



FY19

NG-911 GRANT PROGRAM APPLICATION



VIRGINIA INFORMATION
TECHNOLOGIES AGENCY
Integrated Services Division



FY19 NG-911 GRANT PROGRAM APPLICATION

HOW TO APPLY/DEADLINE

The grant application is available and accessible from VITA ISP's website (<http://www.vita.virginia.gov/isp/default.aspx?id=8578>). Upon completion of the application, it is to be submitted to the electronic mailbox for grant applications - psapgrants@vita.virginia.gov. Any supporting documentation must also be submitted along with the application when making your grant application submission.

After the close of the grant application cycle, a Grant ID and email receipt notification will be sent to the e-mail address listed on the application received.

All funding requests must be submitted using the grant application. Technical assistance is available from VITA's Public Safety Communications (PSC) staff throughout the grant process. The FY19 NG-911 Grant Application Cycle starts July 1, 2017 and concludes on October 2, 2017 at 5:00 pm.

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



FY19 NG-911 GRANT APPLICATION

PROJECT TITLE

Hanover County GIS Data Enhancement for NG911

GRANT APPLICANT PROFILE/PROJECT CONTACT

PSAP/HOST PSAP NAME: Hanover County

CONTACT TITLE: Director of Information Technology

CONTACT FIRST NAME: Kevin

CONTACT LAST NAME: Nelson

ADDRESS 1: 7497 County Complex Road

ADDRESS 2: PO Box 470

CITY: Hanover

ZIP CODE: 23069

CONTACT EMAIL: knelson@hanovercounty.gov

CONTACT PHONE NUMBER: 804-365-6168

CONTACT MOBILE NUMBER: 804-387-2389

CONTACT FAX NUMBER: 804-365-6304

REGIONAL COORDINATOR: Sam Keys

HOST PSAP AND PARTICIPATING PSAPS/LOCALITIES

Hanover County

| | |
|-------|-------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

GRANT TYPE

Individual PSAP

Shared Services



Non-vendor supported application MUST include age and/or version of hardware/software, **along with a copy of the notice from the vendor.**

VERSION:

YEARS of HARDWARE/SOFTWARE:

PRIORITY/PROJECT FOCUS NG 9-1-1 GIS

FINANCIAL DATA

Amount Requested: \$ 65,000

Total Project Cost: \$ 65,000



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 primary focus of this grant application is to remedy discrepancies identified in the State NG911 GIS Data Preparedness Assessment report. This includes street centerline edits focusing on duplicate/overlapping address ranges, ensuring attributes are accurate to NENA standards, reconciling with address data, and general centerline corrections (missing attributes, spatial accuracy, etc.). This also includes address match issues with the street centerline data layer and ALI and MSAG databases. These datasets will be checked for completeness and accuracy as well as validated and formatted for compliance with the NG911 and NENA standards. In addition the County's emergency service response zone district GIS data layer will be reviewed and updates to ensure the proper assignment of E911 calls for service as prescribed through the NG911 database. To guarantee the continued value of the investment made in the abovementioned data improvements and dataset synchronization efforts, it is essential to implement sustainable practices for their ongoing maintenance. To this end, a set of workflows and policies and procedures will be established and documented to enable ongoing system maintenance. Wherever practical, these procedures will employ automation through scripting and models, data review tools, and domains to simplify maintenance tasks, minimize manual effort and ensure the quality and consistency of relevant public safety datasets. Once the GIS data is accurate the County intends to perform an assessment against the CAD system database to ensure that the data is compatible with that system. Where necessary, configuration changes will be made to current CAD mapping applications to accommodate the new model. The goal is to have a GIS database that is able to fully support NG911 technology (from the telephone company to NG911 to GIS to the CAD system) and to develop the necessary structure to sustain GIS data maintenance activities to ensure that the data is kept current, complete, and accurate in the future.



PROJECT GOAL

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

The deliverables for the grant will ensure that Hanover's GIS data is structured to meet the requirements for implementing NG911 technology and establish a sustainable program to ensure this structure continues over time. The grant will also ensure that the address and street centerline data is tightly integrated to Hanover's E911 CAD system software OneSolution. Project goals include: Goal 1 Prepare GIS data for use under NG911 initiative; Goal 2 Increase accuracy and consistency of GIS data; Goal 3 Implement measures to ensure sustainability of data integrity; Goal 4 Ensure data retains compatibility with E911 CAD system. This grant application is consistent with the following VA 911 Comprehensive Plan goals: Goal 5: Protect the reliability and security of the 911 system by standardizing data elements across platforms (Telco MSAG, GIS, and CAD); Goal 7: Leverage GIS technology and data to better locate callers and improve response capabilities by improving GIS data and integrating GIS and CAD data.

PROJECT OBJECTIVES

Describe the objectives that will support the goals identified above:

Goal 1 objectives: Review and modify (as needed) GIS and CAD system data models; Ensure data is NENA compliant; Improve accuracy and consistency within and between GIS, ALI, MSAG, and CAD databases; Goal 2 objectives: Identify and correct ALI address issues; Identify and correct MSAG street range issues; Identify and correct street centerline range issues; Identify and correct emergency service response zones; Goal 3 objectives: Draft written data maintenance processes and procedures; Develop automated workflow tools for consistent data maintenance; Develop scripts/programs to evaluate data for consistency with NG911; Goal 4 objectives: Perform data assessment in coordination with CAD system vendor; Ensure database and mapping integration is in place.



SHARED SERVICES (if applicable)

Describe the relationship of the project to the participating PSAPs:

NA

Describe the intended collaborative efforts and resource sharing opportunities:

NA



**IMPLEMENTATION PLAN
SHARED SERVICES & INDIVIDUAL PSAP APPLICATIONS:**

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, NG-911 Grant application is filed, local budgets are obtained, appropriated grant funds are approved, and budgetary estimates are obtained. | 07 / 31 / 2018 |
| DESIGN/PLANNING - Requirements are documented, components to be purchased are identified, and general design is documented. | 08 / 31 / 2018 |
| ACQUISITION - RFP (or other bid related processes) are drafted, proposals are evaluated, contract is signed, purchase orders are issued, and quotes are obtained. | 09 / 30 / 2018 |
| IMPLEMENTATION - Purchased components are delivered and installed and training is performed | 03 / 31 / 2019 |
| TESTING/COMPLETION - Performance of system/solution is validated and system/solution goes “live” | 05 / 31 / 2019 |



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.

Hanover County has several GIS companies under a general consulting services contract. These companies were asked to assist in the compilation of a budget level cost estimate to complete the necessary tasks identified under the implementation plan section. Vendor project management and status reports are included as part of the itemized funding request. The following is a summary of the grant funding request: GIS Data Edits = **\$34,000** (addresses (MSAG/ALI) = \$20,000 + street centerlines = \$7,000 + ESN boundaries = \$7,000); GIS data management = **\$17,000** (procedure documents = \$5,000 + workflow tool development (includes training) = \$12,000); CAD system integration = **\$14,000** (programmatic assessment = \$12,000 + deployment to production = \$2,000). **Total request = \$65,000**

EVALUATION

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

Project Plan Phase 1 Project Initiation, August 2018 - Deliverable: draft requirements to be included as part of a solicitation for services; contract for services – Phase 2 Project Implementation, April 2019 – Deliverable: street centerline edits (metric tied to State assessment report); ALI, MSAG, & GIS address edits (metric tied to State assessment report); accurate emergency service response zone data layer (metric to test CAD calls for service to ensure proper dispatching of call records) – Phase 3 Data Integrity, February 2019 – Deliverable: draft GIS data editing and quality control procedures (metric to test standards against actual editing); develop automated tools/workflows that support established procedures (metric to test tool against actual editing) – Phase 4 CAD Integration, April 2019 - Deliverable: validate updated street and address GIS data against CAD (metric 100% accurate validation); CAD system testing results report (metric to test CAD calls for service to ensure proper dispatching of call record)



PHYSICAL CONSOLIDATION - (complete only if applicable)

How would a consolidation take place and provide improved service:

NA

How should it be organized and staffed:

NA

What services should it perform:

NA

How should policies be made and changed:

NA



PHYSICAL CONSOLIDATION - (complete only if applicable) – continued

How should it be funded:

NA

What communication changes or improvements should be made in order to better support operations:

NA



County of Hanover
Information Technology Department
VITA FY19 PSAP Grant Application
Business Case

Initiative Overview

Hanover County has received a GIS data preparedness assessment report from the Virginia Information Technology Agency (VITA). This assessment report documents deficiencies with the County's address and street centerline GIS data as it relates to using the data in support of the Next Generation 911 (NG911) technology initiative. The NG911 initiative replaces typical telephone trunk lines with high speed internet-based (IP) trunks to connect to local E911 communication centers (PSAP). GIS data is critical to NG911 call delivery. The State's role is to host the Emergency Service IP (ESI) database, which will integrate, via the internet, with local E911 center dispatch operations. This ESI database is tightly integrated to local address and street centerline GIS databases.

The intent is to apply for one-time funding as an Individual State grant under the Strengthen tier to assist the County in making the necessary changes in its GIS data to meet the NG911 implementation requirements, entitled "Hanover County GIS Data Preparation to Support NG911."

VITA 911 Comprehensive Plan

In July 2015, VITA adopted a Statewide 911 Comprehensive Plan with 7 strategic goals accompanied by initiatives, outcomes, and performances. This grant application is consistent with the following goals:

Goal 5: Protect the reliability and security of the 911 system by standardizing data elements across platforms (Telco MSAG, GIS, and CAD).

Goal 7: Leverage GIS technology and data to better locate callers and improve response capabilities by improving GIS data and integrating GIS and CAD data.

Project Purpose

The State has provided a NG911 GIS Data Preparedness Assessment report that forms the foundation of this grant application. The deliverables for the grant will ensure that Hanover's GIS data is structured to meet the requirements for implementing NG911 technology and establish a sustainable program to ensure this structure continues over time. The grant will also ensure that the address and street centerline data is tightly integrated to Hanover's E911 Computer Aided Dispatch (CAD) system software solution, Superior OneSolution. This grant application is based on the following goals/objectives:



County of Hanover
Information Technology Department
VITA FY19 PSAP Grant Application
Business Case

- Goal 1 – Prepare GIS data for use under NG911 initiative;
 - o Review and modify (as needed) GIS and CAD system data models
 - o Ensure data is NENA compliant
 - o Improve accuracy and consistency within and between GIS, ALI, MSAG, and CAD databases
- Goal 2 – Increase accuracy and consistency of GIS data;
 - o Identify and correct ALI address issues
 - o Identify and correct MSAG street range issues
 - o Identify and correct street centerline range issues
 - o Identify and correct emergency service response zones
- Goal 3 – Implement measures to ensure sustainability of data integrity;
 - o Draft written data maintenance processes and procedures
 - o Develop automated workflow tools for consistent data maintenance
 - o Develop scripts/programs to evaluate data for consistency with NG911
- Goal 4 – Ensure data retains compatibility with E911 CAD system.
 - o Perform data assessment in coordination with CAD system vendor
 - o Ensure database and mapping integration is in place

Current State Analysis

Hanover County’s GIS became operational in 1995 primarily in support of implementation of the County’s Enhanced 911 program. GIS is centralized under the Information Technology Department, which coordinates support for all GIS activities, including address, street centerline, and tax parcel data maintenance. The Town of Ashland assigns their own addresses, but these addresses are added to GIS by the County for integration into the E911 program. The County has expanded access to GIS data for staff and the public using internet technologies.

Hanover County’s E911 program is managed by the Emergency Communications Department, which serves as the main E911 answering point and emergency dispatch center for the County and the Town of Ashland. Communications provides call taking, dispatch, and support services to more than 23 Departments and Agencies. These include the Sheriff, Ashland Police, Fire-EMS, and Animal Control public safety Departments. The County uses Superior’s OneSolution Computer Aided Dispatch (CAD) system. Communications managed nearly 227,000 calls for service in 2016, predominantly for public safety.

The County’s address and street centerline GIS data was developed to comply with NENA standards, but has never been independently reviewed to be NENA



County of Hanover
Information Technology Department
VITA FY19 PSAP Grant Application
Business Case

compliant. New street range data is sent to telephone company providers in the County (Verizon (main), Century Link, and Windstream) to update their Master Street Addressing Guide (MSAG) databases. GIS data is interfaced with the County's CAD system (Superior OneSolution) such that the GIS database is the defacto default CAD geo-record and mapping database. The GIS Division processed 564 address and 51 street centerline updates in FY17.

In March 2017 the State provided the County an assessment report, which identified GIS address and street centerline records that needed additional review and possible correction (see Appendix A). Of the 11 focus areas analyzed the County has data discrepancies, whose totals are outside the target accuracy percentage, in 6 categories. This assessment report identified 1,454 street centerline segments and 19,492 address items when compared against one another and with the ALI and MSAG databases.

Implementation Plan

Project Concept/Scope

This grant represents an opportunity to make meaningful improvements to current GIS data and ultimately PSAP operations to prepare the County for integration into a statewide NG911 system. The primary focus of this grant application is to remedy discrepancies identified in the State NG911 GIS Data Preparedness Assessment report, which will better integrate GIS and PSAP operations and position the County to more smoothly transition into the statewide NG911 system.

This includes street centerline edits focusing on duplicate/overlapping address ranges, ensuring attributes are accurate to NENA standards, reconciling with address data, and general centerline corrections (missing attributes, spatial accuracy, etc.). This also includes address match issues with the street centerline data layer and ALI and MSAG databases. These datasets will be checked for completeness and accuracy as well as validated and formatted for compliance with the NG911 and NENA standards. In addition the County's emergency service response zone district GIS data layer will be reviewed and updates to ensure the proper assignment of E911 calls for service as prescribed through the NG911 database.

To guarantee the continued value of the investment made in the abovementioned data improvements and dataset synchronization efforts, it is essential to implement sustainable practices for their ongoing maintenance. To this end, a set of workflows and policies and procedures will be established and documented to enable ongoing system maintenance. Wherever practical, these procedures will employ automation through



County of Hanover
Information Technology Department
VITA FY19 PSAP Grant Application
Business Case

scripting and models, data review tools, and domains to simplify maintenance tasks, minimize manual effort and ensure the quality and consistency of relevant public safety datasets.

Once the GIS data is accurate the County intends to perform an assessment against the CAD system database to ensure that the data is compatible with that system. Where necessary, configuration changes will be made to current PSAP mapping applications to accommodate the new model. The goal is to have a GIS database that is able to fully support NG911 technology (from the telephone company to NG911 to GIS to the CAD system) and to develop the necessary structure to sustain GIS data maintenance activities to ensure that the data is kept current, complete, and accurate in the future.

Project Plan

Phase 1 – Project Initiation, Completion August 2018

Milestone/Deliverables

1. draft requirements for project to be included as part of a solicitation for services, July 2018
2. contract for services, August 2018

Phase 2 – Project Implementation, Completion April 2019

Milestone/Deliverables

1. street centerline edits, April 2019 (metric will be tied to State assessment report)
2. ALI, MSAG, & GIS address edits, April 2019 (metric will be tied to State assessment report)
3. accurate emergency service response zone data layer, December 2018 (metric will be to test CAD calls for service to ensure proper dispatching of call record focusing on streets that have coincident boundaries)

Phase 3 – Data Integrity, Completion February 2019

Milestones/Deliverables

1. draft written GIS data editing and quality control procedures, February 2019 (metric will be to test standards against actual editing)
2. develop automated tools/workflows that support the established procedures, February 2019 (metric will be to test tool against actual editing)

Phase 4 – CAD System Integration April 2019



County of Hanover
Information Technology Department
VITA FY19 PSAP Grant Application
Business Case

Milestones/Deliverables

1. validate updated/accurate street and address GIS data against CAD (metric will be 100% accurate validation)
2. CAD system testing results report (metric will be to test CAD calls for service to ensure proper dispatching of call record)

Proposed PSAP Grant Costs

Hanover County has several GIS companies under a general consulting services contract. These companies were asked to assist in the compilation of a budget level cost estimate to complete the necessary tasks identified under the implementation plan section. Vendor project management and status reports are included as part of the itemized funding request. The following is a summary of the grant funding request:

- I. GIS Data Edits = **\$34,000**
 - a. Addresses (MSAG/ALI) = \$20,000
 - b. Street centerlines = \$7,000
 - c. ESN boundaries = \$7,000
- II. GIS Data Management = **\$17,000**
 - a. Procedure documents = \$5,000
 - b. Workflow tool development (includes training) = \$12,000
- III. CAD System Integration = **\$14,000**
 - a. Programmatic assessment = \$12,000
 - b. Deployment to production = \$2,000
- IV. **Total Project Cost = \$65,000**



County of Hanover
 Information Technology Department
**VITA FY19 PSAP Grant Application
 Business Case**



Virginia NG9-1-1 GIS Preparedness Assessment
 FY2019 PSAP Grant Program

| ISP Region | PSAP | GIS Data Source |
|------------|---------|-----------------|
| 1 | Hanover | Hanover County |

Number of GIS Checks Needing Additional Work: 2
 (Source: 2017Q1 VITA GIS Analysis)

| Check | Description | Count | Discrepancy Rate | Target Rate | Work Needed To Meet Target Rate |
|-------|--|-------|------------------|-------------|---------------------------------|
| 2 | RCL Has Duplicate Address Ranges For Attributes <> 0 | 159 | 2.2% | <1% | Yes |
| 6 | RCL Has Left Side Overlapping Address Range | 6 | 0.1% | <1% | No |
| 7 | RCL Has Right Side Overlapping Address Range | 3 | 0.0% | <1% | No |
| 10 | RCL Has Street Name Attributes <> Virginia, USPS, & NENA standard | 939 | 13.3% | <1% | Yes |
| 18 | AP Is Duplicate, Has No Street Name, Or No Address Number | 23 | 0.0% | <1% | No |
| 19 | AP Does Not Geocode to Road Centerline Street Name and Address Range | 265 | 0.6% | <2% | No |
| 20 | AP Street Name And RCL Street Name Mismatch | 59 | 0.1% | <1% | No |

Number of ALI to GIS Checks Needing Additional Work: 4
 (Source: 2016Q3 VITA MSAG/ALI/GIS Analysis)

| Check | Description | Count | Discrepancy Rate | Target Rate | Work Needed To Meet Target Rate |
|--------------|---|-------|------------------|-------------|---------------------------------|
| ALI2AP_U | No ALI Match to AP | 2383 | 5.8% | <2% | Yes |
| | ¹ Top 10 Unmatched | 713 | 4.0% | | |
| | ² Top 20 Unmatched | 1041 | 3.2% | | |
| ALI2RCL_U | No ALI Match to RCL | 1681 | 4.1% | <2% | Yes |
| ALI2AP_M_SI | ALI Match but AP/ALI Street Names Different | 7598 | 18.4% | <2% | Yes |
| ALI2RCL_M_SI | ALI Match but RCL/ALI Street Name Different | 7830 | 18.9% | <2% | Yes |

¹² 10 or 20 most common addresses in the unmatched ALI table. Resulting discrepancy rates depict the expected discrepancy rate when the top 10/20 records are resolved.

FY2016-FY2018 Grant History (GIS or Mapping Related Projects): No

FY2016: N/A
 FY2017: N/A
 FY2018: N/A