet the local needs. No locality should feel obligated to accept this proposal as they may use an appropriate procurement process for these services. This is simply to provide more information about services that are already available through an existing contract.

The Commonwealth's goal is to have all PSAPs fully deployed with the National Emergency Number Association (NENA) i3 standard. This standard states that all 9-1-1 calls are delivered to the PSAP on IP circuits with associated caller location data. If the equipment or GIS data in the PSAP is not capable of supporting the NENA i3 standard, interim solutions are available. These solutions allow calls to be delivered to the PSAP as IP, but then be converted back to analog for interface with the PSAP's systems. This interim solution established the PSAP's connection to the ESInet and will serve as the initial migration to NG9-1-1. After system and/or GIS data upgrades are complete the PSAP will be able to reach a full i3, NG9-1-1 environment. While AT&T will conduct a more exhaustive assessment after the PSAP executes a participation agreement, the review ISP performed for this proposal indicates that the **Martinsville - Henry PSAP** will need to upgrade their current Vesta 911 software to version 7.2, or have in place an i3 functional CHE that has been approved on the AT&T ESInet™ to be able to implement the full NENA i3 standard without the need for any interim or transitional steps. Some work on their GIS data will be required, but it should not impact the deployment schedule.

Solution Overview

AT&T is offering their Next Generation ESInet solution throughout Virginia as a solution that will facilitate a transition from legacy 9-1-1 networks to networks capable of supporting the growing demands of a mobile society. AT&T's solution supports key NENA i3 capabilities today, while forming the basis of a true NG9-1-1 platform that will support multimedia emergency services as standards are solidified in the industry.

The AT&T ESInet™ solution is a combination of a world class IP network and the NG9-1-1 components. Their ESInet solution (delivered as a service) comes complete with a full suite of advanced features, management services and tools to help ensure they provide the best possible service to each PSAP and ultimately the citizens they serve.

The AT&T ESInet™ solution provides the public safety community with an i3 architecture built from the ground up. AT&T's commitment to the NENA i3 standard is based on years of contributions to NENA standards committees and understanding the evolving needs and requirements of the Public Safety community. The AT&T solution is not just "i3 like," or "i3 aligned." As elements of the i3 standard continue to be ratified, updated and enhanced—AT&T will continue its commitment to i3. The AT&T ESInet™ services will provide Virginia everything needed to deliver the critical foundational components of an industry standard i3 solution delivered over the worlds most advanced IP network.

AT&T ESInet™ Included Features

- Initial build-out with expandable capacity
- Nationally distributed, geographically diverse and redundant service architecture
- Pre-deployed ESInet Call Processing Centers in AT&T datacenters across US
- Aggregation Centers (AGC) in AT&T Central Offices across the US to easily augment growth capacity
- Initial call processing capacity more than twice current US E9-1-1 call volumes
- NENA i3 compliant
- High availability design (99.999% availability)
- 6 core redundant architecture
- Redundant ALI database
- Interoperable with neighboring PSAPs
- Defense in depth security
- Text to 911 – National TCC Provider
- IPV6 capable
- Reporting Suite
- Full lifecycle management
- End to end management and monitoring
- Fully resourced team to install and support
- Full Business Continuity/Disaster Recovery organization
- Dedicated Program / Service Manager

The proposed solution provides a secure IP-based network with no single point of failure. With no single point of failure, the solution includes six ESInet data centers located at AT&T facilities throughout the country. The ESInet will provide the core for a robust emergency services IP network that assures call delivery. The AT&T solution enables call delivery into a legacy PSAP environment, an IP-enabled 9-1-1 PSAP, or to peer ESInets. AT&T and West Corporation have deep security and support provisions in

place. AT&T has demonstrated experience in cybersecurity. All of this is backed by AT&T's 24/7/365 Resolution Center, AT&T Labs, AT&T's world class project management and service delivery organizations.

Additional information about the AT&T solutions and the contract with Fairfax County can be found at: https://www.fairfaxcounty.gov/cregister/ContractDetails.aspx?contractNumber=4400007825

PSAP Call Handling Systems and Applications

Each PSAP system and application that interfaces with the 9-1-1 call must be assessed to determine if it will be compatible with NG9-1-1. This section of the migration proposal identifies each major system, assesses its readiness and outlines any upgrades that must or could be implemented with NG9-1-1.

Call Handling Equipment

Obviously, the PSAP's call handling equipment (CHE) is the primary system that interfaces with the 9-1-1 network. As such, it is likely the one that will require the deepest assessment and potential upgrades to operate with the NG9-1-1 network. CHE that is non-vendor supported (NVS) (or will become NVS during the transition period) or cannot be upgraded to be NG9-1-1 capable will be identified for replacement, but will be subject to the funding limits currently in place for the PSAP grant program ($150,000 individual or $200,000 shared services). This may also apply to technology refreshes of hardware due to becoming NVS or operating systems becoming end-of-support. The current CHE in the PSAP has been identified as:

- CHE manufacturer: **Motorola**
- CHE model: **Vesta**
- CHE version number (clients): **7.0**
- CHE version number (server): **7.0**
- CHE maintenance provider (channel): **Mobile Communications America**
- CHE Geodiversity: **Yes; 1024 DuPont Rd. Martinsville 24112**
- Number of positions: **11 (9 at primary center, 2 at backup)**
- SIP capable: **Yes**

This CHE will require an upgrade to implement the full i3 interface. This upgrade will require the purchase of two firewalls to connect to the ESInet. However, since the PSAP has deployed text to 9-1-1 with the direct IP solution, these firewalls have already been purchased and can be used for both purposes.

The PSAP indicates the planned replacement of their CHE in **January 2021** and to have a shared system with the Patrick and Franklin County PSAPs. This date is at the start of their planned NG9-1-1 migration. Any new CHE will need to be tested and i3 functional on the AT&T ESInet.

Text to 9-1-1

Text to 9-1-1 can be deployed web-based on a separate computer or integrated with the CHE. While the former is typically at no cost, the latter tends to have a cost associated with it. Though text to 9-1-1 will be a base feature of NG9-1-1, the passage of Senate Bill 418 in the 2018 General Assembly requires all PSAPs to implement text to 9-1-1 by July 1, 2020. The **Martinsville – Henry PSAP** has deployed the direct IP text to 9-1-1 solution and therefore meets this legislative requirement.

Computer-Aided Dispatch

A computer-aided dispatch (CAD) system usually receives 9-1-1 location information (ALI) through an interface with the CHE. As a result, the change to NG9-1-1 should not have an impact on a CAD system.

However, an assessment is made to determine if that is the case and if any options are available from the CAD vendor that could improve operations after NG9-1-1 is deployed. Any required upgrades would be funded through the Board, but any options to improve operations would be at the PSAP's expense. Additionally, as a reminder, CAD system replacement is no longer funded through the PSAP grant program so PSAPs need to plan for its replacement locally. The current CAD system has been identified as follows:

- CAD vendor: **Southern Software**
- CAD software version: **18.1.234.16**
- CAD interfaces: **Yes**
- Method of data transfer: **Serial**

This CAD system has been determined to not require any upgrade or modification with the deployment of NG9-1-1.

Mapping Display System

Similar to a CAD system, a mapping display system usually receives 9-1-1 location information (ALI) through an interface with the CHE or is part of the CHE or CAD. As a result, the change to NG9-1-1 should not have an impact on a mapping display system. However, an assessment is made to determine if that is the case and if any options are available from the mapping vendor that could improve operations after NG9-1-1 is deployed. The current mapping display system has been identified as follows:

- Dispatch Mapping Vendor: **Southern Software**
- Dispatch Mapping Software Version: **MDS Map Viewer v2.105.3.0**
- Method of data transfer: **from CAD**

This mapping display system has been determined to not require any upgrade or modification with the deployment of NG9-1-1.

Voice Logging and Recording

Typically, the audio recorded by a voice logging recorder is generated by the CHE. Though not a best practice, it is possible to record audio directly from the incoming 9-1-1 trunks so an assessment must be performed to ensure that audio from 9-1-1 calls will still be recorded after the deployment of NG9-1-1. The current logging system has been identified as follows:

- Logging Recorder Vendor: **Eventide**
- Logging Recorder Model: **NexLog**
- Logging Recorder Software Version: **2.7.2**
- Audio Origination Point: **Both positions and trunks**

It is important to note that with an IP connection, audio is not present on the circuit until the CHE responds with an answer code. This is usually not until it is answered by a call taker, though it could be earlier if an audio message is played for the caller (which technically requires the CHE to answer the call to play the message). This voice logging recorder system has been determined to not require any upgrade or modification with the deployment of NG9-1-1.

Data Analytics

Though the ECaTS data analytics application is provided to all PSAPs by the 9-1-1 Services Board, some PSAPs still use a second application, native to the CHE, for data analytics in the PSAP. While the Board

will directly fund the upgrade to ECaTS to handle NG9-1-1, the local data analytics application may also need to be upgraded. The current data analytics application has been identified as follows:

- Primary Data Analytics System: **ECaTS and Vesta Analytics**
- Data Analytics Vendor: **West and Motorola**

All required upgrades to ECaTS will be handled through the statewide contract at no cost to the PSAP. It is the responsibility of the PSAP to determine if any upgrades to Vest Analytics are required, and to pay for an implement those upgrades if desired.

Outcall Notification Systems

The PSAP currently uses **CodeRed** as their outcall notification system. AT&T will provide quarterly subscriber data for use in this system at no cost. It is important to note that this data's use is limited to the outcall notification system and cannot be used for other purposes.

Other Systems or Applications

No other systems, that interface with the 9-1-1 call flow have been identified that will impact the PSAP's readiness for NG9-1-1.

Rack Space

The AT&T solution requires four units (4U) of rack space in the PSAP equipment/computer room for networking equipment. The rack must also have available electrical connections and be properly grounded. The PSAP has confirmed that this space is currently available.

Coordination with Open Grants

The PSAP currently does not have any open grants.

GIS Data Preparation

GIS Data Sources

Currently, **Henry County GIS and Martinsville GIS** maintains all of the GIS data for the PSAP and will be the source for all GIS data required for NG9-1-1 geospatial routing; however, other departments within the locality may contribute data or manage various processes. It is the responsibility of **Henry County** to aggregate the GIS data required for the PSAP and NG9-1-1.

Locality GIS Data Readiness

Geospatial data drives the routing of NG9-1-1 calls. It is imperative that road centerline and address point data layers are highly accurate and well maintained. In 2016, VITA conducted an analysis of these data against the existing automatic location identification (ALI) database and master street address guide (MSAG) to help determine readiness and provided a report to each PSAP of the results. This analysis has been repeated making adjustment to the logic to ensure it matches the methodology used by AT&T in their analysis. The goal is to have 98% of all addresses in the current ALI database geocode against the locality's road centerline data layer. Once the 98% threshold recommended by NENA is met, the PSAP is ready to deploy NG9-1-1. Since matching to the address point is more accurate, VITA is recommending the additional goal of matching 98% of ALI database addresses when geocoded against the address point data layer. If either of these goals in not achieved, then GIS data work must be completed to meet or exceed these goals. While financial support from the PSAP grant program may be available to fund this work, localities with GIS programs will be encouraged to make the necessary corrections in house if resources and time before deployment permits.

These are preliminary results based on expected data criteria of AT&T, and will be retested directly by AT&T after the execution of the participation agreement. This analysis provides the PSAP and their GIS support with an estimate of the extent of potential errors and helps identify the issues that need to be resolved. ISP staff including a GIS analyst and/or regional coordinator will begin working with the GIS data maintenance provider (internal or external) to identify and correct the GIS data or ALI data and achieve a higher match rate and thus more accurate geospatial routing.

Though there are other types of errors that may exist in the GIS data used by the PSAP (such as parity or cartography errors), these do not usually impact the routing of a 9-1-1 call. As a result, as part of this effort, only corrections that impact routing the 9-1-1 call will be required. PSAPs, in coordination with their GIS support, are encouraged to look more broadly at their data and work to improve its overall quality as well.

The 2018 MSAG/ALI/GIS analysis for the PSAP (including data from both Henry County and Martinsville City) determined the current match rate to be as follows:

- Road Centerline (RCL) – **99.7%**
- Address Point – **99.1%**

Martinsville-Henry County already meets both goals. If they desire a higher match rate, there are differences in street names between the ALI and GIS data. Correcting the street names so they match would increase the match rate for RCL to **99.9%**. The analysis also determined that no more than ten addresses were responsible for many of the address point discrepancies. Resolving no more than ten addresses will increase the result to **99.3%**. During July 2018, VITA will send each PSAP and/or GIS manager a report detailing this analysis, and identifying the specific ALI records that could not be matched to the RCL or address point data. To resolve these ALI address discrepancies, there are potentially four actions that will need to take place:

1. **Add a record to the GIS** – When the ALI database has correct addresses that have not been added to the GIS data, the addition of data needs to occur. This may entail adding a road segment to the RCL or a point to the address points.
2. **Change attribution in the GIS** – When an ALI record has a correct address but the RCL or address point attribution is incorrect the discrepancy in the GIS data must be resolved. A common issue is a difference with the street name or street type between the ALI and the GIS data. Often, this issue can be corrected using a batch script process. VITA staff can assist.
3. **Change attribution in the ALI database** – When the RCL or address point has the correct address but the ALI record is incorrect, the discrepancy in the ALI database may need to be resolved. Again, this is often caused by differences in the street name or street type between the records. If necessary, AT&T can make batch changes as they load the ALI database into the ESInet.
4. **Determine that the discrepancy is not an error** – There are often ALI records associated with telephone numbers that can never actually dial 9-1-1. They could be pilot numbers for a multi-line telephone system, foreign exchanges or shell records for wireless calls. While many of those records were filtered out of the analysis, some may still be within the data. These ALI records need to be identified and removed from the match rate calculation. VITA staff will assist with this process.

In addition to the requirement for ALI address matches, there are five GIS data reviews that AT&T conducts on the GIS data to ensure there are no errors that would cause issues or uncertainty when routing a 9-1-1 call. As an example, duplicate GIS data could cause a search for an address to result in two or more matches. Since certainty of a location is important, checks are performed to ensure no

duplicate data exist. The following is a list of the additional analyses performed and the number of records that were found to be in error that will need to be corrected:

- Road centerline has duplicate address ranges - **0**
- Road centerline has right or left side overlapping address range - **17**
- Road centerline has street name attributes not meeting Virginia, USPS, & NENA standard - **0**
- Address point Is duplicate, has no street name, or no address number - **59**
- Address point street name and road centerline street name mismatch - **6**

All of these errors will be also included in the analysis delivered to the PSAP and GIS Manager in July 2018. This includes geospatial data identifying each specific error that can be viewed in ArcMap. Utilizing this information will assist in error identification and correction.

Regardless of how they are resolved, **Henry County GIS** will need to resolve these issues through internal resources, at least three months prior to the targeted deployment date

PSAP Boundary

This is a GIS polygon data layer that defines the area of responsibility for each PSAP. The PSAP boundary must be agreed to by all adjoining PSAPs, thus its development must be a regional effort. VITA ISP will support the regional development and maintenance of a statewide PSAP boundary. This PSAP boundary layer is essential to routing 9-1-1 calls based on caller location by either civic address or coordinate location. This layer must not have gaps or overlaps to ensure correct call routing. VITA will develop a best practice to guide each PSAP through this process, which can also be facilitated by the VITA ISP regional coordinator.

Authoritative GIS Data Source Boundary

This polygon layer defines the area of authoritative GIS data sources, with no unintentional gaps or overlaps. The boundary must be agreed to by all adjoining data provisioning providers. Edge-matching conformance is ensuring that one and only one entity is responsible for maintaining each piece of GIS data within a PSAP. Within a PSAP boundary, there may be multiple sources for authoritative GIS data as a combination of cities and counties. The GIS sources within the PSAP need a common and agreed-upon understanding for the maintenance of each feature and the provisioning boundary of responsibility. Making sure there is agreement of that point and ensuring each locality is only providing data where they are the authoritative GIS data source are the purpose of this assessment. External edge-matching conformance addresses boundaries between neighboring PSAPs to ensure that there are no overlaps or gaps in the maintenance of GIS data. Geometric features need to meet at the agreed upon boundary.

MSAG transition/confirmation

In order to accommodate originating service providers (OSP) that are not fully i3 capable, AT&T will maintain a master street address guide (MSAG) as part of the NG9-1-1 solution. While the existing MSAG can be used and maintained, generating a new MSAG from local GIS data is a better solution since existing GIS data is generally of superior quality than the MSAG. To use GIS data to generate the MSAG, an emergency service number (ESN) data layer must exist or be created. The PSAP has **71 ESNs** for their area of responsibility. **Martinsville-Henry County** has an ESN boundary layer depicting this area so they will utilize a GIS generated MSAG with the migration to NG9-1-1.

Ultimately, ESN and community name need to be attribute fields in the address points and road centerlines layers to support call routing until the OSP can transition to i3. If these attributes are not part of a locality's existing maintenance workflow or GIS database, they can be created by building a separate polygon layer and transferring these values to the centerline segments (commonly referred to

as a spatial join). The spatial join method can be implemented as part of the workflow for preparing to transfer GIS data to AT&T to ensure these fields are accurately populated.

GIS Ingest Readiness

Localities may choose to implement AT&T's tools and workflows for ongoing maintenance of GIS data, or may choose to continue using internal workflows or third-party support services. As GIS data is updated, regardless of the tool set or service provider, the GIS datasets must be provided to the spatial interface (SI). The SI provisions the updated GIS data to drive location validation and call routing functions in the ESInet.

Localities choosing to adopt or transition to the AT&T toolset will have a defined workflow for providing updated GIS data. Localities wishing to use existing tools, acquire third-party tools, or rely on a service provider will need to ensure the workflows are in place to accept and resolve discrepancy calls (formalized requests to update GIS datasets), and periodically transfer updated GIS datasets to the AT&T spatial interface. This section will establish the path and milestones for completing this work.

Data maintenance Workflow/Procedures

The quality of GIS data diminishes over time unless it is properly maintained. It is important that localities document GIS data maintenance workflows and validations to ensure synchronization across GIS layers. This can include periodically ensuring conformance of edge matching of GIS data at shared boundaries. VITA has confirmed that the GIS organizations supporting the PSAP have appropriate internal data maintenance procedures/discrepancy management workflows.

Call Routing

The ultimate goal for all PSAPs is to use geospatial (i3) routing for all 9-1-1 calls. This solution uses all the NENA i3 standards for delivering voice and data directly into the PSAP's CHE. 9-1-1 call routing is based on the PSAP-provided GIS data. The ESInet router hands off the call to the PSAP networking equipment (router or firewall). The PSAP's CHE must be able to receive the voice call via SIP. Location data delivered via SIP using PIDF-LO, and would perform all the i3 protocols such as LoST and HELD.

If the PSAP's CHE is not NG9-1-1 capable or the geospatial data is not ready for deployment, a PSAP can still connect to the ESInet with an interim solution for call delivery. This will allow the PSAP to migrate on schedule, and they can implement geospatial (i3) routing when the GIS data is suitable for this use and the CHE is i3 capable.

The two interim solutions are as follows:

Legacy PSAP Gateway - This solution allows the PSAP to be connected to the ESInet through a network gateway. In this call delivery configuration, the call is routed with the legacy MSAG and ALI data, however this is done over the IP network. Once the call reaches the gateway, the voice data is converted to analog and processed over an analog voice circuit to the PSAP's CHE. This does not require any upgrade to the CHE and as mentioned uses a legacy ALI lookup. The ALI lookup would use a standard serial connection (in this case to the legacy PSAP gateway placed in the PSAP) to retrieve location information.

Transitional SIP - This solution uses an IP (SIP) connection to get the voice call directly into the PSAP's CHE. The ESInet router passes the call to the PSAP networking equipment (router or firewall). The PSAP's CHE must be capable of receiving the voice call via SIP. The CHE would still use a legacy ALI lookup. The ALI lookup would use the standard serial connection (in this case to

the ESInet routers) to retrieve location information. MSAG and ALI are still used to conduct the routing.

Again, the ultimate goal for all PSAPs is to geospatially route all 9-1-1 calls. If the geospatial data meets the accuracy goals, a PSAP should be able to deploy NG9-1-1 with geospatial routing. If for some reason, this cannot be accomplished, interim solutions are available to allow the PSAP to deploy on schedule, and they can convert to geospatial routing later.

Based on an assessment of the CHE and GIS data, geospatial routing can be implemented initially with NG9-1-1 and no interim solution will be necessary. While some GIS data correction must take place, the PSAP is committed to correcting those issues well in advance of the required milestone and to maintain that data through the transition period.

Call Transfers

During the transition to NG9-1-1, the AT&T ESInet will be interconnected with all selective routers from Verizon and CenturyLink to ensure that calls received by PSAPs that have deployed NG9-1-1 can be transferred to PSAPs on the legacy E9-1-1 network and vice versa. No ability to transfer calls will be lost during the transition when neighboring PSAPs may be on different networks.

Post deployment, all Virginia PSAPs should be on an ESInet and should be able to transfer calls among PSAPs with accompanying location data. Even if more than one ESInet is deployed from different solution providers, the goal is that they are interconnected and calls can be transferred between them.

Network

The NG9-1-1 solution offered by AT&T is a service; therefore, the network is provided as part of that service. However, there are several issues impacting the network that may be outside of this service that must be considered. The configuration of the PSAP's connection to the network will be based on the legacy E9-1-1 network information as follows:

- Legacy E9-1-1 service provider: **Century Link**
- ALI database provider: **Century Link**
- Selective router pair(s): **Johnson City/Wytheville**
- Trunk counts (all): **20**
    - Wireline: **8**
    - Wireless: **8**
    - SIP:
    - Administrative: **4**

The NG9-1-1 network will be designed to support the same number of concurrent 9-1-1 calls as can be supported on the legacy network (wireline and wireless trunks). The PSAP can designate what happens to calls that exceed this number. This setting is determined in the PSAP CHE, but the options will be discussed with AT&T during system configuration. The options include providing the caller with a fast busy signal, routing the call to another PSAP, or overflowing the call to another line. As a best practice, VITA ISP recommends routing the call to a fast busy signal or rerouting calls to another PSAP.

Redundancy and Diversity

In order to provide 99.999% availability of the NG9-1-1 service, each PSAP must have diverse and redundant IP connections to the ESInet. Having redundant connectivity means having two connections, but they could be co-located or follow the same path. Having diversity means that those redundant connections follow different paths that never touch from origin to destination. To achieve the 99.999%

availability, diverse connectivity is planned for all PSAPs. There is a chance the diversity is simply not available to all PSAPs. AT&T has conducted a diversity study for each PSAP. The results for the primary site of the **Martinsville - Henry PSAP** are as follows (since the CHE is geodiverse a drawing is provided for each location):
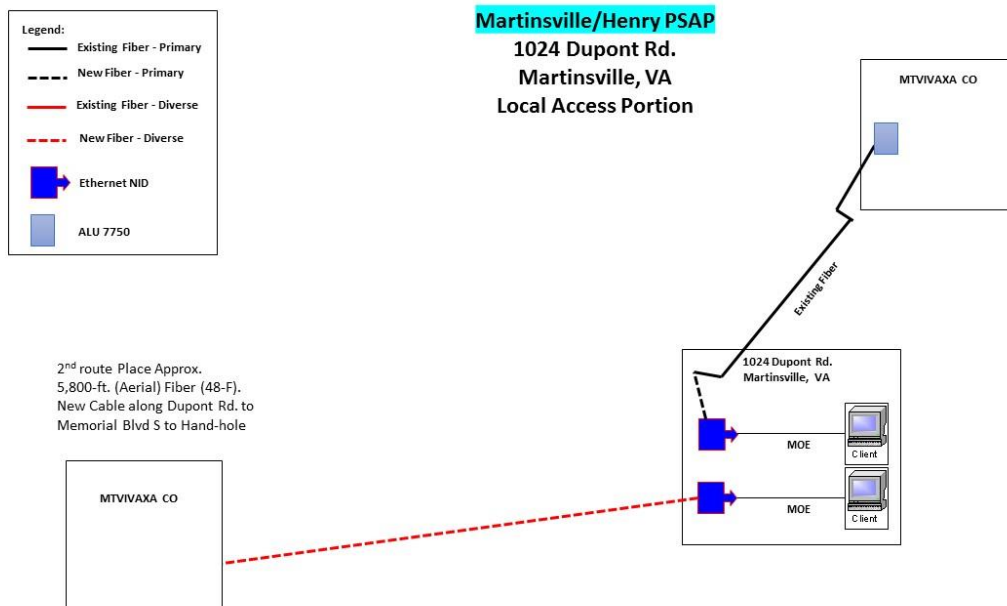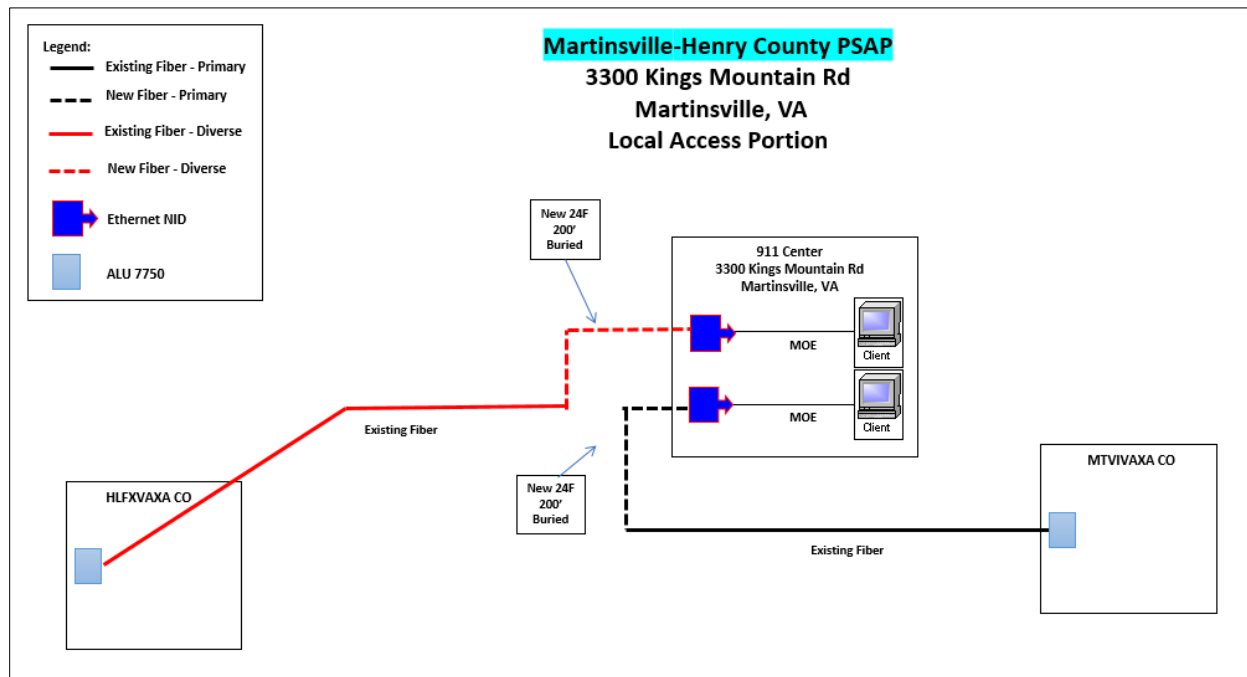
The total cost for this diverse connectivity is **$24,000** ($0 for primary location and $24,000 for the geodiverse site), which will be provided by the Board as part of the PSAP's funding submission. The timing of the implementation of the diverse connectivity may not be completed until after initial NG9-1-1 deployment.

Disaster Recovery

Though the NG9-1-1 solution is designed to provide 99.999% availability, disaster recovery plans still need to be in place for instances when the network becomes unavailable or the PSAP is otherwise inoperable (evacuation, structural damage, etc.). Broadly, when the PSAP must be abandoned, there are two approaches to disaster recovery, a) having a backup PSAP within the locality or b) partnering with a neighboring PSAP to take the calls. Additionally, if only the network is impacted and the PSAP is still operable, 9-1-1 calls can be forwarded to a 10-digit telephone number in the same PSAP. Location data is lost, but that call can still be answered and processed.

Currently, the PSAP has a disaster recovery plan that states if the PSAP must be evacuated for any reason call will be rerouted to the **backup center**. Should just the 9-1-1 network be unavailable calls will receive a fast busy signal.

Based on the current disaster recovery plan, no additional steps must be taken in order for this plan to continue to be viable with NG9-1-1. The PSAP need only inform AT&T of their disaster recovery plan during the detailed planning after the participation agreement is signed. AT&T will then build those routes in the configuration files both for during the transition and post-migration to NG9-1-1.

While support will be available to maintain the current disaster recovery capability for the PSAP, it is important to note that there are aspects of disaster recovery that are beyond the scope of this migration proposal. As an example, while the NG9-1-1 network can be configured to route calls to a neighboring PSAP in the event of a PSAP evacuation, getting the 9-1-1 call to another PSAP to be answered is only part of the dispatching process. The call for service then needs to be sent to first responders through a radio channel or mobile data. Assuming that capability already exists, nothing about the deployment of NG9-1-1 should impact that. In cases were disaster recovery does not exist currently, this migration proposal only deals with getting the 9-1-1 call routed to another PSAP (backup or neighboring) and does not address radio or CAD interoperability needed to effect the dispatch of first responders. VITA ISP can assist with that process, but outside of NG9-1-1 deployment. Additionally, VITA ISP can assist with the exercising of disaster recovery plans, which should be done at least once a year to make sure they are fully functional when needed.

Secondary PSAP

There are no secondary PSAP(s) identified within the service area of the primary PSAP.

Network Security

AT&T employs a defense-in-depth security strategy to protect sensitive information. Security mechanisms are deployed throughout the service in addition to the multi-layered security provided by the network itself, in order to provide seamless and effective security. AT&T's world-class experience in both IP and Telephony Security provides the following key security elements.

- Availability of the VoIP Service: Stop denial or deterioration of service functionality
- Integrity of the VoIP environment: Prevent system functions or data from being corrupted
- Confidentiality and Data Privacy in VoIP: Keep information secure and private

The AT&T IP/MPLS Converged Network deploys the same attention to state-of-the-art security measures as have been provided on traditional PSTN networks:

- AT&T Security Policy and Requirements (ASPR) and AT&T OneProcess provide the security foundation.
- AT&T Internet Protect helps protect against worm/virus attacks and offers DoS (denial of service) protection.

- A 24x7 Security Network Operations Center (SNOC).
- AT&T MPLS Voice Aware Network provides security and QoS.
- AT&T Global Fraud Management System protects AT&T VoIP against fraud.
- AT&T hub-and-spoke MPLS VoIP VPN for customer access helps to provide security and QoS for AT&T.

In the AT&T MPLS network, customer services are provisioned on specific interfaces of an MPLS VPN by using known IP addresses. This approach enables AT&T to authenticate users and traffic. Rather than supporting signaling or voice encryption, AT&T relies on the MPLS security and secured IP tunnels to provide confidentiality for signaling and voice.

The data privacy and data integrity of an MPLS VPN is not dependent on encryption or address space-based access controls. AT&T protects the core network against compromise by:

- Hardening the routers and turning off unnecessary services.
- Implementing TACACS+ authentication, authorization and accounting for router access/commands.
- Automated provisioning of router configuration driven from ordering systems, to minimize human error, complimented by daily discord reports and investigation.
- 24/7 monitoring and DoS mitigation tools.
- Route dampening and/or limiting total number of routers learned to protect routing stability.
- Firewalls, IDS, token based authentication, encrypted remote access for network and service management systems/work centers.

The AT&T security culture assures that these architectural protections are enforced by audits, employee awareness training, penetration testing and enforcement of architectural principles and policy.

In addition, AT&T MPLS VPN service is a transport only service, with the data integrity and data privacy protection as described above. AT&T monitors the core network for traffic anomalies and shared resource consumption thresholds to protect the core network and assure that traffic storms do not impact the performance of other customers. AT&T network management and service management systems are hardened, require authentication and authorization control, and are instrumented with intrusion detection to assure that they are not compromised, and cannot serve as a vector to attack the network or customers.

Schedule for Deployment

A clear and accurate schedule is essential to ensure cost effective and coordinated deployment throughout the Commonwealth. For that reason, this section identifies all milestones that must be met in order to successfully deploy. To manage costs, a six-month deployment window has been established for each selective router pair regardless of whether the PSAPs choose the AT&T or another NG9-1-1 solution. The following chart identifies the deployment periods for each selective router pair:

Selective Routers	9-1-1 Service Provider	Population	Time Period
Fairfax/Alexandria	Verizon	2,494,184	January 2019 – June 2019
High St Portsmouth/Jefferson	Verizon	1,662,247	July 2019 – December 2019
Stuart/Chester	Verizon	1,660,182	January 2020 – June 2020
Charlottesville/Farmville	CenturyLink	403,369	July 2020 – December 2020
Fredericksburg/Winchester	Verizon	343,031	July 2020 – December 2020

Danville/Lynchburg Church St	Verizon	320,247	July 2020 – December 2020
Staunton/Salem	Verizon	453,065	January 2021 – June 2021
Shenandoah County ECC	Shentel	43,175	January 2021 – June 2021
Covington	Ntelos	21,556	January 2021 – June 2021
New Castle	TDS Telecom	5,158	January 2021 – June 2021
Floyd County	Citizens	15,651	January 2021 – June 2021
Monterey-Highland Telephone	Highland Telephone	2,216	January 2021 – June 2021
Blacksburg/Norton	Verizon	340,101	July 2021 – December 2021
Johnson City/Wytheville	**CenturyLink**	**338,311**	**July 2021 – December 2021**

The **Martinsville - Henry PSAP's** deployment window will be **July 2021 – December 2021**. A specific date will be determined after all PSAPs have made the NG9-1-1 decision and AT&T develops the master schedule. Regardless of the specific date, any CHE upgrades, diverse connectivity enhancements and GIS data corrections must be completed at least **three months** before the deployment date. If they are not completed by this date, migration can still occur on schedule, but it will require the deployment of an interim solution instead of full i3.

Cost Estimates for NG9-1-1 Funding

The 9-1-1 Services Board has committed to funding the transitional costs for NG9-1-1 deployment so it is important that all such costs are identified and made part of the overall budget. It is also important that the funding be provided on a fair basis across all PSAPs in Virginia. While most costs will be fully funded, others like replacement of non-vendor supported CHE will continue to be funded at the same levels as has been provided through the PSAP grant program in prior years. Based on all of the information provided in this migration proposal, the following budget is for your deployment of NG9-1-1:

Category	Amount	Notes
NG9-1-1 non-recurring cost	$4,000	Flat rate from AT&T
CHE upgrade	$30,000	i3 licenses and services
CHE Replacement	$200,000	CHE replacement in FY21
Text-to-911	$0	Already deployed
CAD upgrade	$0	Not required
Mapping upgrade	$0	Not required
Voice logging upgrade	$0	Not required
ECaTS Data analytics expansion	$1,000	i3 logging and text to 9-1-1
Other system upgrades	$0	Not required
Rack space	$0	Rack space is available
Diverse connectivity costs	$24,000	
Disaster recovery upgrade	$0	Not required
Secondary PSAPs	$0	None
GIS data preparation	$0	Currently using grant funds
Legacy 9-1-1 transition costs	$9,632.10	CenturyLink Costs
Project management assistance	$0	None requested
Total	$268,632.10	

The monthly recurring cost for the AT&T solution is **$9,496.65** which is set for the ten-year term of the Fairfax County contract. The current monthly recurring cost for the legacy E9-1-1 solution is approximately **$5,850.70**. The estimated monthly increase to the PSAP after deployment is approximately **$3,645.95**. This increase will be covered by the Board for a period of 24 months after deployment is complete. At the end of this period, the entire cost will be the responsibility of the PSAP. Copies of invoices from the current 9-1-1 service provider must be provided to substantiate the current monthly cost. This will be the basis for determining whether monthly funding is provided and in what amount.

The monthly recurring cost is impacted by the bandwidth into the PSAP. Bandwidth is primarily impacted by the number of concurrent calls each PSAP wants to be able to process. As the PSAP grows and adds bandwidth to handle more concurrent calls, the increased monthly cost will be the obligation of the PSAP even if during the 24 months following transition. Additionally, the recurring maintenance costs for PSAP equipment and GIS data will remain the responsibility of the PSAP.

Projected Board Funding

The Board will begin awarding funding for NG9-1-1 in late 2018. Until the Board approves the funding request from the PSAP, all funding levels shown are just projected. Based on the funding guidelines approved by the Board (or will be approved by the Board), the following funding would be awarded to the PSAP:

Type of Funding	Amount
Non-recurring	$268,632.10
Recurring (over 24 months)	$87,502.80
Data Analytics (monthly)	$415.12

The funding amount shown is based on estimates at this point. As binding quotes are received, the budget will be adjusted. The approval from the Board will be for the specific equipment or services and contingency funding will be available should the final cost be slightly higher so long as the original scope of the effort does not change. Similarly, if the final cost is lower, the budget will be adjusted lower. That additional funding cannot be shifted to another part of the project.

Virginia Information Technologies Agency

VITA

9-1-1

Commonwealth of Virginia
Next Generation 9-1-1

Proposal Acceptance Letter

(PAL)

www.vita.virginia.gov

Purpose

The Proposal Acceptance Letter (PAL) functions as the funding request for the NG9-1-1 Migration Program. Primary PSAPs and secondary PSAPs currently served by a selective router pair are eligible to submit a PAL and request funding from the 9-1-1 Services Board (the "Board"). The PAL confirms a PSAP's acceptance of the information contained in their NG9-1-1 Migration Proposal (MP) and signals their intent to deploy NG9-1-1. The PAL should be submitted to the electronic mailbox for the PSAP Grant Program - psapgrants@vita.virginia.gov.

The funding cycle for the NG9-1-1 Migration Program starts on July 1, 2018 and remains open throughout the NG9-1-1 deployment period. The 9-1-1 Services Board will review funding requests received no later than 45 calendar days in advance of each regularly scheduled meeting. A Grant ID and email receipt notification will be sent to the e-mail address listed on the PAL.

The funding amount requested in the PAL should not exceed the recurring and non-recurring cost estimates contained in the MP. After reviewing a PSAP's MP and PAL, the Board will approve funding for specific equipment and services. Contingency funding will be available should the final cost be slightly higher so long as the original scope of the effort does not change. Similarly, if the final cost is lower, the budget will be adjusted lower. This additional funding cannot be shifted to another part of the project. Also, if a PSAP's MP needs to be revised for a material change after it has been approved by the Board, an additional PAL would need to be submitted to obtain any additional funding.

When the Board approves a PSAP's funding request, the PSAP will be expected to execute a contract vehicle with a NG9-1-1 solutions provider within three months of the award date. If a PSAP needs additional time to execute this contract, the PSAP will need to request an extension from the Board. The PSAP will also be expected to complete all identified NG9-1-1 ready implementation steps within three months of the scheduled deployment date. Funding for approved equipment and services may not be immediately available to a PSAP. ISP staff will provide a spending plan, specific to a PSAP's deployment schedule, that details in which year of the deployment period funding will for available to the PSAP.

Local Project Manager (Contact)

PSAP/HOST PSAP NAME: **Martinsville-Henry County 911**

CONTACT TITLE: **Director**

CONTACT FIRST NAME: **JR**

CONTACT LAST NAME: **Powell**

ADDRESS 1: **3300 Kings Mountain Rd**

ADDRESS 2:

CITY: **Martinsville, VA**

ZIP CODE: **24112**

CONTACT EMAIL: **vpowell@co.henry.va.us**

CONTACT PHONE NUMBER: **276-632-7677**

CONTACT MOBILE NUMBER: **276-732-9543**

CONTACT FAX NUMBER: **276-638-1394**

Financial Information

Amount Requested: $ **$356,134.90**

Date of Completed Migration Proposal: **November 1, 2018**

PSAP preference for Board payment on behalf of PSAP for incurred eligible NG9-1-1 expenses:

☒ Yes   ☐ No

Commonwealth of Virginia
Next Generation 9-1-1

Lancaster County
PSAP/GIS Specific
NG9-1-1 Migration Proposal

Executive Summary

This migration proposal is being prepared for the **Lancaster County PSAP** based on the Fairfax County contract with **AT&T**. **Glenn Rowe** shall be the primary contacts.

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, capabilities and functionality of an 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 aid that decision, the 9-1-1 Services Board (the Board) adopted the Virginia NG9-1-1 Deployment Plan in January 2018. That plan proposed the methodology and process to guide the 9-1-1 Services 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. Though the Board is recommending the Fairfax County contract with AT&T for NG9-1-1 services since it was awarded through a competitive process, each locality will need to determine the most appropriate path. 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.

A Migration Proposal is being developed for each locality (or groups of localities if served by a consolidated public safety answering point or PSAP) to provide information about the AT&T solution, prerequisite work needed within the PSAP and the expected costs and funding provided by the Board. The goal of this document is to provide each PSAP/locality with all of the information needed to evaluate the AT&T solution and determine whether it will meet the local needs. No locality should feel obligated to accept this proposal as they may use an appropriate procurement process for these services. This is simply to provide more information about services that are already available through an existing contract.

The Commonwealth's goal is to have all PSAPs fully deployed with the National Emergency Number Association (NENA) i3 standard. This standard states that all 9-1-1 calls are delivered to the PSAP on IP circuits with associated caller location data. If the equipment or GIS data in the PSAP is not capable of supporting the NENA i3 standard, interim solutions are available. These solutions allow calls to be delivered to the PSAP as IP, but then be converted back to analog for interface with the PSAP's systems. This interim solution established the PSAP's connection to the ESInet and will serve as the initial migration to NG9-1-1. After system and/or GIS data upgrades are complete the PSAP will be able to reach a full i3, NG9-1-1 environment. While AT&T will conduct a more exhaustive assessment after the PSAP executes a participation agreement, the review ISP performed for this proposal indicates that the **Lancaster County PSAP** will need to have i3-capable call handling equipment in place that has been approved on the AT&T ESInet™ to be able to implement the full NENA i3 standard without the need for any interim or transitional steps. Some work on their GIS data will be required, but it should not impact the deployment schedule.

Solution Overview

AT&T is offering their Next Generation ESInet solution throughout Virginia as a solution that will facilitate a transition from legacy 9-1-1 networks to networks capable of supporting the growing demands of a mobile society. AT&T's solution supports key NENA i3 capabilities today, while forming the basis of a true NG9-1-1 platform that will support multimedia emergency services as standards are solidified in the industry.

The AT&T ESInet™ solution is a combination of a world class IP network and the NG9-1-1 components. Their ESInet solution (delivered as a service) comes complete with a full suite of advanced features, management services and tools to help ensure they provide the best possible service to each PSAP and ultimately the citizens they serve.

The AT&T ESInet™ solution provides the public safety community with an i3 architecture built from the ground up. AT&T's commitment to the NENA i3 standard is based on years of contributions to NENA standards committees and understanding the evolving needs and requirements of the Public Safety community. The AT&T solution is not just "i3 like," or "i3 aligned." As elements of the i3 standard continue to be ratified, updated and enhanced—AT&T will continue its commitment to i3. The AT&T ESInet™ services will provide Virginia everything needed to deliver the critical foundational components of an industry standard i3 solution delivered over the worlds most advanced IP network.

AT&T ESInet™ Included Features

- Initial build-out with expandable capacity
- Nationally distributed, geographically diverse and redundant service architecture
- Pre-deployed ESInet Call Processing Centers in AT&T datacenters across US
- Aggregation Centers (AGC) in AT&T Central Offices across the US to easily augment growth capacity
- Initial call processing capacity more than twice current US E9-1-1 call volumes
- NENA i3 compliant
- High availability design (99.999% availability)
- 6 core redundant architecture
- Redundant ALI database
- Interoperable with neighboring PSAPs
- Defense in depth security
- Text to 911 – National TCC Provider
- IPV6 capable
- Reporting Suite
- Full lifecycle management
- End to end management and monitoring
- Fully resourced team to install and support
- Full Business Continuity/Disaster Recovery organization
- Dedicated Program / Service Manager

The proposed solution provides a secure IP-based network with no single point of failure. With no single point of failure, the solution includes six ESInet data centers located at AT&T facilities throughout the country. The ESInet will provide the core for a robust emergency services IP network that assures call delivery. The AT&T solution enables call delivery into a legacy PSAP environment, an IP-enabled 9-1-1 PSAP, or to peer ESInets. AT&T and West Corporation have deep security and support provisions in

place. AT&T has demonstrated experience in cybersecurity. All of this is backed by AT&T's 24/7/365 Resolution Center, AT&T Labs, AT&T's world class project management and service delivery organizations.

Additional information about the AT&T solutions and the contract with Fairfax County can be found at: https://www.fairfaxcounty.gov/cregister/ContractDetails.aspx?contractNumber=4400007825

PSAP Call Handling Systems and Applications

Each PSAP system and application that interfaces with the 9-1-1 call must be assessed to determine if it will be compatible with NG9-1-1. This section of the migration proposal identifies each major system, assesses its readiness and outlines any upgrades that must or could be implemented with NG9-1-1.

Call Handling Equipment

Obviously, the PSAP's call handling equipment (CHE) is the primary system that interfaces with the 9-1-1 network. As such, it is likely the one that will require the deepest assessment and potential upgrades to operate with the NG9-1-1 network. CHE that is non-vendor supported (NVS) (or will become NVS during the transition period) or cannot be upgraded to be NG9-1-1 capable will be identified for replacement, but will be subject to the funding limits currently in place for the PSAP grant program ($150,000 individual or $200,000 shared services). This may also apply to technology refreshes of hardware due to becoming NVS or operating systems becoming end-of-support. The current CHE in the PSAP has been identified as:

- CHE manufacturer: **Motorola**
- CHE model: **Vesta**
- CHE version number (clients): **6.1**
- CHE version number (server): **6.1**
- CHE maintenance provider (channel): **Radio Communications of Virginia**
- CHE Geodiversity: **No**
- Number of positions: **4**
- SIP capable: **Yes**

This CHE will require an upgrade to Vesta 7.2 to implement the full i3 interface. This upgrade will require the purchase of two firewalls to connect to the ESInet. However, if the PSAP deploys text to 9-1-1 with the direct IP solution prior to NG9-1-1 migration, these firewalls will already have been purchased and can be used for both purposes.

The PSAP indicates the planned replacement of their CHE in **October 2020**. This is after the planned NG9-1-1 migration. Any new CHE will need to be tested and i3 functional on the AT&T ESInet.

Text to 9-1-1

Text to 9-1-1 can be deployed web-based on a separate computer or integrated with the CHE. While the former is typically at no cost, the latter tends to have a cost associated with it. Though text to 9-1-1 will be a base feature of NG9-1-1, the passage of Senate Bill 418 in the 2018 General Assembly requires all PSAPs to implement text to 9-1-1 by July 1, 2020. The PSAP has not yet deployed text to 9-1-1. Since their deployment for NG9-1-1 is scheduled before the new deadline for text to 9-1-1 deployment, they will deploy it with NG9-1-1 as a direct IP service integrated with their CHE. The cost to implement this will be covered by the Board.

Computer-Aided Dispatch

A computer-aided dispatch (CAD) system usually receives 9-1-1 location information (ALI) through an interface with the CHE. As a result, the change to NG9-1-1 should not have an impact on a CAD system. However, an assessment is made to determine if that is the case and if any options are available from the CAD vendor that could improve operations after NG9-1-1 is deployed. Any required upgrades would be funded through the Board, but any options to improve operations would be at the PSAP's expense. Additionally, as a reminder, CAD system replacement is no longer funded through the PSAP grant program so PSAPs need to plan for its replacement locally. The current CAD system has been identified as follows:

- CAD vendor: **Soma Global**
- CAD software version: **13**
- CAD interfaces: **Yes**
- Method of data transfer: **Serial**

This CAD system has been determined to not require any upgrade or modification with the deployment of NG9-1-1.

Mapping Display System

Similar to a CAD system, a mapping display system usually receives 9-1-1 location information (ALI) through an interface with the CHE or is part of the CHE or CAD. As a result, the change to NG9-1-1 should not have an impact on a mapping display system. However, an assessment is made to determine if that is the case and if any options are available from the mapping vendor that could improve operations after NG9-1-1 is deployed. The current mapping display system has been identified as follows:

- Dispatch Mapping Vendor: **ESRI**
- Dispatch Mapping Software Version: **Cloud-based solution**
- Method of data transfer: **Serial**

This mapping display system has been determined to not require any upgrade or modification with the deployment of NG9-1-1.

Voice Logging and Recording

Typically, the audio recorded by a voice logging recorder is generated by the CHE. Though not a best practice, it is possible to record audio directly from the incoming 9-1-1 trunks so an assessment must be performed to ensure that audio from 9-1-1 calls will still be recorded after the deployment of NG9-1-1. The current logging system has been identified as follows:

- Logging Recorder Vendor: **Revcord**
- Logging Recorder Model:
- Logging Recorder Software Version: **8.1**
- Audio Origination Point: **Both trunk-based and position-based**

It is important to note that with an IP connection, audio is not present on the circuit until the CHE responds with an answer code. This is usually not until it is answered by a call taker, though it could be earlier if an audio message is played for the caller (which technically requires the CHE to answer the call to play the message). This voice logging recorder system has been determined to not require any upgrade or modification with the deployment of NG9-1-1.

Data Analytics

Though the ECaTS data analytics application is provided to all PSAPs by the 9-1-1 Services Board, some PSAPs still use a second application, native to the CHE, for data analytics in the PSAP. While the Board will directly fund the upgrade to ECaTS to handle NG9-1-1, the local data analytics application may also need to be upgraded. The current data analytics application has been identified as follows:

- Primary Data Analytics System: **ECaTS**
- Data Analytics Vendor: **ECaTS**

All required upgrades to ECaTS will be handled through the statewide contract at no cost to the PSAP.

Outcall Notification Systems

The PSAP currently has **CodeRed** as their outcall notification system. AT&T will provide quarterly subscriber data for use in this system at no cost. It is important to note that this data's use is limited to the outcall notification system and cannot be used for other purposes.

Other Systems or Applications

No other systems, that interface with the 9-1-1 call flow have been identified that will impact the PSAP's readiness for NG9-1-1.

Rack Space

The AT&T solution requires four units (4U) of rack space in the PSAP equipment/computer room for networking equipment. The rack must also have available electrical connections and be properly grounded. The PSAP has confirmed that this space is currently or will be available.

Coordination with Open Grants

The PSAP currently has one open grant:

1. **FY18 – NG9-1-1 GIS –Shared Services grant participant - $515,728.86**
2. **FY19 – NG9-1-1 GIS – Shared Services grant participant – $32,075.00**

To ensure the grant funds support the migration to NG9-1-1, the PSAP should, to the extent practical, use funding from the FY18 and FY19 regional GIS grant to correct geospatial issues identified in the following section.

GIS Data Preparation

GIS Data Sources

Currently, the **Lancaster County IT Department** maintains all of the GIS data for the PSAP and will be the source for all GIS data required for NG9-1-1 geospatial routing; however, other departments within the locality may contribute data or manage various processes. It is the responsibility of the **Lancaster County IT Department** to aggregate the GIS data required for the PSAP and NG9-1-1.

Locality GIS Data Readiness

Geospatial data drives the routing of NG9-1-1 calls. It is imperative that road centerline and address point data layers are highly accurate and well maintained. In 2016, VITA conducted an analysis of these data against the existing automatic location identification (ALI) database and master street address guide (MSAG) to help determine readiness and provided a report to each PSAP of the results. This analysis has been repeated making adjustment to the logic to ensure it matches the methodology used by AT&T in their analysis. The goal is to have 98% of all addresses in the current ALI database geocode against the locality's road centerline data layer. Once the 98% threshold recommended by NENA is met,

the PSAP is ready to deploy NG9-1-1. Since matching to the address point is more accurate, VITA is recommending the additional goal of matching 98% of ALI database addresses when geocoded against the address point data layer. If either of these goals in not achieved, then GIS data work must be completed to meet or exceed these goals. While financial support from the PSAP grant program may be available to fund this work, localities with GIS programs will be encouraged to make the necessary corrections in house if resources and time before deployment permits.

These are preliminary results based on expected data criteria of AT&T, and will be retested directly by AT&T after the execution of the participation agreement. This analysis provides the PSAP and their GIS support with an estimate of the extent of potential errors and helps identify the issues that need to be resolved. ISP staff including a GIS analyst and/or regional coordinator will begin working with the GIS data maintenance provider (internal or external) to identify and correct the GIS data or ALI data and achieve a higher match rate and thus more accurate geospatial routing.

Though there are other types of errors that may exist in the GIS data used by the PSAP (such as parity or cartography errors), these do not usually impact the routing of a 9-1-1 call. As a result, as part of this effort, only corrections that impact routing the 9-1-1 call will be required. PSAPs, in coordination with their GIS support, are encouraged to look more broadly at their data and work to improve its overall quality as well.

The 2018 MSAG/ALI/GIS analysis for the PSAP determined the current match rate to be as follows:

- Road Centerline (RCL) – **99.4%**
- Address Point – **97.1%**

Lancaster County already meets the RCL goal. If they desire a greater match rate, there are some differences in street names between the ALI and GIS data. Correcting the street names so they match would increase the match rate for RCL to **99.9%**. The analysis also determined that no more than ten addresses were responsible for many of the address point discrepancies. Resolving no more than ten addresses will increase the result to **98.3%**. During July 2018, VITA will send each PSAP and/or GIS manager a report detailing this analysis, and identifying the specific ALI records that could not be matched to the RCL or address point data. To resolve these ALI address discrepancies, there are potentially four actions that will need to take place:

1. **Add a record to the GIS** – When the ALI database has correct addresses that have not been added to the GIS data, the addition of data needs to occur. This may entail adding a road segment to the RCL or a point to the address points.
2. **Change attribution in the GIS** – When an ALI record has a correct address but the RCL or address point attribution is incorrect the discrepancy in the GIS data must be resolved. A common issue is a difference with the street name or street type between the ALI and the GIS data. Often, this issue can be corrected using a batch script process. VITA staff can assist.
3. **Change attribution in the ALI database** – When the RCL or address point has the correct address but the ALI record is incorrect, the discrepancy in the ALI database may need to be resolved. Again, this is often caused by differences in the street name or street type between the records. If necessary, AT&T can make batch changes as they load the ALI database into the ESInet.
4. **Determine that the discrepancy is not an error** – There are often ALI records associated with telephone numbers that can never actually dial 9-1-1. They could be pilot numbers for a multi-line telephone system, foreign exchanges or shell records for wireless calls. While many of those records were filtered out of the analysis, some may still be within the data.

These ALI records need to be identified and removed from the match rate calculation. VITA staff will assist with this process.

In addition to the requirement for ALI address matches, there are five GIS data reviews that AT&T conducts on the GIS data to ensure there are no errors that would cause issues or uncertainty when routing a 9-1-1 call. As an example, duplicate GIS data could cause a search for an address to result in two or more matches. Since certainty of a location is important, checks are performed to ensure no duplicate data exist. The following is a list of the additional analyses performed and the number of records that were found to be in error that will need to be corrected:

- Road centerline has duplicate address ranges - **0**
- Road centerline has right or left side overlapping address range - **3**
- Road centerline has street name attributes not meeting Virginia, USPS, & NENA standard - **0**
- Address point Is duplicate, has no street name, or no address number - **13**
- Address point street name and road centerline street name mismatch - **12**

All of these errors will be also included in the analysis delivered to the PSAP and GIS Manager in July 2018. This includes geospatial data identifying each specific error that can be viewed in ArcMap. Utilizing this information will assist in error identification and correction.

Regardless of how they are resolved, **Lancaster County** will need to resolve these issues through internal resources, at least 3 months prior to the targeted deployment date.

PSAP Boundary
This is a GIS polygon data layer that defines the area of responsibility for each PSAP. The PSAP boundary must be agreed to by all adjoining PSAPs, thus its development must be a regional effort. VITA ISP will support the regional development and maintenance of a statewide PSAP boundary. This PSAP boundary layer is essential to routing 9-1-1 calls based on caller location by either civic address or coordinate location. This layer must not have gaps or overlaps to ensure correct call routing. VITA will develop a best practice to guide each PSAP through this process, which can also be facilitated by the VITA ISP regional coordinator.

Authoritative GIS Data Source Boundary
This polygon layer defines the area of authoritative GIS data sources, with no unintentional gaps or overlaps. The boundary must be agreed to by all adjoining data provisioning providers. Edge-matching conformance is ensuring that one and only one entity is responsible for maintaining each piece of GIS data within a PSAP. Within a PSAP boundary, there may be multiple sources for authoritative GIS data as a combination of cities and counties. The GIS sources within the PSAP need a common and agreed-upon understanding for the maintenance of each feature and the provisioning boundary of responsibility. Making sure there is agreement of that point and ensuring each locality is only providing data where they are the authoritative GIS data source are the purpose of this assessment. External edge-matching conformance addresses boundaries between neighboring PSAPs to ensure that there are no overlaps or gaps in the maintenance of GIS data. Geometric features need to meet at the agreed upon boundary.

MSAG transition/confirmation
In order to accommodate originating service providers (OSP) that are not fully i3 capable, AT&T will maintain a master street address guide (MSAG) as part of the NG9-1-1 solution. While the existing MSAG can be used and maintained, generating a new MSAG from local GIS data is a better solution since existing GIS data is generally of superior quality than the MSAG. To use GIS data to generate the MSAG, an emergency service number (ESN) data layer must exist or be created. The PSAP has **seven ESNs** for

their area of responsibility. **Lancaster County** maintains an ESN boundary layer depicting this area so they will utilize a GIS generated MSAG with the migration to NG9-1-1.

Ultimately, ESN and community name need to be attribute fields in the address points and road centerlines layers to support call routing until the OSP can transition to i3. If these attributes are not part of a locality's existing maintenance workflow or GIS database, they can be created by building a separate polygon layer and transferring these values to the centerline segments (commonly referred to as a spatial join). The spatial join method can be implemented as part of the workflow for preparing to transfer GIS data to AT&T to ensure these fields are accurately populated.

Ingest Readiness

Localities may choose to implement AT&T's tools and workflows for ongoing maintenance of GIS data, or may choose to continue using internal workflows or third-party support services. As GIS data is updated, regardless of the tool set or service provider, the GIS datasets must be provided to the spatial interface (SI). The SI provisions the updated GIS data to drive location validation and call routing functions in the ESInet.

Localities choosing to adopt or transition to the AT&T toolset will have a defined workflow for providing updated GIS data. Localities wishing to use existing tools, acquire third-party tools, or rely on a service provider will need to ensure the workflows are in place to accept and resolve discrepancy calls (formalized requests to update GIS datasets), and periodically transfer updated GIS datasets to the AT&T spatial interface. This section will establish the path and milestones for completing this work.

Data maintenance Workflow/Procedures

The quality of GIS data diminishes over time unless it is properly maintained. It is important that localities document GIS data maintenance workflows and validations to ensure synchronization across GIS layers. This can include periodically ensuring conformance of edge matching of GIS data at shared boundaries. VITA has confirmed that the GIS organizations supporting the PSAP have appropriate internal data maintenance procedures/discrepancy management workflows.

Call Routing

The ultimate goal for all PSAPs is to use geospatial (i3) routing for all 9-1-1 calls. This solution uses all the NENA i3 standards for delivering voice and data directly into the PSAP's CHE. 9-1-1 call routing is based on the PSAP-provided GIS data. The ESInet router hands off the call to the PSAP networking equipment (router or firewall). The PSAP's CHE must be able to receive the voice call via SIP. Location data delivered via SIP using PIDF-LO, and would perform all the i3 protocols such as LoST and HELD.

If the PSAP's CHE is not NG9-1-1 capable or the geospatial data is not ready for deployment, a PSAP can still connect to the ESInet with an interim solution for call delivery. This will allow the PSAP to migrate on schedule, and they can implement geospatial (i3) routing when the GIS data is suitable for this use and the CHE is i3 capable.

The two interim solutions are as follows:

Legacy PSAP Gateway - This solution allows the PSAP to be connected to the ESInet through a network gateway. In this call delivery configuration, the call is routed with the legacy MSAG and ALI data, however this is done over the IP network. Once the call reaches the gateway, the voice data is converted to analog and processed over an analog voice circuit to the PSAP's CHE. This does not require any upgrade to the CHE and as mentioned uses a legacy ALI lookup. The ALI

lookup would use a standard serial connection (in this case to the legacy PSAP gateway placed in the PSAP) to retrieve location information.

Transitional SIP - This solution uses an IP (SIP) connection to get the voice call directly into the PSAP's CHE. The ESInet router passes the call to the PSAP networking equipment (router or firewall). The PSAP's CHE must be capable of receiving the voice call via SIP. The CHE would still use a legacy ALI lookup. The ALI lookup would use the standard serial connection (in this case to the ESInet routers) to retrieve location information. MSAG and ALI are still used to conduct the routing.

Again, the ultimate goal for all PSAPs is to geospatially route all 9-1-1 calls. If the geospatial data meets the accuracy goals, a PSAP should be able to deploy NG9-1-1 with geospatial routing. If for some reason, this cannot be accomplished, interim solutions are available to allow the PSAP to deploy on schedule, and they can convert to geospatial routing later.

Based on an assessment of the CHE and GIS data, geospatial routing can be implemented initially with NG9-1-1 and no interim solution will be necessary. While some GIS data correction must take place, the PSAP is committed to correcting those issues well in advance of the required milestone and to maintain that data through the transition period.

Call Transfers

During the transition to NG9-1-1, the AT&T ESInet will be interconnected with all selective routers from Verizon and CenturyLink to ensure that calls received by PSAPs that have deployed NG9-1-1 can be transferred to PSAPs on the legacy E9-1-1 network and vice versa. No ability to transfer calls will be lost during the transition when neighboring PSAPs may be on different networks.

Post deployment, all Virginia PSAPs should be on an ESInet and should be able to transfer calls among PSAPs with accompanying location data. Even if more than one ESInet is deployed from different solution providers, the goal is that they are interconnected and calls can be transferred between them.

Network

The NG9-1-1 solution offered by AT&T is a service; therefore, the network is provided as part of that service. However, there are several issues impacting the network that may be outside of this service that must be considered. The configuration of the PSAP's connection to the network will be based on the legacy E9-1-1 network information as follows:

- Legacy E9-1-1 service provider: **Verizon**
- ALI database provider: **Verizon**
- Selective router pair(s): **Chester/Richmond Stuart**
- Trunk counts (all): **14**
    - Wireline: **4**
    - Wireless: **4**
    - SIP: **0**
    - Administrative: **6**

The NG9-1-1 network will be designed to support the same number of concurrent 9-1-1 calls as can be supported on the legacy network (wireline and wireless trunks). The PSAP can designate what happens to calls that exceed this number. This setting is determined in the PSAP CHE, but the options will be discussed with AT&T during system configuration. The options include providing the caller with a fast

busy signal, routing the call to another PSAP, or overflowing the call to another line. As a best practice, VITA ISP recommends routing the call to a fast busy signal or rerouting calls to another PSAP.

Redundancy and Diversity

In order to provide 99.999% availability of the NG9-1-1 service, each PSAP must have diverse and redundant IP connections to the ESInet. Having redundant connectivity means having two connections, but they could be co-located or follow the same path. Having diversity means that those redundant connections follow different paths that never touch from origin to destination. To achieve the 99.999% availability, diverse connectivity is planned for all PSAPs. There is a chance the diversity is simply not available to all PSAPs. AT&T has conducted a diversity study for each PSAP and the results for the current location of the **Lancaster County** PSAP are as follows:
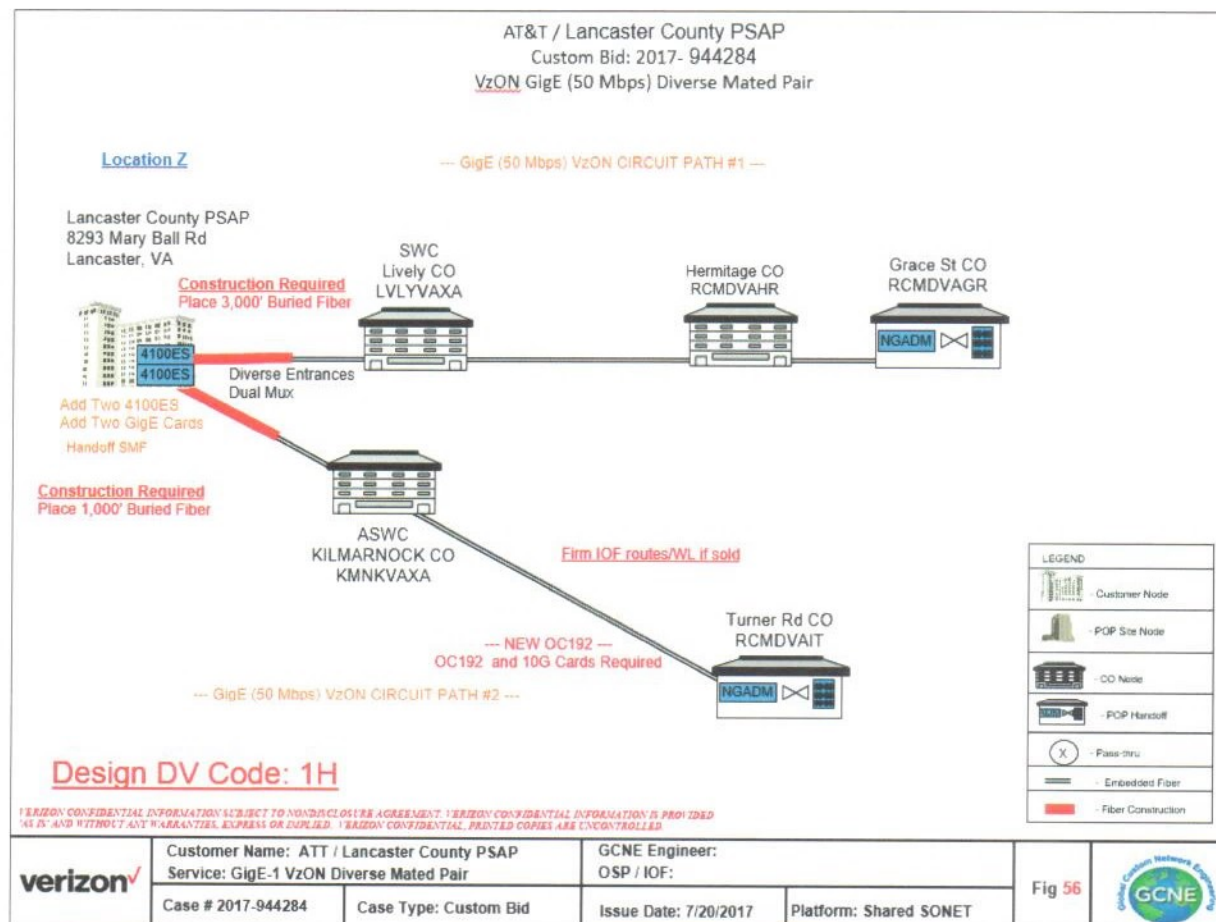
The total cost for this diverse connectivity is **$209,489.70** which will be provided by the Board as part of the PSAP's funding submission. The timing of the implementation of the diverse connectivity may not be completed until after initial NG9-1-1 deployment.

Disaster Recovery

Though the NG9-1-1 solution is designed to provide 99.999% availability, disaster recovery plans still need to be in place for instances when the network becomes unavailable or the PSAP is otherwise inoperable (evacuation, structural damage, etc.). Broadly, when the PSAP must be abandoned, there are two approaches to disaster recovery, a) having a backup PSAP within the locality or b) partnering with a neighboring PSAP to take the calls. Additionally, if only the network is impacted and the PSAP is still operable, 9-1-1 calls can be forwarded to a 10-digit telephone number in the same PSAP. Location data is lost, but that call can still be answered and processed.

Currently, the PSAP has a disaster recovery plan, which states that if the PSAP must be evacuated for any reason, or if the 9-1-1 network is unavailable and the PSAP can still be occupied, calls are routed to **Northumberland County**.

Based on the current disaster recovery plan, no additional steps must be taken in order for this plan to continue to be viable with NG9-1-1. The PSAP need only inform AT&T of their disaster recovery plan during the detailed planning after the participation agreement is signed. AT&T will then build those routes in the configuration files both for during the transition and post-migration to NG9-1-1.

While support will be available to maintain the current disaster recovery capability for the PSAP, it is important to note that there are aspects of disaster recovery that are beyond the scope of this migration proposal. As an example, while the NG9-1-1 network can be configured to route calls to a neighboring PSAP in the event of a PSAP evacuation, getting the 9-1-1 call to another PSAP to be answered is only part of the dispatching process. The call for service then needs to be sent to first responders through a radio channel or mobile data. Assuming that capability already exists, nothing about the deployment of NG9-1-1 should impact that. In cases were disaster recovery does not exist currently, this migration proposal only deals with getting the 9-1-1 call routed to another PSAP (backup or neighboring) and does not address radio or CAD interoperability needed to effect the dispatch of first responders. VITA ISP can assist with that process, but outside of NG9-1-1 deployment. Additionally, VITA ISP can assist with the exercising of disaster recovery plans, which should be done at least once a year to make sure they are fully functional when needed.

Secondary PSAP

There are no secondary PSAP(s) identified within the service area of the primary PSAP.

Network Security

AT&T employs a defense-in-depth security strategy to protect sensitive information. Security mechanisms are deployed throughout the service in addition to the multi-layered security provided by the network itself, in order to provide seamless and effective security. AT&T's world-class experience in both IP and Telephony Security provides the following key security elements.

- Availability of the VoIP Service: Stop denial or deterioration of service functionality
- Integrity of the VoIP environment: Prevent system functions or data from being corrupted
- Confidentiality and Data Privacy in VoIP: Keep information secure and private

The AT&T IP/MPLS Converged Network deploys the same attention to state-of-the-art security measures as have been provided on traditional PSTN networks:

- AT&T Security Policy and Requirements (ASPR) and AT&T OneProcess provide the security foundation.
- AT&T Internet Protect helps protect against worm/virus attacks and offers DoS (denial of service) protection.
- A 24x7 Security Network Operations Center (SNOC).
- AT&T MPLS Voice Aware Network provides security and QoS.
- AT&T Global Fraud Management System protects AT&T VoIP against fraud.
- AT&T hub-and-spoke MPLS VoIP VPN for customer access helps to provide security and QoS for AT&T.

In the AT&T MPLS network, customer services are provisioned on specific interfaces of an MPLS VPN by using known IP addresses. This approach enables AT&T to authenticate users and traffic. Rather than

supporting signaling or voice encryption, AT&T relies on the MPLS security and secured IP tunnels to provide confidentiality for signaling and voice.

The data privacy and data integrity of an MPLS VPN is not dependent on encryption or address space-based access controls. AT&T protects the core network against compromise by:

- Hardening the routers and turning off unnecessary services.
- Implementing TACACS+ authentication, authorization and accounting for router access/commands.
- Automated provisioning of router configuration driven from ordering systems, to minimize human error, complimented by daily discord reports and investigation.
- 24/7 monitoring and DoS mitigation tools.
- Route dampening and/or limiting total number of routers learned to protect routing stability.
- Firewalls, IDS, token based authentication, encrypted remote access for network and service management systems/work centers.

The AT&T security culture assures that these architectural protections are enforced by audits, employee awareness training, penetration testing and enforcement of architectural principles and policy.

In addition, AT&T MPLS VPN service is a transport only service, with the data integrity and data privacy protection as described above. AT&T monitors the core network for traffic anomalies and shared resource consumption thresholds to protect the core network and assure that traffic storms do not impact the performance of other customers. AT&T network management and service management systems are hardened, require authentication and authorization control, and are instrumented with intrusion detection to assure that they are not compromised, and cannot serve as a vector to attack the network or customers.

Schedule for Deployment

A clear and accurate schedule is essential to ensure cost effective and coordinated deployment throughout the Commonwealth. For that reason, this section identifies all milestones that must be met in order to successfully deploy. To manage costs, a six-month deployment window has been established for each selective router pair regardless of whether the PSAPs choose the AT&T or another NG9-1-1 solution. The following chart identifies the deployment periods for each selective router pair:

Selective Routers	9-1-1 Service Provider	Population	Time Period
Fairfax/Alexandria	Verizon	2,494,184	January 2019 – June 2019
High St Portsmouth/Jefferson	Verizon	1,662,247	July 2019 – December 2019
Stuart/Chester	**Verizon**	**1,660,182**	**January 2020 – June 2020**
Charlottesville/Farmville	CenturyLink	403,369	July 2020 – December 2020
Fredericksburg/Winchester	Verizon	343,031	July 2020 – December 2020
Danville/Lynchburg Church St	Verizon	320,247	July 2020 – December 2020
Staunton/Salem	Verizon	453,065	January 2021 – June 2021
Shenandoah County ECC	Shentel	43,175	January 2021 – June 2021
Covington	Ntelos	21,556	January 2021 – June 2021
New Castle	TDS Telecom	5,158	January 2021 – June 2021
Floyd County	Citizens	15,651	January 2021 – June 2021
Monterey-Highland Telephone	Highland Telephone	2,216	January 2021 – June 2021
Blacksburg/Norton	Verizon	340,101	July 2021 – December 2021

| Johnson City/Wytheville | CenturyLink | 338,311 | July 2021 – December 2021 |

The **Lancaster County PSAP's** deployment window will be **January 2020 – June 2020**. A specific date will be determined after all PSAPs have made the NG9-1-1 decision and AT&T develops the master schedule. Regardless of the specific date, any CHE upgrades, diverse connectivity enhancements and GIS data corrections must be completed at least **three months** before the deployment date. If they are not completed by this date, migration can still occur on schedule, but it will require the deployment of an interim solution instead of full i3.

Cost Estimates for NG9-1-1 Funding

The 9-1-1 Services Board has committed to funding the transitional costs for NG9-1-1 deployment so it is important that all such costs are identified and made part of the overall budget. It is also important that the funding be provided on a fair basis across all PSAPs in Virginia. While most costs will be fully funded, others like replacement of non-vendor supported CHE will continue to be funded at the same levels as has been provided through the PSAP grant program in prior years. Based on all of the information provided in this migration proposal, the following budget is for your deployment of NG9-1-1:

Category	Amount	Notes
NG9-1-1 non-recurring cost	$4,000	Flat rate from AT&T
CHE replacement	$150,000	Estimated replacement FY21
CHE upgrade	$30,000	i3 licenses and services
Text-to-911	$30,000	Not currently deployed
CAD upgrade	$0	Not required
Mapping upgrade	$0	Not required
Voice logging upgrade	$0	Not required
ECaTS Data analytics expansion	$1,000	i3 logging and text to 9-1-1
Other system upgrades	$0	Not required
Rack space	$0	Rack space is available
Diverse connectivity costs	$209,489.70	
Disaster recovery upgrade	$0	Not required
Secondary PSAPs	$0	None
GIS data preparation	$0	
Legacy 9-1-1 transition costs	$1,746.00	Verizon costs
Project management assistance	$0	None requested
Total	$426,235.70	

The monthly recurring cost for the AT&T solution is **$3,871.46** which is set for the ten-year term of the Fairfax County contract. The current monthly recurring cost for the legacy E9-1-1 solution is approximately **$270.00**. The estimated monthly increase to the PSAP after deployment is approximately **$3,601.46**. This increase will be covered by the Board for a period of 24 months after deployment is complete. At the end of this period, the entire cost will be the responsibility of the PSAP. Copies of invoices from the current 9-1-1 service provider must be provided to substantiate the current monthly cost. This will be the basis for determining whether monthly funding is provided and in what amount.

The monthly recurring cost is impacted by the bandwidth into the PSAP. Bandwidth is primarily impacted by the number of concurrent calls each PSAP wants to be able to process. As the PSAP grows

and adds bandwidth to handle more concurrent calls, the increased monthly cost will be the obligation of the PSAP even if during the 24 months following transition. Additionally, the recurring maintenance costs for PSAP equipment and GIS data will remain the responsibility of the PSAP.

Projected Board Funding

The Board will begin awarding funding for NG9-1-1 in late 2018. Until the Board approves the funding request from the PSAP, all funding levels shown are just projected. Based on the funding guidelines approved by the Board (or will be approved by the Board), the following funding would be awarded to the PSAP:

Type of Funding	Amount
Non-recurring	$426,235.70
Recurring (over 24 months)	$86,435.04
Data Analytics (monthly)	$415.12

The funding amount shown is based on estimates at this point. As binding quotes are received, the budget will be adjusted. The approval from the Board will be for the specific equipment or services and contingency funding will be available should the final cost be slightly higher so long as the original scope of the effort does not change. Similarly, if the final cost is lower, the budget will be adjusted lower. That additional funding cannot be shifted to another part of the project.

Virginia Information Technologies Agency

VITA

Commonwealth of Virginia
Next Generation 9-1-1

Proposal Acceptance Letter

(PAL)

Purpose

The Proposal Acceptance Letter (PAL) functions as the funding request for the NG9-1-1 Migration Program. Primary PSAPs and secondary PSAPs currently served by a selective router pair are eligible to submit a PAL and request funding from the 9-1-1 Services Board (the "Board"). The PAL confirms a PSAP's acceptance of the information contained in their NG9-1-1 Migration Proposal (MP) and signals their intent to deploy NG9-1-1. The PAL should be submitted to the electronic mailbox for the PSAP Grant Program - psapgrants@vita.virginia.gov.

The funding cycle for the NG9-1-1 Migration Program starts on July 1, 2018 and remains open throughout the NG9-1-1 deployment period. The 9-1-1 Services Board will review funding requests received no later than 45 calendar days in advance of each regularly scheduled meeting. A Grant ID and email receipt notification will be sent to the e-mail address listed on the PAL.

The funding amount requested in the PAL should not exceed the recurring and non-recurring cost estimates contained in the MP. After reviewing a PSAP's MP and PAL, the Board will approve funding for specific equipment and services. Contingency funding will be available should the final cost be slightly higher so long as the original scope of the effort does not change. Similarly, if the final cost is lower, the budget will be adjusted lower. This additional funding cannot be shifted to another part of the project. Also, if a PSAP's MP needs to be revised for a material change after it has been approved by the Board, an additional PAL would need to be submitted to obtain any additional funding.

When the Board approves a PSAP's funding request, the PSAP will be expected to execute a contract vehicle with a NG9-1-1 solutions provider within three months of the award date. If a PSAP needs additional time to execute this contract, the PSAP will need to request an extension from the Board. The PSAP will also be expected to complete all identified NG9-1-1 ready implementation steps within three months of the scheduled deployment date. Funding for approved equipment and services may not be immediately available to a PSAP. ISP staff will provide a spending plan, specific to a PSAP's deployment schedule, that details in which year of the deployment period funding will for available to the PSAP.

Local Project Manager (Contact)

PSAP/HOST PSAP NAME: Lancaster County Sheriff's Office

CONTACT TITLE: Director of Information Technology

CONTACT FIRST NAME: Glenn

CONTACT LAST NAME: Rowe

ADDRESS 1: 8311 Mary Ball Rd

ADDRESS 2: Click here to enter text

CITY: Lancaster

ZIP CODE: 22503

CONTACT EMAIL: growe@lancova.com

CONTACT PHONE NUMBER: 804-462-5129

CONTACT MOBILE NUMBER: 804-436-5904

CONTACT FAX NUMBER: 804-462-0031

Financial Information

Amount Requested: $ ~~515,924.74~~ 512,670.74

Date of Completed Migration Proposal: ~~July 1, 2018~~ November 1st, 2018

PSAP preference for Board payment on behalf of PSAP for incurred eligible NG9-1-1 expenses:

☒ Yes   ☐ No

Virginia Information Technologies Agency

VITA

9-1-1

Commonwealth of Virginia
Next Generation 9-1-1

Essex County
PSAP/GIS Specific
NG9-1-1 Migration Proposal

November 1, 2018

www.vita.virginia.gov

Executive Summary

This migration proposal is being prepared for the **Essex County PSAP** based on the Fairfax County contract with **AT&T**. **Susanne Joy** shall be the primary contacts.

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, capabilities and functionality of an 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 aid that decision, the 9-1-1 Services Board (the Board) adopted the Virginia NG9-1-1 Deployment Plan in January 2018. That plan proposed the methodology and process to guide the 9-1-1 Services 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. Though the Board is recommending the Fairfax County contract with AT&T for NG9-1-1 services since it was awarded through a competitive process, each locality will need to determine the most appropriate path. 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.

A Migration Proposal is being developed for each locality (or groups of localities if served by a consolidated public safety answering point or PSAP) to provide information about the AT&T solution, prerequisite work needed within the PSAP and the expected costs and funding provided by the Board. The goal of this document is to provide each PSAP/locality with all of the information needed to evaluate the AT&T solution and determine whether it will meet the local needs. No locality should feel obligated to accept this proposal as they may use an appropriate procurement process for these services. This is simply to provide more information about services that are already available through an existing contract.

The Commonwealth's goal is to have all PSAPs fully deployed with the National Emergency Number Association (NENA) i3 standard. This standard states that all 9-1-1 calls are delivered to the PSAP on IP circuits with associated caller location data. If the equipment or GIS data in the PSAP is not capable of supporting the NENA i3 standard, interim solutions are available. These solutions allow calls to be delivered to the PSAP as IP, but then be converted back to analog for interface with the PSAP's systems. This interim solution established the PSAP's connection to the ESInet and will serve as the initial migration to NG9-1-1. After system and/or GIS data upgrades are complete the PSAP will be able to reach a full i3, NG9-1-1 environment. While AT&T will conduct a more exhaustive assessment after the PSAP executes a participation agreement, the review ISP performed for this proposal indicates that the **Essex County PSAP** will need to have i3-capable call handling equipment in place that has been approved on the AT&T ESInet™ to be able to implement the full NENA i3 standard without the need for any interim or transitional steps. Some work on their GIS data will be required, but it should not impact the deployment schedule.

Solution Overview

AT&T is offering their Next Generation ESInet solution throughout Virginia as a solution that will facilitate a transition from legacy 9-1-1 networks to networks capable of supporting the growing demands of a mobile society. AT&T's solution supports key NENA i3 capabilities today, while forming the basis of a true NG9-1-1 platform that will support multimedia emergency services as standards are solidified in the industry.

The AT&T ESInet™ solution is a combination of a world class IP network and the NG9-1-1 components. Their ESInet solution (delivered as a service) comes complete with a full suite of advanced features, management services and tools to help ensure they provide the best possible service to each PSAP and ultimately the citizens they serve.

The AT&T ESInet™ solution provides the public safety community with an i3 architecture built from the ground up. AT&T's commitment to the NENA i3 standard is based on years of contributions to NENA standards committees and understanding the evolving needs and requirements of the Public Safety community. The AT&T solution is not just "i3 like," or "i3 aligned." As elements of the i3 standard continue to be ratified, updated and enhanced—AT&T will continue its commitment to i3. The AT&T ESInet™ services will provide Virginia everything needed to deliver the critical foundational components of an industry standard i3 solution delivered over the worlds most advanced IP network.

AT&T ESInet™ Included Features

- Initial build-out with expandable capacity
- Nationally distributed, geographically diverse and redundant service architecture
- Pre-deployed ESInet Call Processing Centers in AT&T datacenters across US
- Aggregation Centers (AGC) in AT&T Central Offices across the US to easily augment growth capacity
- Initial call processing capacity more than twice current US E9-1-1 call volumes
- NENA i3 compliant
- High availability design (99.999% availability)
- 6 core redundant architecture
- Redundant ALI database
- Interoperable with neighboring PSAPs
- Defense in depth security
- Text to 911 – National TCC Provider
- IPV6 capable
- Reporting Suite
- Full lifecycle management
- End to end management and monitoring
- Fully resourced team to install and support
- Full Business Continuity/Disaster Recovery organization
- Dedicated Program / Service Manager

The proposed solution provides a secure IP-based network with no single point of failure. With no single point of failure, the solution includes six ESInet data centers located at AT&T facilities throughout the country. The ESInet will provide the core for a robust emergency services IP network that assures call delivery. The AT&T solution enables call delivery into a legacy PSAP environment, an IP-enabled 9-1-1 PSAP, or to peer ESInets. AT&T and West Corporation have deep security and support provisions in

place. AT&T has demonstrated experience in cybersecurity. All of this is backed by AT&T's 24/7/365 Resolution Center, AT&T Labs, AT&T's world class project management and service delivery organizations.

Additional information about the AT&T solutions and the contract with Fairfax County can be found at: https://www.fairfaxcounty.gov/cregister/ContractDetails.aspx?contractNumber=4400007825

PSAP Call Handling Systems and Applications

Each PSAP system and application that interfaces with the 9-1-1 call must be assessed to determine if it will be compatible with NG9-1-1. This section of the migration proposal identifies each major system, assesses its readiness and outlines any upgrades that must or could be implemented with NG9-1-1.

Call Handling Equipment

Obviously, the PSAP's call handling equipment (CHE) is the primary system that interfaces with the 9-1-1 network. As such, it is likely the one that will require the deepest assessment and potential upgrades to operate with the NG9-1-1 network. CHE that is non-vendor supported (NVS) (or will become NVS during the transition period) or cannot be upgraded to be NG9-1-1 capable will be identified for replacement, but will be subject to the funding limits currently in place for the PSAP grant program ($150,000 individual or $200,000 shared services). This may also apply to technology refreshes of hardware due to becoming NVS or operating systems becoming end-of-support. The current CHE in the PSAP has been identified as:

- CHE manufacturer: **Motorola**
- CHE model: **Vesta 911**
- CHE version number (clients): **6.1**
- CHE version number (server): **6.1**
- CHE maintenance provider (channel): **Carousel Industries**
- CHE Geodiversity: **No**
- Number of positions: **2**
- SIP capable: **Yes**

This CHE will require an upgrade to Vesta 7.2 to implement the full i3 interface. This upgrade will require the purchase of two firewalls to connect to the ESInet. However, if the PSAP deploys text to 9-1-1 with the direct IP solution prior to NG9-1-1 migration, these firewalls will already have been purchased and can be used for both purposes.

The PSAP indicates the planned replacement of their CHE in **January 2022**. This is after the planned NG9-1-1 migration. Any new CHE will need to be tested and i3 functional on the AT&T ESInet.

Text to 9-1-1

Text to 9-1-1 can be deployed web-based on a separate computer or integrated with the CHE. While the former is typically at no cost, the latter tends to have a cost associated with it. Though text to 9-1-1 will be a base feature of NG9-1-1, the passage of Senate Bill 418 in the 2018 General Assembly requires all PSAPs to implement text to 9-1-1 by July 1, 2020. The PSAP has not yet deployed text to 9-1-1. Since their deployment for NG9-1-1 is scheduled before the new deadline for text to 9-1-1 deployment, they will deploy it with NG9-1-1 as a direct IP service integrated with their CHE. The cost to implement this will be covered by the Board.

Computer-Aided Dispatch

A computer-aided dispatch (CAD) system usually receives 9-1-1 location information (ALI) through an interface with the CHE. As a result, the change to NG9-1-1 should not have an impact on a CAD system. However, an assessment is made to determine if that is the case and if any options are available from the CAD vendor that could improve operations after NG9-1-1 is deployed. Any required upgrades would be funded through the Board, but any options to improve operations would be at the PSAP's expense. Additionally, as a reminder, CAD system replacement is no longer funded through the PSAP grant program so PSAPs need to plan for its replacement locally. The current CAD system has been identified as follows:

- CAD vendor: **DaPro (replacing with ID Networks CAD)**
- CAD software version: **IBR Plus**
- CAD interfaces: **Yes**
- Method of data transfer: **Ethernet**

This CAD system has been determined to not require any upgrade or modification with the deployment of NG9-1-1.

Mapping Display System

Similar to a CAD system, a mapping display system usually receives 9-1-1 location information (ALI) through an interface with the CHE or is part of the CHE or CAD. As a result, the change to NG9-1-1 should not have an impact on a mapping display system. However, an assessment is made to determine if that is the case and if any options are available from the mapping vendor that could improve operations after NG9-1-1 is deployed. The current mapping display system has been identified as follows:

- Dispatch Mapping Vendor: **TCS (will likely be integrated with ID Networks CAD)**
- Dispatch Mapping Software Version: **Unknown**
- Method of data transfer: **On server with CHE**

This mapping display system has been determined to not require any upgrade or modification with the deployment of NG9-1-1.

Voice Logging and Recording

Typically, the audio recorded by a voice logging recorder is generated by the CHE. Though not a best practice, it is possible to record audio directly from the incoming 9-1-1 trunks so an assessment must be performed to ensure that audio from 9-1-1 calls will still be recorded after the deployment of NG9-1-1. The current logging system has been identified as follows:

- Logging Recorder Vendor: **NICE (replacing with Eventide NexLog 470 by end of 2018)**
- Logging Recorder Model:
- Logging Recorder Software Version: **7.1.0.175**
- Audio Origination Point: **Trunks**

While the voice logging recorder system does not require any upgrade or modification with the deployment of NG9-1-1, if the PSAP wishes to maintain trunk-based recording, a span port will be provided by AT&T. The recording system may require an upgrade to receive and interpret the IP data. If desired, the cost of this upgrade would be covered by the Board. It is important to note that while this will allow audio to be pulled from the IP talk paths, it will not mirror current functionality. Currently, with analog trunks, trunk-based recording allows the audio to be captured before the call is answered by the call taker and the call is still in queue. With an IP connection, the audio is not present on the circuit

until the CHE responds with an answer code. This is usually not until it is answered by a call taker, though it could be earlier if an audio message is played for the caller (which technically requires the CHE to answer the call to play the message). The PSAP can choose to convert to position-based recording and the Board will cover the cost of reconfiguration.

Data Analytics

Though the ECaTS data analytics application is provided to all PSAPs by the 9-1-1 Services Board, some PSAPs still use a second application, native to the CHE, for data analytics in the PSAP. While the Board will directly fund the upgrade to ECaTS to handle NG9-1-1, the local data analytics application may also need to be upgraded. The current data analytics application has been identified as follows:

- Primary Data Analytics System: **ECaTS**
- Data Analytics Vendor: **ECaTS**

All required upgrades to ECaTS will be handled through the statewide contract at no cost to the PSAP.

Outcall Notification Systems

The PSAP currently uses **CodeRed** as their outcall notification system. AT&T will provide quarterly subscriber data for use in this system at no cost. It is important to note that this data's use is limited to the outcall notification system and cannot be used for other purposes.

Other Systems or Applications

No other systems, that interface with the 9-1-1 call flow have been identified that will impact the PSAP's readiness for NG9-1-1.

Rack Space

The AT&T solution requires four units (4U) of rack space in the PSAP equipment/computer room for networking equipment. The rack must also have available electrical connections and be properly grounded. The PSAP has confirmed that this space is currently or will be available.

Coordination with Open Grants

The PSAP currently has two open grants:

1. **FY18 – NG9-1-1 GIS –Address Validation - $139,920**
2. **FY18 – NG9-1-1 GIS –Shared Services grant participant - $515,728.86**

To ensure the grant funds support the migration to NG9-1-1, the PSAP should, to the extent practical, use funding from the FY18 regional GIS grant to correct geospatial issues identified in the following section.

GIS Data Preparation

GIS Data Sources

Currently, the **Essex County GIS** maintains all of the GIS data for the PSAP and will be the source for all GIS data required for NG9-1-1 geospatial routing; however, other departments within the locality may contribute data or manage various processes. It is the responsibility of the **Essex County GIS** to aggregate the GIS data required for the PSAP and NG9-1-1.

Locality GIS Data Readiness

Geospatial data drives the routing of NG9-1-1 calls. It is imperative that road centerline and address point data layers are highly accurate and well maintained. In 2016, VITA conducted an analysis of these data against the existing automatic location identification (ALI) database and master street address guide (MSAG) to help determine readiness and provided a report to each PSAP of the results. This analysis has been repeated making adjustment to the logic to ensure it matches the methodology used by AT&T in their analysis. The goal is to have 98% of all addresses in the current ALI database geocode against the locality's road centerline data layer. Once the 98% threshold recommended by NENA is met, the PSAP is ready to deploy NG9-1-1. Since matching to the address point is more accurate, VITA is recommending the additional goal of matching 98% of ALI database addresses when geocoded against the address point data layer. If either of these goals in not achieved, then GIS data work must be completed to meet or exceed these goals. While financial support from the PSAP grant program may be available to fund this work, localities with GIS programs will be encouraged to make the necessary corrections in house if resources and time before deployment permits.

These are preliminary results based on expected data criteria of AT&T, and will be retested directly by AT&T after the execution of the participation agreement. This analysis provides the PSAP and their GIS support with an estimate of the extent of potential errors and helps identify the issues that need to be resolved. ISP staff including a GIS analyst and/or regional coordinator will begin working with the GIS data maintenance provider (internal or external) to identify and correct the GIS data or ALI data and achieve a higher match rate and thus more accurate geospatial routing.

Though there are other types of errors that may exist in the GIS data used by the PSAP (such as parity or cartography errors), these do not usually impact the routing of a 9-1-1 call. As a result, as part of this effort, only corrections that impact routing the 9-1-1 call will be required. PSAPs, in coordination with their GIS support, are encouraged to look more broadly at their data and work to improve its overall quality as well.

The 2018 MSAG/ALI/GIS analysis for the PSAP determined the current match rate to be as follows:

- Road Centerline (RCL) – **94.6%**
- Address Point – **95.0%**

The primary issue with the RCL data is differences in street names between the ALI and GIS data. Correcting the street names so they match would increase the match rate for RCL to **96.2%**. The analysis also determined that no more than ten addresses were responsible for many of the address point discrepancies. Resolving no more than ten addresses will increase the result to **98.0%**. During July 2018, VITA will send each PSAP and/or GIS manager a report detailing this analysis, and identifying the specific ALI records that could not be matched to the RCL or address point data. To resolve these ALI address discrepancies, there are potentially four actions that will need to take place:

1. **Add a record to the GIS** – When the ALI database has correct addresses that have not been added to the GIS data, the addition of data needs to occur. This may entail adding a road segment to the RCL or a point to the address points.
2. **Change attribution in the GIS** – When an ALI record has a correct address but the RCL or address point attribution is incorrect the discrepancy in the GIS data must be resolved. A common issue is a difference with the street name or street type between the ALI and the GIS data. Often, this issue can be corrected using a batch script process. VITA staff can assist.
3. **Change attribution in the ALI database** – When the RCL or address point has the correct address but the ALI record is incorrect, the discrepancy in the ALI database may need to be

resolved. Again, this is often caused by differences in the street name or street type between the records. If necessary, AT&T can make batch changes as they load the ALI database into the ESInet.

4. **Determine that the discrepancy is not an error** – There are often ALI records associated with telephone numbers that can never actually dial 9-1-1. They could be pilot numbers for a multi-line telephone system, foreign exchanges or shell records for wireless calls. While many of those records were filtered out of the analysis, some may still be within the data. These ALI records need to be identified and removed from the match rate calculation. VITA staff will assist with this process.

In addition to the requirement for ALI address matches, there are five GIS data reviews that AT&T conducts on the GIS data to ensure there are no errors that would cause issues or uncertainty when routing a 9-1-1 call. As an example, duplicate GIS data could cause a search for an address to result in two or more matches. Since certainty of a location is important, checks are performed to ensure no duplicate data exist. The following is a list of the additional analyses performed and the number of records that were found to be in error that will need to be corrected:

- Road centerline has duplicate address ranges - **49**
- Road centerline has right or left side overlapping address range - **687**
- Road centerline has street name attributes not meeting Virginia, USPS, & NENA standard - **0**
- Address point Is duplicate, has no street name, or no address number - **3,013**
- Address point street name and road centerline street name mismatch - **37**

All of these errors will be also included in the analysis delivered to the PSAP and GIS Manager in July 2018. This includes geospatial data identifying each specific error that can be viewed in ArcMap. Utilizing this information will assist in error identification and correction.

Regardless of how they are resolved, **Essex County** will need to resolve these issues through internal resources or existing grants, at least 3 months prior to the targeted deployment date.

PSAP Boundary

This is a GIS polygon data layer that defines the area of responsibility for each PSAP. The PSAP boundary must be agreed to by all adjoining PSAPs, thus its development must be a regional effort. VITA ISP will support the regional development and maintenance of a statewide PSAP boundary. This PSAP boundary layer is essential to routing 9-1-1 calls based on caller location by either civic address or coordinate location. This layer must not have gaps or overlaps to ensure correct call routing. VITA will develop a best practice to guide each PSAP through this process, which can also be facilitated by the VITA ISP regional coordinator.

Authoritative GIS Data Source Boundary

This polygon layer defines the area of authoritative GIS data sources, with no unintentional gaps or overlaps. The boundary must be agreed to by all adjoining data provisioning providers. Edge-matching conformance is ensuring that one and only one entity is responsible for maintaining each piece of GIS data within a PSAP. Within a PSAP boundary, there may be multiple sources for authoritative GIS data as a combination of cities and counties. The GIS sources within the PSAP need a common and agreed-upon understanding for the maintenance of each feature and the provisioning boundary of responsibility. Making sure there is agreement of that point and ensuring each locality is only providing data where they are the authoritative GIS data source are the purpose of this assessment. External edge-matching conformance addresses boundaries between neighboring PSAPs to ensure that there are no overlaps or gaps in the maintenance of GIS data. Geometric features need to meet at the agreed upon boundary.

MSAG transition/confirmation

In order to accommodate originating service providers (OSP) that are not fully i3 capable, AT&T will maintain a master street address guide (MSAG) as part of the NG9-1-1 solution. While the existing MSAG can be used and maintained, generating a new MSAG from local GIS data is a better solution since existing GIS data is generally of superior quality than the MSAG. To use GIS data to generate the MSAG, an emergency service number (ESN) data layer must exist or be created. The PSAP has **one** ESN for their area of responsibility. **Essex County GIS** maintains an ESN boundary layer depicting this area so they will utilize a GIS generated MSAG with the migration to NG9-1-1.

Ultimately, ESN and community name need to be attribute fields in the address points and road centerlines layers to support call routing until the OSP can transition to i3. If these attributes are not part of a locality's existing maintenance workflow or GIS database, they can be created by building a separate polygon layer and transferring these values to the centerline segments (commonly referred to as a spatial join). The spatial join method can be implemented as part of the workflow for preparing to transfer GIS data to AT&T to ensure these fields are accurately populated.

Ingest Readiness

Localities may choose to implement AT&T's tools and workflows for ongoing maintenance of GIS data, or may choose to continue using internal workflows or third-party support services. As GIS data is updated, regardless of the tool set or service provider, the GIS datasets must be provided to the spatial interface (SI). The SI provisions the updated GIS data to drive location validation and call routing functions in the ESInet.

Localities choosing to adopt or transition to the AT&T toolset will have a defined workflow for providing updated GIS data. Localities wishing to use existing tools, acquire third-party tools, or rely on a service provider will need to ensure the workflows are in place to accept and resolve discrepancy calls (formalized requests to update GIS datasets), and periodically transfer updated GIS datasets to the AT&T spatial interface. This section will establish the path and milestones for completing this work.

Data maintenance Workflow/Procedures

The quality of GIS data diminishes over time unless it is properly maintained. It is important that localities document GIS data maintenance workflows and validations to ensure synchronization across GIS layers. This can include periodically ensuring conformance of edge matching of GIS data at shared boundaries. VITA has confirmed that the GIS organizations supporting the PSAP have appropriate internal data maintenance procedures/discrepancy management workflows.

Call Routing

The ultimate goal for all PSAPs is to use geospatial (i3) routing for all 9-1-1 calls. This solution uses all the NENA i3 standards for delivering voice and data directly into the PSAP's CHE. 9-1-1 call routing is based on the PSAP-provided GIS data. The ESInet router hands off the call to the PSAP networking equipment (router or firewall). The PSAP's CHE must be able to receive the voice call via SIP. Location data delivered via SIP using PIDF-LO, and would perform all the i3 protocols such as LoST and HELD.

If the PSAP's CHE is not NG9-1-1 capable or the geospatial data is not ready for deployment, a PSAP can still connect to the ESInet with an interim solution for call delivery. This will allow the PSAP to migrate on schedule, and they can implement geospatial (i3) routing when the GIS data is suitable for this use and the CHE is i3 capable.

The two interim solutions are as follows:

Legacy PSAP Gateway - This solution allows the PSAP to be connected to the ESInet through a network gateway. In this call delivery configuration, the call is routed with the legacy MSAG and ALI data, however this is done over the IP network. Once the call reaches the gateway, the voice data is converted to analog and processed over an analog voice circuit to the PSAP's CHE. This does not require any upgrade to the CHE and as mentioned uses a legacy ALI lookup. The ALI lookup would use a standard serial connection (in this case to the legacy PSAP gateway placed in the PSAP) to retrieve location information.

Transitional SIP - This solution uses an IP (SIP) connection to get the voice call directly into the PSAP's CHE. The ESInet router passes the call to the PSAP networking equipment (router or firewall). The PSAP's CHE must be capable of receiving the voice call via SIP. The CHE would still use a legacy ALI lookup. The ALI lookup would use the standard serial connection (in this case to the ESInet routers) to retrieve location information. MSAG and ALI are still used to conduct the routing.

Again, the ultimate goal for all PSAPs is to geospatially route all 9-1-1 calls. If the geospatial data meets the accuracy goals, a PSAP should be able to deploy NG9-1-1 with geospatial routing. If for some reason, this cannot be accomplished, interim solutions are available to allow the PSAP to deploy on schedule, and they can convert to geospatial routing later.

Based on an assessment of the CHE and GIS data, geospatial routing can be implemented initially with NG9-1-1 and no interim solution will be necessary. While some GIS data correction must take place, the PSAP is committed to correcting those issues well in advance of the required milestone and to maintain that data through the transition period.

Call Transfers

During the transition to NG9-1-1, the AT&T ESInet will be interconnected with all selective routers from Verizon and CenturyLink to ensure that calls received by PSAPs that have deployed NG9-1-1 can be transferred to PSAPs on the legacy E9-1-1 network and vice versa. No ability to transfer calls will be lost during the transition when neighboring PSAPs may be on different networks.

Post deployment, all Virginia PSAPs should be on an ESInet and should be able to transfer calls among PSAPs with accompanying location data. Even if more than one ESInet is deployed from different solution providers, the goal is that they are interconnected and calls can be transferred between them.
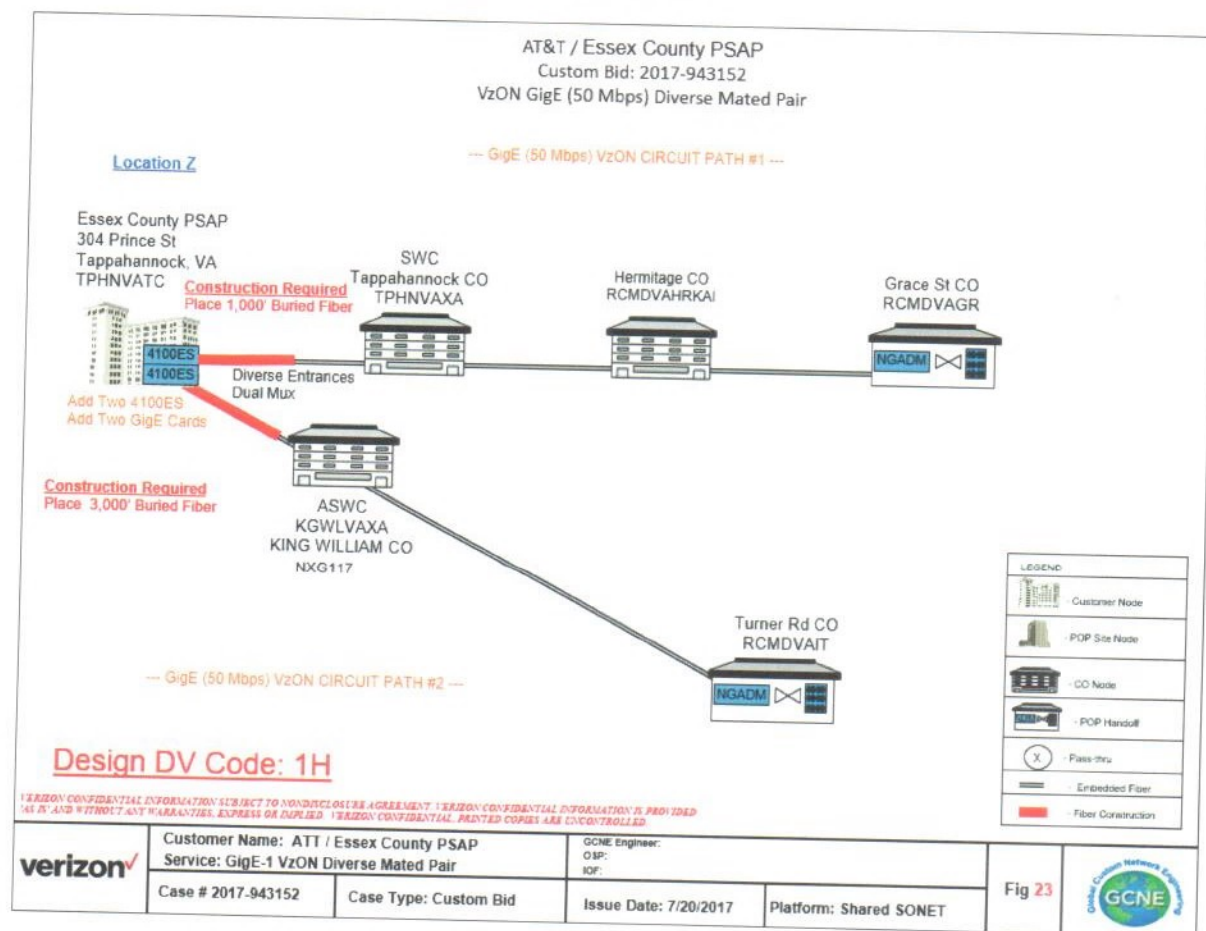
Network

The NG9-1-1 solution offered by AT&T is a service; therefore, the network is provided as part of that service. However, there are several issues impacting the network that may be outside of this service that must be considered. The configuration of the PSAP's connection to the network will be based on the legacy E9-1-1 network information as follows:

- Legacy E9-1-1 service provider: **Verizon**
- ALI database provider: **Verizon**
- Selective router pair(s): **Chester/Richmond Stuart**
- Trunk counts (all): **9**
  - Wireline: **4**
  - Wireless: **4**
  - SIP: **0**
  - Administrative: **1**

The NG9-1-1 network will be designed to support the same number of concurrent 9-1-1 calls as can be supported on the legacy network (wireline and wireless trunks). The PSAP can designate what happens to calls that exceed this number. This setting is determined in the PSAP CHE, but the options will be discussed with AT&T during system configuration. The options include providing the caller with a fast busy signal, routing the call to another PSAP, or overflowing the call to another line. As a best practice, VITA ISP recommends routing the call to a fast busy signal or rerouting calls to another PSAP.

Redundancy and Diversity

In order to provide 99.999% availability of the NG9-1-1 service, each PSAP must have diverse and redundant IP connections to the ESInet. Having redundant connectivity means having two connections, but they could be co-located or follow the same path. Having diversity means that those redundant connections follow different paths that never touch from origin to destination. To achieve the 99.999% availability, diverse connectivity is planned for all PSAPs. There is a chance the diversity is simply not available to all PSAPs. AT&T has conducted a diversity study for each PSAP and the results for the current location of the **Essex County** PSAP are as follows:

AT&T / Essex County PSAP
Custom Bid: 2017-943152
VzON GigE (50 Mbps) Diverse Mated Pair

Design DV Code: 1H

Customer Name: ATT / Essex County PSAP		GCNE Engineer: OSP: IOF:		
Service: GigE-1 VzON Diverse Mated Pair				
Case # 2017-943152	Case Type: Custom Bid	Issue Date: 7/20/2017	Platform: Shared SONET	Fig 23

The total cost for this diverse connectivity is **$87,610.78**, which will be provided by the Board as part of the PSAP's funding submission. The timing of the implementation of the diverse connectivity may not be completed until after initial NG9-1-1 deployment.

Disaster Recovery

Though the NG9-1-1 solution is designed to provide 99.999% availability, disaster recovery plans still need to be in place for instances when the network becomes unavailable or the PSAP is otherwise inoperable (evacuation, structural damage, etc.). Broadly, when the PSAP must be abandoned, there are two approaches to disaster recovery, a) having a backup PSAP within the locality or b) partnering with a

neighboring PSAP to take the calls. Additionally, if only the network is impacted and the PSAP is still operable, 9-1-1 calls can be forwarded to a 10-digit telephone number in the same PSAP. Location data is lost, but that call can still be answered and processed.

Currently, the PSAP has a disaster recovery plan, which states that if the PSAP must be evacuated for any reason, or if the 9-1-1 network is unavailable and the PSAP can still be occupied, calls are routed to the **Richmond County PSAP**.

Based on the current disaster recovery plan, no additional steps must be taken in order for this plan to continue to be viable with NG9-1-1. The PSAP need only inform AT&T of their disaster recovery plan during the detailed planning after the participation agreement is signed. AT&T will then build those routes in the configuration files both for during the transition and post-migration to NG9-1-1.

While support will be available to maintain the current disaster recovery capability for the PSAP, it is important to note that there are aspects of disaster recovery that are beyond the scope of this migration proposal. As an example, while the NG9-1-1 network can be configured to route calls to a neighboring PSAP in the event of a PSAP evacuation, getting the 9-1-1 call to another PSAP to be answered is only part of the dispatching process. The call for service then needs to be sent to first responders through a radio channel or mobile data. Assuming that capability already exists, nothing about the deployment of NG9-1-1 should impact that. In cases were disaster recovery does not exist currently, this migration proposal only deals with getting the 9-1-1 call routed to another PSAP (backup or neighboring) and does not address radio or CAD interoperability needed to effect the dispatch of first responders. VITA ISP can assist with that process, but outside of NG9-1-1 deployment. Additionally, VITA ISP can assist with the exercising of disaster recovery plans, which should be done at least once a year to make sure they are fully functional when needed.

Secondary PSAP

There are no secondary PSAP(s) identified within the service area of the primary PSAP.

Network Security

AT&T employs a defense-in-depth security strategy to protect sensitive information. Security mechanisms are deployed throughout the service in addition to the multi-layered security provided by the network itself, in order to provide seamless and effective security. AT&T's world-class experience in both IP and Telephony Security provides the following key security elements.

- Availability of the VoIP Service: Stop denial or deterioration of service functionality
- Integrity of the VoIP environment: Prevent system functions or data from being corrupted
- Confidentiality and Data Privacy in VoIP: Keep information secure and private

The AT&T IP/MPLS Converged Network deploys the same attention to state-of-the-art security measures as have been provided on traditional PSTN networks:

- AT&T Security Policy and Requirements (ASPR) and AT&T OneProcess provide the security foundation.
- AT&T Internet Protect helps protect against worm/virus attacks and offers DoS (denial of service) protection.
- A 24x7 Security Network Operations Center (SNOC).
- AT&T MPLS Voice Aware Network provides security and QoS.
- AT&T Global Fraud Management System protects AT&T VoIP against fraud.
- AT&T hub-and-spoke MPLS VoIP VPN for customer access helps to provide security and QoS for AT&T.

In the AT&T MPLS network, customer services are provisioned on specific interfaces of an MPLS VPN by using known IP addresses. This approach enables AT&T to authenticate users and traffic. Rather than supporting signaling or voice encryption, AT&T relies on the MPLS security and secured IP tunnels to provide confidentiality for signaling and voice.

The data privacy and data integrity of an MPLS VPN is not dependent on encryption or address space-based access controls. AT&T protects the core network against compromise by:

- Hardening the routers and turning off unnecessary services.
- Implementing TACACS+ authentication, authorization and accounting for router access/commands.
- Automated provisioning of router configuration driven from ordering systems, to minimize human error, complimented by daily discord reports and investigation.
- 24/7 monitoring and DoS mitigation tools.
- Route dampening and/or limiting total number of routers learned to protect routing stability.
- Firewalls, IDS, token based authentication, encrypted remote access for network and service management systems/work centers.

The AT&T security culture assures that these architectural protections are enforced by audits, employee awareness training, penetration testing and enforcement of architectural principles and policy.

In addition, AT&T MPLS VPN service is a transport only service, with the data integrity and data privacy protection as described above. AT&T monitors the core network for traffic anomalies and shared resource consumption thresholds to protect the core network and assure that traffic storms do not impact the performance of other customers. AT&T network management and service management systems are hardened, require authentication and authorization control, and are instrumented with intrusion detection to assure that they are not compromised, and cannot serve as a vector to attack the network or customers.

Schedule for Deployment

A clear and accurate schedule is essential to ensure cost effective and coordinated deployment throughout the Commonwealth. For that reason, this section identifies all milestones that must be met in order to successfully deploy. To manage costs, a six-month deployment window has been established for each selective router pair regardless of whether the PSAPs choose the AT&T or another NG9-1-1 solution. The following chart identifies the deployment periods for each selective router pair:

Selective Routers	9-1-1 Service Provider	Population	Time Period
Fairfax/Alexandria	Verizon	2,494,184	January 2019 – June 2019
High St Portsmouth/Jefferson	Verizon	1,662,247	July 2019 – December 2019
Stuart/Chester	**Verizon**	**1,660,182**	**January 2020 – June 2020**
Charlottesville/Farmville	CenturyLink	403,369	July 2020 – December 2020
Fredericksburg/Winchester	Verizon	343,031	July 2020 – December 2020
Danville/Lynchburg Church St	Verizon	320,247	July 2020 – December 2020
Staunton/Salem	Verizon	453,065	January 2021 – June 2021
Shenandoah County ECC	Shentel	43,175	January 2021 – June 2021
Covington	Ntelos	21,556	January 2021 – June 2021
New Castle	TDS Telecom	5,158	January 2021 – June 2021
Floyd County	Citizens	15,651	January 2021 – June 2021

Monterey-Highland Telephone	Highland Telephone	2,216	January 2021 – June 2021
Blacksburg/Norton	Verizon	340,101	July 2021 – December 2021
Johnson City/Wytheville	CenturyLink	338,311	July 2021 – December 2021

The **Essex County PSAP's** deployment window will be **January 2020 – June 2020**. A specific date will be determined after all PSAPs have made the NG9-1-1 decision and AT&T develops the master schedule. Regardless of the specific date, any CHE upgrades, diverse connectivity enhancements and GIS data corrections must be completed at least **three months** before the deployment date. If they are not completed by this date, migration can still occur on schedule, but it will require the deployment of an interim solution instead of full i3.

Cost Estimates for NG9-1-1 Funding

The 9-1-1 Services Board has committed to funding the transitional costs for NG9-1-1 deployment so it is important that all such costs are identified and made part of the overall budget. It is also important that the funding be provided on a fair basis across all PSAPs in Virginia. While most costs will be fully funded, others like replacement of non-vendor supported CHE will continue to be funded at the same levels as has been provided through the PSAP grant program in prior years. Based on all of the information provided in this migration proposal, the following budget is for your deployment of NG9-1-1:

Category	Amount	Notes
NG9-1-1 non-recurring cost	$4,000	Flat rate from AT&T
CHE upgrade	$30,000	i3 licenses and services
CHE replacement	$150,000	Replacement planned for FY22
Text-to-911	$30,000	Not currently deployed
CAD upgrade	$0	Not required
Mapping upgrade	$0	Not required
Voice logging upgrade	$0	Not required
ECaTS Data analytics expansion	$1,000	i3 logging and text to 9-1-1
Other system upgrades	$0	Not required
Rack space	$0	
Diverse connectivity costs	$87,610.78	
Disaster recovery upgrade	$0	Not required
Secondary PSAPs	$0	None
GIS data preparation	$0	Using existing grants
Legacy 9-1-1 transition costs	$1,047.60	Verizon costs
Project management assistance	$0	To be provided by VITA ISP staff as required
Total	$303,658.38	

The monthly recurring cost for the AT&T solution is **$3,885.95** which is set for the ten-year term of the Fairfax County contract. The current monthly recurring cost for the legacy E9-1-1 solution is approximately **$600**. The estimated monthly increase to the PSAP after deployment is approximately **$3,285.95**. This increase will be covered by the Board for a period of 24 months after deployment is complete. At the end of this period, the entire cost will be the responsibility of the PSAP. Copies of invoices from the current 9-1-1 service provider must be provided to substantiate the current monthly cost. This will be the basis for determining whether monthly funding is provided and in what amount.

The monthly recurring cost is impacted by the bandwidth into the PSAP. Bandwidth is primarily impacted by the number of concurrent calls each PSAP wants to be able to process. As the PSAP grows and adds bandwidth to handle more concurrent calls, the increased monthly cost will be the obligation of the PSAP even if during the 24 months following transition. Additionally, the recurring maintenance costs for PSAP equipment and GIS data will remain the responsibility of the PSAP.

Projected Board Funding

The Board will begin awarding funding for NG9-1-1 in late 2018. Until the Board approves the funding request from the PSAP, all funding levels shown are just projected. Based on the funding guidelines approved by the Board (or will be approved by the Board), the following funding would be awarded to the PSAP:

Type of Funding	Amount
Non-recurring	$303,658.38
Recurring (over 24 months)	$78,862.80
Data Analytics (monthly)	$415.12

The funding amount shown is based on estimates at this point. As binding quotes are received, the budget will be adjusted. The approval from the Board will be for the specific equipment or services and contingency funding will be available should the final cost be slightly higher so long as the original scope of the effort does not change. Similarly, if the final cost is lower, the budget will be adjusted lower. That additional funding cannot be shifted to another part of the project.

Virginia Information Technologies Agency

VITA

9-1-1

Commonwealth of Virginia
Next Generation 9-1-1

Proposal Acceptance Letter

(PAL)

Purpose

The Proposal Acceptance Letter (PAL) functions as the funding request for the NG9-1-1 Migration Program. Primary PSAPs and secondary PSAPs currently served by a selective router pair are eligible to submit a PAL and request funding from the 9-1-1 Services Board (the "Board"). The PAL confirms a PSAP's acceptance of the information contained in their NG9-1-1 Migration Proposal (MP) and signals their intent to deploy NG9-1-1. The PAL should be submitted to the electronic mailbox for the PSAP Grant Program - psapgrants@vita.virginia.gov.

The funding cycle for the NG9-1-1 Migration Program starts on July 1, 2018 and remains open throughout the NG9-1-1 deployment period. The 9-1-1 Services Board will review funding requests received no later than 45 calendar days in advance of each regularly scheduled meeting. A Grant ID and email receipt notification will be sent to the e-mail address listed on the PAL.

The funding amount requested in the PAL should not exceed the recurring and non-recurring cost estimates contained in the MP. After reviewing a PSAP's MP and PAL, the Board will approve funding for specific equipment and services. Contingency funding will be available should the final cost be slightly higher so long as the original scope of the effort does not change. Similarly, if the final cost is lower, the budget will be adjusted lower. This additional funding cannot be shifted to another part of the project. Also, if a PSAP's MP needs to be revised for a material change after it has been approved by the Board, an additional PAL would need to be submitted to obtain any additional funding.

When the Board approves a PSAP's funding request, the PSAP will be expected to execute a contract vehicle with a NG9-1-1 solutions provider within three months of the award date. If a PSAP needs additional time to execute this contract, the PSAP will need to request an extension from the Board. The PSAP will also be expected to complete all identified NG9-1-1 ready implementation steps within three months of the scheduled deployment date. Funding for approved equipment and services may not be immediately available to a PSAP. ISP staff will provide a spending plan, specific to a PSAP's deployment schedule, that details in which year of the deployment period funding will for available to the PSAP.

Local Project Manager (Contact)

PSAP/HOST PSAP NAME: Essex County Sheriff's Office/Essex County

CONTACT TITLE: Chief of Emergency Services

CONTACT FIRST NAME: James

CONTACT LAST NAME: Brann

ADDRESS 1: 202 South Church Lane

ADDRESS 2: Click here to enter text

CITY: Tappahannock VA

ZIP CODE: 22560

CONTACT EMAIL: jbrann@essex-virginia.org

CONTACT PHONE NUMBER: (804)443-4059

CONTACT MOBILE NUMBER: (804)296-5301

CONTACT FAX NUMBER: (804)445-8023

Financial Information

Amount Requested: $ $382,521.18

Date of Completed Migration Proposal: November 1,2018

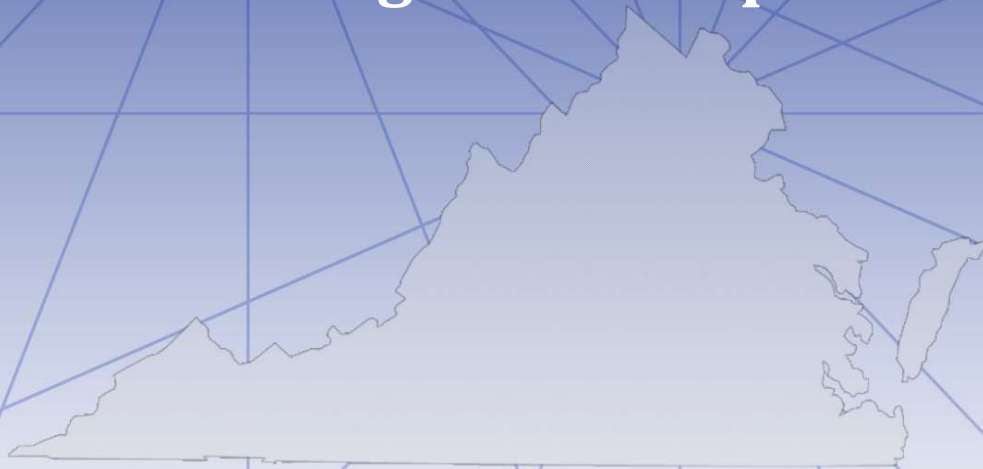PSAP preference for Board payment on behalf of PSAP for incurred eligible NG9-1-1 expenses:

X☐ Yes

☐ No

Virginia Information Technologies Agency

Commonwealth of Virginia
Next Generation 9-1-1

Cumberland County
PSAP/GIS Specific
NG9-1-1 Migration Proposal

Executive Summary

This migration proposal is being prepared for the **Cumberland County PSAP** based on the Fairfax County contract with **AT&T**. **Shawn Howard** shall be the primary contacts.

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, capabilities and functionality of an 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 aid that decision, the 9-1-1 Services Board (the Board) adopted the Virginia NG9-1-1 Deployment Plan in January 2018. That plan proposed the methodology and process to guide the 9-1-1 Services 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. Though the Board is recommending the Fairfax County contract with AT&T for NG9-1-1 services since it was awarded through a competitive process, each locality will need to determine the most appropriate path. 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.

A Migration Proposal is being developed for each locality (or groups of localities if served by a consolidated public safety answering point or PSAP) to provide information about the AT&T solution, prerequisite work needed within the PSAP and the expected costs and funding provided by the Board. The goal of this document is to provide each PSAP/locality with all of the information needed to evaluate the AT&T solution and determine whether it will meet the local needs. No locality should feel obligated to accept this proposal as they may use an appropriate procurement process for these services. This is simply to provide more information about services that are already available through an existing contract.

The Commonwealth's goal is to have all PSAPs fully deployed with the National Emergency Number Association (NENA) i3 standard. This standard states that all 9-1-1 calls are delivered to the PSAP on IP circuits with associated caller location data. If the equipment or GIS data in the PSAP is not capable of supporting the NENA i3 standard, interim solutions are available. These solutions allow calls to be delivered to the PSAP as IP, but then be converted back to analog for interface with the PSAP's systems. This interim solution established the PSAP's connection to the ESInet and will serve as the initial migration to NG9-1-1. After system and/or GIS data upgrades are complete the PSAP will be able to reach a full i3, NG9-1-1 environment. While AT&T will conduct a more exhaustive assessment after the PSAP executes a participation agreement, the review ISP performed for this proposal indicates that the **Cumberland County PSAP** will need to have i3-capable call handling equipment in place that has been approved on the AT&T ESInet™ to be able to implement the full NENA i3 standard without the need for any interim or transitional steps. Some work on their GIS data will be required, but it should not impact the deployment schedule.

Solution Overview

AT&T is offering their Next Generation ESInet solution throughout Virginia as a solution that will facilitate a transition from legacy 9-1-1 networks to networks capable of supporting the growing demands of a mobile society. AT&T's solution supports key NENA i3 capabilities today, while forming the basis of a true NG9-1-1 platform that will support multimedia emergency services as standards are solidified in the industry.

The AT&T ESInet™ solution is a combination of a world class IP network and the NG9-1-1 components. Their ESInet solution (delivered as a service) comes complete with a full suite of advanced features, management services and tools to help ensure they provide the best possible service to each PSAP and ultimately the citizens they serve.

The AT&T ESInet™ solution provides the public safety community with an i3 architecture built from the ground up. AT&T's commitment to the NENA i3 standard is based on years of contributions to NENA standards committees and understanding the evolving needs and requirements of the Public Safety community. The AT&T solution is not just "i3 like," or "i3 aligned." As elements of the i3 standard continue to be ratified, updated and enhanced—AT&T will continue its commitment to i3. The AT&T ESInet™ services will provide Virginia everything needed to deliver the critical foundational components of an industry standard i3 solution delivered over the worlds most advanced IP network.

AT&T ESInet™ Included Features

- Initial build-out with expandable capacity
- Nationally distributed, geographically diverse and redundant service architecture
- Pre-deployed ESInet Call Processing Centers in AT&T datacenters across US
- Aggregation Centers (AGC) in AT&T Central Offices across the US to easily augment growth capacity
- Initial call processing capacity more than twice current US E9-1-1 call volumes
- NENA i3 compliant
- High availability design (99.999% availability)
- 6 core redundant architecture
- Redundant ALI database
- Interoperable with neighboring PSAPs
- Defense in depth security
- Text to 911 – National TCC Provider
- IPV6 capable
- Reporting Suite
- Full lifecycle management
- End to end management and monitoring
- Fully resourced team to install and support
- Full Business Continuity/Disaster Recovery organization
- Dedicated Program / Service Manager

The proposed solution provides a secure IP-based network with no single point of failure. With no single point of failure, the solution includes six ESInet data centers located at AT&T facilities throughout the country. The ESInet will provide the core for a robust emergency services IP network that assures call delivery. The AT&T solution enables call delivery into a legacy PSAP environment, an IP-enabled 9-1-1 PSAP, or to peer ESInets. AT&T and West Corporation have deep security and support provisions in

place. AT&T has demonstrated experience in cybersecurity. All of this is backed by AT&T's 24/7/365 Resolution Center, AT&T Labs, AT&T's world class project management and service delivery organizations.

Additional information about the AT&T solutions and the contract with Fairfax County can be found at: https://www.fairfaxcounty.gov/cregister/ContractDetails.aspx?contractNumber=4400007825

PSAP Call Handling Systems and Applications

Each PSAP system and application that interfaces with the 9-1-1 call must be assessed to determine if it will be compatible with NG9-1-1. This section of the migration proposal identifies each major system, assesses its readiness and outlines any upgrades that must or could be implemented with NG9-1-1.

Call Handling Equipment

Obviously, the PSAP's call handling equipment (CHE) is the primary system that interfaces with the 9-1-1 network. As such, it is likely the one that will require the deepest assessment and potential upgrades to operate with the NG9-1-1 network. CHE that is non-vendor supported (NVS) (or will become NVS during the transition period) or cannot be upgraded to be NG9-1-1 capable will be identified for replacement, but will be subject to the funding limits currently in place for the PSAP grant program ($150,000 individual or $200,000 shared services). This may also apply to technology refreshes of hardware due to becoming NVS or operating systems becoming end-of-support. The current CHE in the PSAP has been identified as:

- CHE manufacturer: **Motorola**
- CHE model: **Vesta**
- CHE version number (clients): **4.2**
- CHE version number (server): **4.2**
- CHE maintenance provider (channel): **Century Link**
- CHE Geodiversity: **No**
- Number of positions: **2**
- SIP capable: **No**

This CHE will require an upgrade to Vesta 7.2 to implement the full i3 interface. This upgrade will require the purchase of two firewalls to connect to the ESInet. However, if the PSAP deploys text to 9-1-1 with the direct IP solution prior to NG9-1-1 migration, these firewalls will already have been purchased and can be used for both purposes.

The PSAP indicates the planned replacement of their CHE in **November 2019**. This is during the planned NG9-1-1 migration. Any new CHE will need to be tested and i3 functional on the AT&T ESInet.

Text to 9-1-1

Text to 9-1-1 can be deployed web-based on a separate computer or integrated with the CHE. While the former is typically at no cost, the latter tends to have a cost associated with it. Though text to 9-1-1 will be a base feature of NG9-1-1, the passage of Senate Bill 418 in the 2018 General Assembly requires all PSAPs to implement text to 9-1-1 by July 1, 2020. The PSAP has not yet deployed text to 9-1-1. Since their deployment for NG9-1-1 is scheduled before the new deadline for text to 9-1-1 deployment, they will deploy it with NG9-1-1 as a direct IP service integrated with their CHE. The cost to implement this will be covered by the Board.

Computer-Aided Dispatch

A computer-aided dispatch (CAD) system usually receives 9-1-1 location information (ALI) through an interface with the CHE. As a result, the change to NG9-1-1 should not have an impact on a CAD system. However, an assessment is made to determine if that is the case and if any options are available from the CAD vendor that could improve operations after NG9-1-1 is deployed. Any required upgrades would be funded through the Board, but any options to improve operations would be at the PSAP's expense. Additionally, as a reminder, CAD system replacement is no longer funded through the PSAP grant program so PSAPs need to plan for its replacement locally. The current CAD system has been identified as follows:

- CAD vendor: **ID Networks**
- CAD software version: **3.4.193**
- CAD interfaces: **Yes**
- Method of data transfer: **IP converter**

This CAD system has been determined to not require any upgrade or modification with the deployment of NG9-1-1.

Mapping Display System

Similar to a CAD system, a mapping display system usually receives 9-1-1 location information (ALI) through an interface with the CHE or is part of the CHE or CAD. As a result, the change to NG9-1-1 should not have an impact on a mapping display system. However, an assessment is made to determine if that is the case and if any options are available from the mapping vendor that could improve operations after NG9-1-1 is deployed. The current mapping display system has been identified as follows:

- Dispatch Mapping Vendor: **Digital Data Technologies Inc. (embedded in CAD)**
- Dispatch Mapping Software Version: **3.0.3009.0**
- Method of data transfer: **Software provided API**

This mapping display system has been determined to not require any upgrade or modification with the deployment of NG9-1-1.

Voice Logging and Recording

Typically, the audio recorded by a voice logging recorder is generated by the CHE. Though not a best practice, it is possible to record audio directly from the incoming 9-1-1 trunks so an assessment must be performed to ensure that audio from 9-1-1 calls will still be recorded after the deployment of NG9-1-1. The current logging system has been identified as follows:

- Logging Recorder Vendor: **NICE**
- Logging Recorder Model: **Inform**
- Logging Recorder Software Version: **7.1.0.175**
- Audio Origination Point: **Trunks**

While the voice logging recorder system does not require any upgrade or modification with the deployment of NG9-1-1, if the PSAP wishes to maintain trunk-based recording, a span port will be provided by AT&T. The recording system may require an upgrade to receive and interpret the IP data. If desired, the cost of this upgrade would be covered by the Board. It is important to note that while this will allow audio to be pulled from the IP talk paths, it will not mirror current functionality. Currently, with analog trunks, trunk-based recording allows the audio to be captured before the call is answered by the call taker and the call is still in queue. With an IP connection, the audio is not present on the circuit

until the CHE responds with an answer code. This is usually not until it is answered by a call taker, though it could be earlier if an audio message is played for the caller (which technically requires the CHE to answer the call to play the message). The PSAP can choose to convert to position-based recording and the Board will cover the cost of reconfiguration.

Data Analytics

Though the ECaTS data analytics application is provided to all PSAPs by the 9-1-1 Services Board, some PSAPs still use a second application, native to the CHE, for data analytics in the PSAP. While the Board will directly fund the upgrade to ECaTS to handle NG9-1-1, the local data analytics application may also need to be upgraded. The current data analytics application has been identified as follows:

- Primary Data Analytics System: **ECaTS**
- Data Analytics Vendor: **ECaTS**

All required upgrades to ECaTS will be handled through the statewide contract at no cost to the PSAP.

Outcall Notification Systems

The PSAP currently uses **Regroup** as their outcall notification system. AT&T will provide quarterly subscriber data for use in this system at no cost. It is important to note that this data's use is limited to the outcall notification system and cannot be used for other purposes.

Other Systems or Applications

No other systems, that interface with the 9-1-1 call flow have been identified that will impact the PSAP's readiness for NG9-1-1.

Rack Space

The AT&T solution requires four units (4U) of rack space in the PSAP equipment/computer room for networking equipment. The rack must also have available electrical connections and be properly grounded. The PSAP has confirmed that this space is currently or will be available.

Coordination with Open Grants

The PSAP currently has one open grant:

1. **FY19 – NG9-1-1 GIS - $101,358**

To ensure the grant funds support the migration to NG9-1-1, the PSAP should, to the extent practical, use funding from the FY19 regional GIS grant to correct geospatial issues identified in the following section.

GIS Data Preparation

GIS Data Sources

Currently, the **Cumberland County GIS,** in conjunction with external GIS and CAD vendors, maintains all of the GIS data for the PSAP and will be the source for all GIS data required for NG9-1-1 geospatial routing; however, other departments within the locality may contribute data or manage various processes. It is **Cumberland County's** responsibility to aggregate the GIS data required for the PSAP and NG9-1-1, even if performed by a third party vendor.

Locality GIS Data Readiness

Geospatial data drives the routing of NG9-1-1 calls. It is imperative that road centerline and address point data layers are highly accurate and well maintained. In 2016, VITA conducted an analysis of these

data against the existing automatic location identification (ALI) database and master street address guide (MSAG) to help determine readiness and provided a report to each PSAP of the results. This analysis has been repeated making adjustment to the logic to ensure it matches the methodology used by AT&T in their analysis. The goal is to have 98% of all addresses in the current ALI database geocode against the locality's road centerline data layer. Once the 98% threshold recommended by NENA is met, the PSAP is ready to deploy NG9-1-1. Since matching to the address point is more accurate, VITA is recommending the additional goal of matching 98% of ALI database addresses when geocoded against the address point data layer. If either of these goals in not achieved, then GIS data work must be completed to meet or exceed these goals. While financial support from the PSAP grant program may be available to fund this work, localities with GIS programs will be encouraged to make the necessary corrections in house if resources and time before deployment permits.

These are preliminary results based on expected data criteria of AT&T, and will be retested directly by AT&T after the execution of the participation agreement. This analysis provides the PSAP and their GIS support with an estimate of the extent of potential errors and helps identify the issues that need to be resolved. ISP staff including a GIS analyst and/or regional coordinator will begin working with the GIS data maintenance provider (internal or external) to identify and correct the GIS data or ALI data and achieve a higher match rate and thus more accurate geospatial routing.

Though there are other types of errors that may exist in the GIS data used by the PSAP (such as parity or cartography errors), these do not usually impact the routing of a 9-1-1 call. As a result, as part of this effort, only corrections that impact routing the 9-1-1 call will be required. PSAPs, in coordination with their GIS support, are encouraged to look more broadly at their data and work to improve its overall quality as well.

The 2018 MSAG/ALI/GIS analysis for the PSAP determined the current match rate to be as follows:

- Road Centerline (RCL) – **71.5%**
- Address Point – **5.3%**

The primary issue with the RCL data is differences in street names between the ALI and GIS data. Correcting the street names so they match would increase the match rate for RCL to **72.8%** and address point to **69.6%**. The analysis also determined that no more than ten addresses were responsible for many of the address point discrepancies. Resolving no more than ten addresses will increase the result to **92.8%**. During July 2018, VITA will send each PSAP and/or GIS manager a report detailing this analysis, and identifying the specific ALI records that could not be matched to the RCL or address point data. To resolve these ALI address discrepancies, there are potentially four actions that will need to take place:

1. **Add a record to the GIS** – When the ALI database has correct addresses that have not been added to the GIS data, the addition of data needs to occur. This may entail adding a road segment to the RCL or a point to the address points.
2. **Change attribution in the GIS** – When an ALI record has a correct address but the RCL or address point attribution is incorrect the discrepancy in the GIS data must be resolved. A common issue is a difference with the street name or street type between the ALI and the GIS data. Often, this issue can be corrected using a batch script process. VITA staff can assist.
3. **Change attribution in the ALI database** – When the RCL or address point has the correct address but the ALI record is incorrect, the discrepancy in the ALI database may need to be resolved. Again, this is often caused by differences in the street name or street type between the records. If necessary, AT&T can make batch changes as they load the ALI database into the ESInet.

4. **Determine that the discrepancy is not an error** – There are often ALI records associated with telephone numbers that can never actually dial 9-1-1. They could be pilot numbers for a multi-line telephone system, foreign exchanges or shell records for wireless calls. While many of those records were filtered out of the analysis, some may still be within the data. These ALI records need to be identified and removed from the match rate calculation. VITA staff will assist with this process.

In addition to the requirement for ALI address matches, there are five GIS data reviews that AT&T conducts on the GIS data to ensure there are no errors that would cause issues or uncertainty when routing a 9-1-1 call. As an example, duplicate GIS data could cause a search for an address to result in two or more matches. Since certainty of a location is important, checks are performed to ensure no duplicate data exist. The following is a list of the additional analyses performed and the number of records that were found to be in error that will need to be corrected:

- Road centerline has duplicate address ranges - **0**
- Road centerline has right or left side overlapping address range - **425**
- Road centerline has street name attributes not meeting Virginia, USPS, & NENA standard - **8**
- Address point Is duplicate, has no street name, or no address number - **24**
- Address point street name and road centerline street name mismatch - **4,797**

All of these errors will be also included in the analysis delivered to the PSAP and GIS Manager in July 2018. This includes geospatial data identifying each specific error that can be viewed in ArcMap. Utilizing this information will assist in error identification and correction.

Regardless of how they are resolved, **Cumberland County** will need to resolve these issues through internal resources, at least 3 months prior to the targeted deployment date.

PSAP Boundary

This is a GIS polygon data layer that defines the area of responsibility for each PSAP. The PSAP boundary must be agreed to by all adjoining PSAPs, thus its development must be a regional effort. VITA ISP will support the regional development and maintenance of a statewide PSAP boundary. This PSAP boundary layer is essential to routing 9-1-1 calls based on caller location by either civic address or coordinate location. This layer must not have gaps or overlaps to ensure correct call routing. VITA will develop a best practice to guide each PSAP through this process, which can also be facilitated by the VITA ISP regional coordinator.

Authoritative GIS Data Source Boundary

This polygon layer defines the area of authoritative GIS data sources, with no unintentional gaps or overlaps. The boundary must be agreed to by all adjoining data provisioning providers. Edge-matching conformance is ensuring that one and only one entity is responsible for maintaining each piece of GIS data within a PSAP. Within a PSAP boundary, there may be multiple sources for authoritative GIS data as a combination of cities and counties. The GIS sources within the PSAP need a common and agreed-upon understanding for the maintenance of each feature and the provisioning boundary of responsibility. Making sure there is agreement of that point and ensuring each locality is only providing data where they are the authoritative GIS data source are the purpose of this assessment. External edge-matching conformance addresses boundaries between neighboring PSAPs to ensure that there are no overlaps or gaps in the maintenance of GIS data. Geometric features need to meet at the agreed upon boundary.

MSAG transition/confirmation

In order to accommodate originating service providers (OSP) that are not fully i3 capable, AT&T will maintain a master street address guide (MSAG) as part of the NG9-1-1 solution. While the existing

MSAG can be used and maintained, generating a new MSAG from local GIS data is a better solution since existing GIS data is generally of superior quality than the MSAG. To use GIS data to generate the MSAG, an emergency service number (ESN) data layer must exist or be created. The PSAP has **an unknown number** ESNs for their area of responsibility. **Cumberland County** does not maintain an ESN boundary layer depicting this area. If there is only one ESN, then the ESN boundary would be coincident with the PSAP boundary and both can be created at the same time. If more than one ESN is needed, then an ESN boundary layer will need to be created. Once it is, they can utilize a GIS generated MSAG with the migration to NG9-1-1.

Ultimately, ESN and community name need to be attribute fields in the address points and road centerlines layers to support call routing until the OSP can transition to i3. If these attributes are not part of a locality's existing maintenance workflow or GIS database, they can be created by building a separate polygon layer and transferring these values to the centerline segments (commonly referred to as a spatial join). The spatial join method can be implemented as part of the workflow for preparing to transfer GIS data to AT&T to ensure these fields are accurately populated.

Ingest Readiness

Localities may choose to implement AT&T's tools and workflows for ongoing maintenance of GIS data, or may choose to continue using internal workflows or third-party support services. As GIS data is updated, regardless of the tool set or service provider, the GIS datasets must be provided to the spatial interface (SI). The SI provisions the updated GIS data to drive location validation and call routing functions in the ESInet.

Localities choosing to adopt or transition to the AT&T toolset will have a defined workflow for providing updated GIS data. Localities wishing to use existing tools, acquire third-party tools, or rely on a service provider will need to ensure the workflows are in place to accept and resolve discrepancy calls (formalized requests to update GIS datasets), and periodically transfer updated GIS datasets to the AT&T spatial interface. This section will establish the path and milestones for completing this work.

Data maintenance Workflow/Procedures

The quality of GIS data diminishes over time unless it is properly maintained. It is important that localities document GIS data maintenance workflows and validations to ensure synchronization across GIS layers. This can include periodically ensuring conformance of edge matching of GIS data at shared boundaries. VITA has confirmed that the GIS organizations supporting the PSAP have appropriate internal data maintenance procedures/discrepancy management workflows.

Call Routing

The ultimate goal for all PSAPs is to use geospatial (i3) routing for all 9-1-1 calls. This solution uses all the NENA i3 standards for delivering voice and data directly into the PSAP's CHE. 9-1-1 call routing is based on the PSAP-provided GIS data. The ESInet router hands off the call to the PSAP networking equipment (router or firewall). The PSAP's CHE must be able to receive the voice call via SIP. Location data delivered via SIP using PIDF-LO, and would perform all the i3 protocols such as LoST and HELD.

If the PSAP's CHE is not NG9-1-1 capable or the geospatial data is not ready for deployment, a PSAP can still connect to the ESInet with an interim solution for call delivery. This will allow the PSAP to migrate on schedule, and they can implement geospatial (i3) routing when the GIS data is suitable for this use and the CHE is i3 capable.

The two interim solutions are as follows:

Legacy PSAP Gateway - This solution allows the PSAP to be connected to the ESInet through a network gateway. In this call delivery configuration, the call is routed with the legacy MSAG and ALI data, however this is done over the IP network. Once the call reaches the gateway, the voice data is converted to analog and processed over an analog voice circuit to the PSAP's CHE. This does not require any upgrade to the CHE and as mentioned uses a legacy ALI lookup. The ALI lookup would use a standard serial connection (in this case to the legacy PSAP gateway placed in the PSAP) to retrieve location information.

Transitional SIP - This solution uses an IP (SIP) connection to get the voice call directly into the PSAP's CHE. The ESInet router passes the call to the PSAP networking equipment (router or firewall). The PSAP's CHE must be capable of receiving the voice call via SIP. The CHE would still use a legacy ALI lookup. The ALI lookup would use the standard serial connection (in this case to the ESInet routers) to retrieve location information. MSAG and ALI are still used to conduct the routing.

Again, the ultimate goal for all PSAPs is to geospatially route all 9-1-1 calls. If the geospatial data meets the accuracy goals, a PSAP should be able to deploy NG9-1-1 with geospatial routing. If for some reason, this cannot be accomplished, interim solutions are available to allow the PSAP to deploy on schedule, and they can convert to geospatial routing later.

Based on an assessment of the CHE and GIS data, geospatial routing can be implemented initially with NG9-1-1 and no interim solution will be necessary. While some GIS data correction must take place, the PSAP is committed to correcting those issues well in advance of the required milestone and to maintain that data through the transition period.

Call Transfers

During the transition to NG9-1-1, the AT&T ESInet will be interconnected with all selective routers from Verizon and CenturyLink to ensure that calls received by PSAPs that have deployed NG9-1-1 can be transferred to PSAPs on the legacy E9-1-1 network and vice versa. No ability to transfer calls will be lost during the transition when neighboring PSAPs may be on different networks.

Post deployment, all Virginia PSAPs should be on an ESInet and should be able to transfer calls among PSAPs with accompanying location data. Even if more than one ESInet is deployed from different solution providers, the goal is that they are interconnected and calls can be transferred between them.

Network

The NG9-1-1 solution offered by AT&T is a service; therefore, the network is provided as part of that service. However, there are several issues impacting the network that may be outside of this service that must be considered. The configuration of the PSAP's connection to the network will be based on the legacy E9-1-1 network information as follows:

- Legacy E9-1-1 service provider: **Verizon**
- ALI database provider: **Verizon**
- Selective router pair(s): **Chester/Richmond Stuart**
- Trunk counts (all): **9**
    - Wireline: **4**
    - Wireless: **4**
    - SIP: **0**
    - Administrative: **1**

The NG9-1-1 network will be designed to support the same number of concurrent 9-1-1 calls as can be supported on the legacy network (wireline and wireless trunks). The PSAP can designate what happens to calls that exceed this number. This setting is determined in the PSAP CHE, but the options will be discussed with AT&T during system configuration. The options include providing the caller with a fast busy signal, routing the call to another PSAP, or overflowing the call to another line. As a best practice, VITA ISP recommends routing the call to a fast busy signal or rerouting calls to another PSAP.

Redundancy and Diversity

In order to provide 99.999% availability of the NG9-1-1 service, each PSAP must have diverse and redundant IP connections to the ESInet. Having redundant connectivity means having two connections, but they could be co-located or follow the same path. Having diversity means that those redundant connections follow different paths that never touch from origin to destination. To achieve the 99.999% availability, diverse connectivity is planned for all PSAPs. There is a chance the diversity is simply not available to all PSAPs. AT&T has conducted a diversity study for each PSAP and the results for the current location of the **Cumberland County** PSAP are as follows:
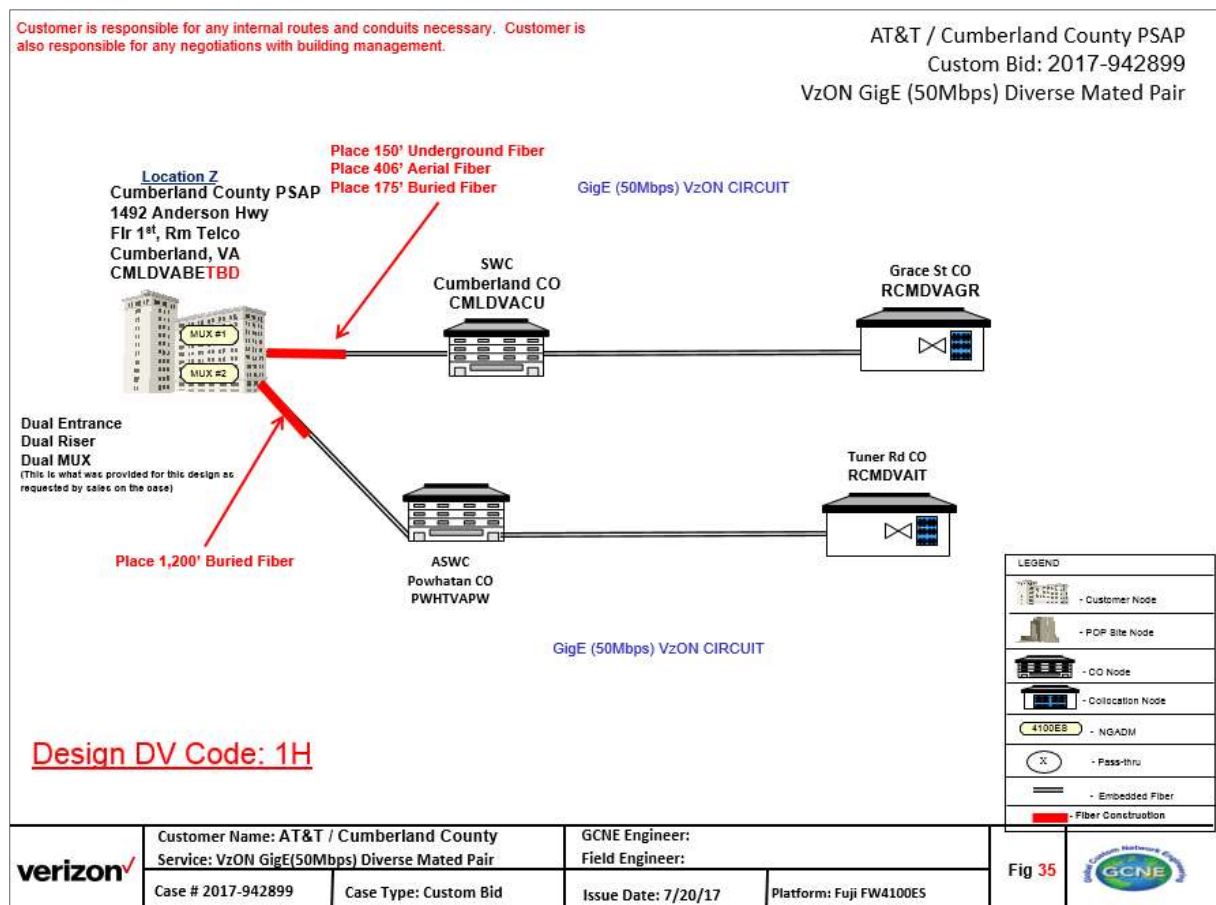
The total cost for this diverse connectivity is $**39,339.01**, which will be provided by the Board as part of the PSAP's funding submission. The timing of the implementation of the diverse connectivity may not be completed until after initial NG9-1-1 deployment.

Disaster Recovery

Though the NG9-1-1 solution is designed to provide 99.999% availability, disaster recovery plans still need to be in place for instances when the network becomes unavailable or the PSAP is otherwise inoperable (evacuation, structural damage, etc.). Broadly, when the PSAP must be abandoned, there are two approaches to disaster recovery, a) having a backup PSAP within the locality or b) partnering with a

neighboring PSAP to take the calls. Additionally, if only the network is impacted and the PSAP is still operable, 9-1-1 calls can be forwarded to a 10-digit telephone number in the same PSAP. Location data is lost, but that call can still be answered and processed.

Currently, the PSAP has a disaster recovery plan, which states that if the PSAP must be evacuated for any reason, or if the 9-1-1 network is unavailable and the PSAP can still be occupied, calls are routed to **administrative lines**.

Based on the current disaster recovery plan, no additional steps must be taken in order for this plan to continue to be viable with NG9-1-1. The PSAP need only inform AT&T of their disaster recovery plan during the detailed planning after the participation agreement is signed. AT&T will then build those routes in the configuration files both for during the transition and post-migration to NG9-1-1.

While support will be available to maintain the current disaster recovery capability for the PSAP, it is important to note that there are aspects of disaster recovery that are beyond the scope of this migration proposal. As an example, while the NG9-1-1 network can be configured to route calls to a neighboring PSAP in the event of a PSAP evacuation, getting the 9-1-1 call to another PSAP to be answered is only part of the dispatching process. The call for service then needs to be sent to first responders through a radio channel or mobile data. Assuming that capability already exists, nothing about the deployment of NG9-1-1 should impact that. In cases were disaster recovery does not exist currently, this migration proposal only deals with getting the 9-1-1 call routed to another PSAP (backup or neighboring) and does not address radio or CAD interoperability needed to effect the dispatch of first responders. VITA ISP can assist with that process, but outside of NG9-1-1 deployment. Additionally, VITA ISP can assist with the exercising of disaster recovery plans, which should be done at least once a year to make sure they are fully functional when needed.

Secondary PSAP
There are no secondary PSAP(s) identified within the service area of the primary PSAP.

Network Security
AT&T employs a defense-in-depth security strategy to protect sensitive information. Security mechanisms are deployed throughout the service in addition to the multi-layered security provided by the network itself, in order to provide seamless and effective security. AT&T's world-class experience in both IP and Telephony Security provides the following key security elements.

- Availability of the VoIP Service: Stop denial or deterioration of service functionality
- Integrity of the VoIP environment: Prevent system functions or data from being corrupted
- Confidentiality and Data Privacy in VoIP: Keep information secure and private

The AT&T IP/MPLS Converged Network deploys the same attention to state-of-the-art security measures as have been provided on traditional PSTN networks:

- AT&T Security Policy and Requirements (ASPR) and AT&T OneProcess provide the security foundation.
- AT&T Internet Protect helps protect against worm/virus attacks and offers DDoS (denial of service) protection.
- A 24x7 Security Network Operations Center (SNOC).
- AT&T MPLS Voice Aware Network provides security and QoS.
- AT&T Global Fraud Management System protects AT&T VoIP against fraud.
- AT&T hub-and-spoke MPLS VoIP VPN for customer access helps to provide security and QoS for AT&T.

In the AT&T MPLS network, customer services are provisioned on specific interfaces of an MPLS VPN by using known IP addresses. This approach enables AT&T to authenticate users and traffic. Rather than supporting signaling or voice encryption, AT&T relies on the MPLS security and secured IP tunnels to provide confidentiality for signaling and voice.

The data privacy and data integrity of an MPLS VPN is not dependent on encryption or address space-based access controls. AT&T protects the core network against compromise by:

- Hardening the routers and turning off unnecessary services.
- Implementing TACACS+ authentication, authorization and accounting for router access/commands.
- Automated provisioning of router configuration driven from ordering systems, to minimize human error, complimented by daily discord reports and investigation.
- 24/7 monitoring and DoS mitigation tools.
- Route dampening and/or limiting total number of routers learned to protect routing stability.
- Firewalls, IDS, token based authentication, encrypted remote access for network and service management systems/work centers.

The AT&T security culture assures that these architectural protections are enforced by audits, employee awareness training, penetration testing and enforcement of architectural principles and policy.

In addition, AT&T MPLS VPN service is a transport only service, with the data integrity and data privacy protection as described above. AT&T monitors the core network for traffic anomalies and shared resource consumption thresholds to protect the core network and assure that traffic storms do not impact the performance of other customers. AT&T network management and service management systems are hardened, require authentication and authorization control, and are instrumented with intrusion detection to assure that they are not compromised, and cannot serve as a vector to attack the network or customers.

Schedule for Deployment

A clear and accurate schedule is essential to ensure cost effective and coordinated deployment throughout the Commonwealth. For that reason, this section identifies all milestones that must be met in order to successfully deploy. To manage costs, a six-month deployment window has been established for each selective router pair regardless of whether the PSAPs choose the AT&T or another NG9-1-1 solution. The following chart identifies the deployment periods for each selective router pair:

Selective Routers	9-1-1 Service Provider	Population	Time Period
Fairfax/Alexandria	Verizon	2,494,184	January 2019 – June 2019
High St Portsmouth/Jefferson	Verizon	1,662,247	July 2019 – December 2019
Stuart/Chester	**Verizon**	**1,660,182**	**January 2020 – June 2020**
Charlottesville/Farmville	CenturyLink	403,369	July 2020 – December 2020
Fredericksburg/Winchester	Verizon	343,031	July 2020 – December 2020
Danville/Lynchburg Church St	Verizon	320,247	July 2020 – December 2020
Staunton/Salem	Verizon	453,065	January 2021 – June 2021
Shenandoah County ECC	Shentel	43,175	January 2021 – June 2021
Covington	Ntelos	21,556	January 2021 – June 2021
New Castle	TDS Telecom	5,158	January 2021 – June 2021
Floyd County	Citizens	15,651	January 2021 – June 2021

Monterey-Highland Telephone	Highland Telephone	2,216	January 2021 – June 2021
Blacksburg/Norton	Verizon	340,101	July 2021 – December 2021
Johnson City/Wytheville	CenturyLink	338,311	July 2021 – December 2021

The **Cumberland County PSAP's** deployment window will be **January 2020 – June 2020**. A specific date will be determined after all PSAPs have made the NG9-1-1 decision and AT&T develops the master schedule. Regardless of the specific date, any CHE upgrades, diverse connectivity enhancements and GIS data corrections must be completed at least **three months** before the deployment date. If they are not completed by this date, migration can still occur on schedule, but it will require the deployment of an interim solution instead of full i3.

Cost Estimates for NG9-1-1 Funding

The 9-1-1 Services Board has committed to funding the transitional costs for NG9-1-1 deployment so it is important that all such costs are identified and made part of the overall budget. It is also important that the funding be provided on a fair basis across all PSAPs in Virginia. While most costs will be fully funded, others like replacement of non-vendor supported CHE will continue to be funded at the same levels as has been provided through the PSAP grant program in prior years. Based on all of the information provided in this migration proposal, the following budget is for your deployment of NG9-1-1:

Category	Amount	Notes
NG9-1-1 non-recurring cost	$4,000	Flat rate from AT&T
CHE replacement	$150,000	Estimated replacement FY20
CHE upgrade	$30,000	i3 deployment services
Text-to-911	$30,000	Not currently deployed
CAD upgrade	$0	Not required
Mapping upgrade	$0	Not required
Voice logging upgrade	$0	Not required
ECaTS Data analytics expansion	$1,000	i3 logging and text to 9-1-1
Other system upgrades	$0	Not required
Rack space	$0	
Diverse connectivity costs	$39,339.01	
Disaster recovery upgrade	$0	Not required
Secondary PSAPs	$0	None
GIS data preparation	$0	Currently using grant funds
Legacy 9-1-1 transition costs	$1,455.00	
Project management assistance	$0	None requested
Total	$255,794.01	

The monthly recurring cost for the AT&T solution is **$3,762.50** which is set for the ten-year term of the Fairfax County contract. The current monthly recurring cost for the legacy E9-1-1 solution is approximately **$1,200**. The estimated monthly increase to the PSAP after deployment is approximately **$2,562.50**. This increase will be covered by the Board for a period of 24 months after deployment is complete. At the end of this period, the entire cost will be the responsibility of the PSAP. Copies of invoices from the current 9-1-1 service provider must be provided to substantiate the current monthly cost. This will be the basis for determining whether monthly funding is provided and in what amount.

The monthly recurring cost is impacted by the bandwidth into the PSAP. Bandwidth is primarily impacted by the number of concurrent calls each PSAP wants to be able to process. As the PSAP grows and adds bandwidth to handle more concurrent calls, the increased monthly cost will be the obligation of the PSAP even if during the 24 months following transition. Additionally, the recurring maintenance costs for PSAP equipment and GIS data will remain the responsibility of the PSAP.

Projected Board Funding

The Board will begin awarding funding for NG9-1-1 in late 2018. Until the Board approves the funding request from the PSAP, all funding levels shown are just projected. Based on the funding guidelines approved by the Board (or will be approved by the Board), the following funding would be awarded to the PSAP:

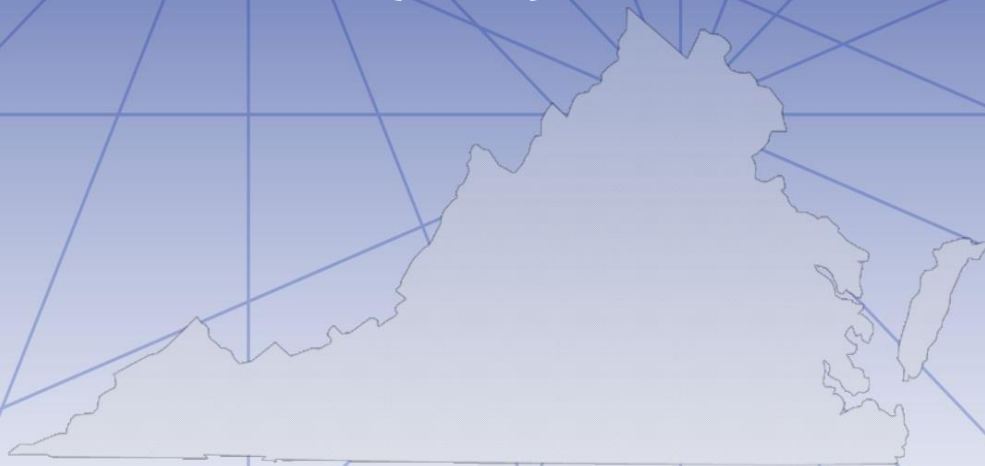| Type of Funding	Amount
Non-recurring	$255,794.01
Recurring (over 24 months)	$61,500.00
Data Analytics (monthly)	$415.12

The funding amount shown is based on estimates at this point. As binding quotes are received, the budget will be adjusted. The approval from the Board will be for the specific equipment or services and contingency funding will be available should the final cost be slightly higher so long as the original scope of the effort does not change. Similarly, if the final cost is lower, the budget will be adjusted lower. That additional funding cannot be shifted to another part of the project.

Commonwealth of Virginia
Next Generation 9-1-1

Proposal Acceptance Letter
(PAL)

Purpose

The Proposal Acceptance Letter (PAL) functions as the funding request for the NG9-1-1 Migration Program.   Primary PSAPs and secondary PSAPs currently served by a selective router pair are eligible to submit a PAL and request funding from the 9-1-1 Services Board (the "Board"). The PAL confirms a PSAP's acceptance of the information contained in their NG9-1-1 Migration Proposal (MP) and signals their intent to deploy NG9-1-1. The PAL should be submitted to the electronic mailbox for the PSAP Grant Program - psapgrants@vita.virginia.gov.

The funding cycle for the NG9-1-1 Migration Program starts on July 1, 2018 and remains open throughout the NG9-1-1 deployment period. The 9-1-1 Services Board will review funding requests received no later than 45 calendar days in advance of each regularly scheduled meeting. A Grant ID and email receipt notification will be sent to the e-mail address listed on the PAL.

The funding amount requested in the PAL should not exceed the recurring and non-recurring cost estimates contained in the MP. After reviewing a PSAP's MP and PAL, the Board will approve funding for specific equipment and services. Contingency funding will be available should the final cost be slightly higher so long as the original scope of the effort does not change. Similarly, if the final cost is lower, the budget will be adjusted lower. This additional funding cannot be shifted to another part of the project. Also, if a PSAP's MP needs to be revised for a material change after it has been approved by the Board, an additional PAL would need to be submitted to obtain any additional funding.

When the Board approves a PSAP's funding request, the PSAP will be expected to execute a contract vehicle with a NG9-1-1 solutions provider within three months of the award date. If a PSAP needs additional time to execute this contract, the PSAP will need to request an extension from the Board. The PSAP will also be expected to complete all identified NG9-1-1 ready implementation steps within three months of the scheduled deployment date. Funding for approved equipment and services may not be immediately available to a PSAP. ISP staff will provide a spending plan, specific to a PSAP's deployment schedule, that details in which year of the deployment period funding will for available to the PSAP.

Local Project Manager (Contact)

PSAP/HOST PSAP NAME: Cumberland County Sheriff

CONTACT TITLE: IT Manager

CONTACT FIRST NAME: Shawn

CONTACT LAST NAME: Howard

ADDRESS 1: 1 Courthouse Circle

ADDRESS 2: Click here to enter text

CITY: Cumberland

ZIP CODE: 23040

CONTACT EMAIL: showard@cumberlandcounty.virginia.gov

CONTACT PHONE NUMBER: 804-492-5398

CONTACT MOBILE NUMBER: Click here to enter text

CONTACT FAX NUMBER: 804-492-9224

Financial Information

Amount Requested: $ 317,294.01

Date of Completed Migration Proposal: November 1, 2018

PSAP preference for Board payment on behalf of PSAP for incurred eligible NG9-1-1 expenses:

☒ Yes   ☐ No

Overview – Consideration – Secondary PSAP Consolidation with a Primary PSAP

Submitted by Jeffrey Flournoy, ESVA 9-1-1 Commission Director – June 28th, 2019

Request for Consideration

The current 9-1-1 Services Board Grant Guidelines do not allow the inclusion of secondary PSAP's with a primary PSAP for consideration of consolidation funding. Requesting to consider permitting, at least on a case-by-case basis and when the impacted PSAP's are local government in nature (cities, counties, and towns), the opportunity for funding to be available (from the grant program) for the consolidation of a secondary PSAP within a jurisdiction with the primary PSAP serving that jurisdiction.

Why This Should Be Considered

If a primary PSAP and one or more secondary PSAP's in that jurisdiction(s) achieved the needed prerequisites; the needed memorandum of agreement(s) and feasibility study, and such consolidation was expected to improve operations and service delivery to its residents and visitors, would think this meets the overall spirit of the grant program and government in-general; that being providing the best possible service to those in need of such services (with public safety, generally referencing law enforcement services, fire services, emergency medical services, and/or emergency dispatch services).

Technology is rapidly changing in public safety communications, specifically focusing on the processing of needs from the public and the dispatch of emergency services. This includes the ability to process text-to 9-1-1 calls, the future delivery of video/pictures and other technologies to 9-1-1 Center's, and the inclusion of other platforms, such as SMART 9-1-1 at 9-1-1 Centers. If a jurisdiction seeks to assure these new technologies are available to its residents and visitors, where it may not exist today (such as with secondary PSAP's), by the consolidation of secondary PSAP's with primary PSAP's, would think opportunities for funding this consolidation would be open to grant funding.

If a feasibility study demonstrated there were potential cost savings and better service opportunities available to residents and visitors (in a jurisdiction(s)) with a consolidation of its PSAP's, would think opportunities for funding this consolidation would be open to grant funding.

Overview of Eastern Shore of Virginia Operations

While it is understood not all secondary PSAP's in our state have the same relationships their primary PSAP (serving the same purpose, how governed, how interacting with the primary PSAP), the following is a brief summary the relationship between the three secondary PSAP's on the Eastern Shore of Virginia and the Eastern Shore of Virginia 9-1-1 Center (ESVA 9-1-1) – The ESVA 9-1-1 Center serves as the primary PSAP, receiving all 9-

1-1 calls for Accomack County (including the Town of Chincoteague) and Northampton County. There are three local government secondary PSAP's in our region; The Accomack County Sheriff's Office (ACSO), the Northampton County Sheriff's Office (NCSO), and the Chincoteague Police Department (CPD), each maintaining a 24/7/365 dispatch center for the dispatch of their law enforcement personnel. While Fire and EMS matters are processed and dispatched by the ESVA 9-1-1 Center, generally law enforcement matters are transferred to the appropriate secondary PSAP for processing (as a traditional telephone call, without ANI/ALI or mapping information) and dispatch. There are some notable exceptions to this practice, such as the active shooter policy (where the ESVA 9-1-1 Center is expected to maintain 9-1-1 calls related to this type of incident and dispatch the incident on the appropriate law enforcement channel) and other time-sensitive/critical incidents where both the primary PSAP (ESVA 9-1-1) and the secondary PSAP (ACSO, NCSO, or CPD) may be on a 9-1-1 call gathering information and providing instructions to callers.

Current Status – Eastern Shore of Virginia

The needed memorandum of agreements, between ESVA 9-1-1 and any of the secondary PSAP's in the region, do not exist, nor does current funding exist for the feasibility study. For this to occur there would need to be significant discussions with the involved entities (ESVA 9-1-1, ACSO, NCSO, and/or CPD). However, attempting to recognize that funding needed for any consolidation endeavor would be a paramount consideration and the reality changes to government processes (such as the guidelines of grant-funded programs) can take a period of time (for the necessary deliberations), requesting consideration as provided earlier, for this change to the current grant guidelines.

END

PSAP Grant Committee Meeting
August 29th, 2019 1:00PM

Council Members in Attendance

J.R. Powell   Steve McMurrer   Stephen Williams

Katie Boone   Chris Caldwell   Tom Crabbs

Staff in Attendance

Lisa Nicholson   Dorothy Spears-Dean   Stefanie McGuffin

Lewis Cassada

1) **Call Meeting to Order**

   The meeting of the PSAP Grant Committee was called to order at 1:04AM by Mr. Steve McMurrer.

2) **Approval of the Minutes**

   Mr. McMurrer called for a motion to approve the minutes from the May 14, 2019 meeting. Mr. Caldwell made the motion and Ms. Katie Boone seconded it. The motion passed 6-0-0.

3) **NG9-1-1 Funding Requests**

   Ms. Lisa Nicholson reviewed the latest round of NG9-1-1 funding requests. The requests were from the localities of Cumberland, Essex, Lancaster, Martinsville-Henry, Spotsylvania, and York. Mr. McMurrer called for a motion to recommend approval of the requests to the Board. Mr. Stephen Williams made the motion and Ms. Katie Boone seconded it. The motion passed 5-0-1. Mr. J.R. Powell (from Martinsville-Henry) abstained.

4) **Text to 9-1-1 Grant Applications**

   Ms. Nicholson reviewed the latest round of Text-to-9-1-1 grant applications. There were four requests from the localities of Bland, Nelson, Twin, and Wythe. Mr. McMurrer called for a motion to recommend

approval of the grant applications to the Board. Mr. J.R. Powell made the motion and Mr. Williams seconded it. The motion passed 6-0-0.

5) **NG9-1-1 Deployment Update**

Ms. Spears-Dean updated the committee with the latest developments regarding NG9-1-1 deployment. Discussed were updates to the VA Beach contract letter of intent, adjustments to the NG9-1-1 deployment schedule, and possible interim transitional SIP solution deployments. Mr. McMurrer discussed different deployment approaches and timelines that Fairfax County is looking at.

6) **Old Business**

Ms. Nicholson discussed the use of PEP grand funding for national conferences; PSAP are incurring registration costs in one cycle and travel costs in another cycle.

7) **New Business**

- Contract extension requests – Ms. Nicholson reviewed localities that have requested contract extension requests. The localities of Amelia, Bath, Craig, Danville, Hopewell, Mecklenburg and Sussex have requested extensions to November 20th. The localities of Giles, Metro Washington Airport Authority, and Staunton have requested and extensions to October 10th. There was Staff/Committee discussion. Mr. McMurrer called for a motion to recommend approval of both sets of extension requests. Mr. Crabbs made the motion and Ms. Boone seconded it. The motion passed 6-0-0.
- Progress Reports – Ms. Nicholson updated the committee on the current progress reports.
- On-Site Diversity Connectivity Costs – Ms. Spears-Dean stated that there may be additional costs to PSAPs to connect to the ESINet. Each PSAP needs two distinct paths for the diverse broadband circuits. Costs were not originally considered in the Migration

Proposals, and the estimate is that it will cost between $30,000 and $40,000 to bring second connections into a building.

- NG9-1-1 Award Amendments - Ms. Nicholson presented two NG9-1-1 funding award decision briefs. (NoVa Decision Brief for $808,752.91 and Buckingham Decision Brief for $170,055) There was Staff/Committee discussion. Mr. McMurrer called for a motion to recommend for approval the two decision briefs as presented. Mr. Williams made the motion and Mr. Caldwell seconded it. The motion passed 5-0-1 with Mr. McMurrer from Fairfax abstaining.

- ESVA Request – Mr. Jeff Flournoy presented his request to the committee (ESVA Overview) and discussed allowing inclusion of secondary PSAPs in the consolidation projects funded through the PSAP Grant Program. Currently, funding is only available to primary PSAPs. There was Staff/Committee discussion. ISP Staff will review consolidation study options and determine next steps at the October 29th PSAG Grant Committee Meeting. The Committee consensus was to take no action.

- Travel Assistance for the APCO Fall Conference – Ms. Lisa Nicholson informed the Committee that Staff has worked with VITA Finance and determined that the travel assistance rate for the APCO Fall Conference will be $143.00.

8) PGC Report to the Board

Ms. Spear-Dean summarized all the actions of the Committee and the action items to be completed by Staff, and will report on those at the next 9-1-1 Services Board meeting.

9) Public Comments and Closing

Mr. McMurrer asked for public comments; there were none. The next meeting date of the PSAP Grant Committee will be October 29th. The meeting adjourned at 2:12PM.

PSAP Grant Program
Decision Brief

Type of Request: NG9-1-1 Funding Award Amendment	**Date Submitted:** August 8, 2019
PSAPs: Buckingham	Amount of Request: $170,055
Staff Recommendation: Approve	

1. **Briefly define the problem/issue:**

   ISP staff is requesting that the funding award for Buckingham County be amended to include a revised connectivity quote of $184,055. The locality originally had a connectivity quote from Century Link for $14,000. If approved by the Board, the amount of the revised funding award would be $437,918.74.

2. **Background** (include important dates)**:**

   Buckingham's NG9-1-1 Migration Proposal (MP) contained an initial quote of $14,000 from Century Link for diverse connectivity. Since receiving the MP, the locality was awarded NG9-1-1 funding and selected a NG9-1-1 solutions provider. As part of the deployment process, the locality's NG9-1-1 service provider, AT&T, reached out to Century Link for a revised quote.

3. **Major Considerations:**

   None.

4. **Recommended action:**

   Ask PGC to concur with staff's recommendation and recommend approval of the amendment request by the 9-1-1 Services Board at their next meeting.

5. **Alternatives to recommended action:**

   None.

PSAP Grant Program
Decision Brief

Type of Request: NG9-1-1 Funding Award Amendments	**Date Submitted:** August 5, 2019
PSAPs: Alexandria, Arlington, Fairfax, Fauquier, Loudon, Prince William, and Stafford	Amount of Request: $808,752.91
Staff Recommendation: Approve	

1. **Briefly define the problem/issue:**

   ISP staff is requesting that the funding awards for the PSAPs listed above be amended to include allowable NG9-1-1 deployment items previously idenitifed as grant-funded. The total additional cost for these items is $808,752.91.

2. **Background** (include important dates)**:**

   The PSAPs listed above were participating in a regional NG9-1-1 ESInet grant (FY 17 ID#35). This grant expired on June 30, 2019 before all of the items included in the scope of work could be completed. With the exception of on-site connectivity placement, these items were identified in the PSAPs' NG9-1-1 Migration Proposals as grant-funded. With the close of the FY 17 grant, the PSAPs' NG9-1-1 funding awards need to be amended to include the grant-funded items that have not yet been completed. A list of these items, the amount for each item, and the new totals for the PSAP awards are listed in a companion spreadsheet.

3. **Major Considerations:**

   At a previous meeting, the PGC was briefed on the need for these amendments. Since then, ISP staff has put into place a process to identify, review, and approve amendment requests.

4. **Recommended action:**

   Ask PGC to concur with staff's recommendation and recommend approval of the amendment requests by the 9-1-1 Services Board at their next meeting.

5. **Alternatives to recommended action:**

   None.