PSAP Grant Program Grant Ranker

View Application--76--Routable Network

Grant Period: 2010

Tier: Strengthen current equipment and service delivery capability by upgrading existing wireless E-911 related equipment or services (**STRENGTHEN**)
Grant Program: Enhancement **Grant Type:** Individual PSAP
Priority: GIS: low priority (refer to GIS-related Grant Request Prioritization Matrix for a description of GIS projects that would have a low funding priority) (**GIS LOW PRIORITY**)

Primary PSAP Applicants:	Campbell County
Jurisdictions Served:	Altavista, Town of Brookneal, Town of Campbell, County of

Project Director:
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Project Description:

Total Project Cost	$85,000.00
Amount Requested:	$85,000.00

Statement of Need:
Relationship to the Current Funding Priorities This grant request is related to the GIS Enhancement Priorities and Continuity as stated the Grant Guidelines for 2010. Enhancement #8 GIS Low Priority – Data – Routable network Continuity #4 GIS High Priority – Non Enterprise 911 Specific GIS Tools – Road and Address Maintenance Tools Enhancement #8 GIS Low Priority – Other Maintenance Tools – Parcel Maintenance Tools Evidence of Financial Need This grant request will provide the funding needed to perform the data collection, verification, and development work necessary to support automated routing functionality in the PSAP CPE and GIS. The County does not have the technical or human resources necessary to complete this work. We intend hire a qualified consultant with experience in developing this data. Impact on Operational Services The PSAP CPE and GIS have the software tools necessary to perform automated routing. We lack a routable road network required to fully utilize the routing tool capabilities. Providing an automated routing capability will improve the PSAP's ability to efficiently dispatch emergency services. The data maintenance tools will help the GIS department maintain the routable network as well as maintain addresses, parcels, emergency service zones, and the locality boundary. Consequences of not receiving funding This project is reliant upon the award of the grant funding. The County does not have the funding necessary to perform this work without the grant award. Inclusion of Project in PSAP Planning Enabling the automated routing capabilities of the PSAP CPE software and GIS software is part of the continuous plan for increasing efficiencies and improving services to our citizens and businesses. The addition of tools to maintain road, address, parcel, and other GIS data layers will increase the efficiency of

the GIS data layers.

Comprehensive Project Description:

Task 1 Project Description – Development of a Routable Network The County is acquiring the services of a qualified consultant to develop and implement a routable road network to support automated routing in the PSAP and GIS. This routable network will be based on the current road centerline data set (RCL) used in the PSAP and GIS. This project includes all the tasks necessary to develop and implement this routable network. The specific task descriptions are included in the implementation strategy work plan below. Goals and Objectives Goal The goal of this project is to improve emergency dispatch and response times by providing dispatchers with an automated routing capability. Project Objectives 1. Secure the services of a qualified consultant 2. Perform the office tasks necessary to develop and populate the routing data 3. Perform the field work necessary to verify and validate the routing data 4. Implement the routing data set within the GIS 5. Implement the routing data set within the PSAP 6. Test and validate 7. Deploy to live system Implementation Strategy and Work plan 1. RCL Data Model Update – The current GIS data model will updated to include necessary geometric and attribute changes required for establishing a routable GIS road network for use in the PSAP and GIS. 2. Road Segment Geometric Update – Testing will be done on the RCL to verify and validate the topology. We will identify and attempt to fix any topology errors. In cases where the geometric fixes cannot be determined, the consultant will identify the problem and provide it to the County GIS department for resolution. The County will communicate the resolution back to the consultant. These resolutions will be then be reflected in the GIS data. 3. Road Point Geometric Feature Development – Geometric point features representing intersections and road end points will be created. The point will be used on the segments to establish a beginning and end node. It will be used to develop a junction feature data set for the network routing functionality. 4. Road Segment Attribute Update - To-node / From-node IDs attributes will be established and populated to establish segment linkage and travel directionality. The County's consultant will utilize the current segment directionality as a point of departure for assignment of travel directionality. In cases where the travel directionality cannot be determined, the consultant will identify the problem and provide it to the County GIS department for resolution. The County will communicate the resolution back to the consultant. These resolutions will be then be reflected in the GIS data. One Way Road Restrictions will also be added to segment attribution in this step. One way roads will be identified and attributed for routing restrictions. Divided highway one way designations will be attributed based on travel direction with the aid of VBMP orthoimagery. Other one way roads will be identified by the County and attributed by the consultant. 5. Road Classification Update – Road classification attributes will be established populated for each road segment. The classification system will be used to organize the roads based on type (e.g. Interstate, Primary, Secondary, Subdivision, Rural). It is recommended that the County start with the existing DOT type classifications as a point of departure and modifying that to suit County needs. Once established, classification to County road segments will be applied to the data. 6. Update of Segment Impedance Factors – Standard impedance parameters and domain values will be established to model travel impedance cost. This will include the segment impedance factor of speed based on the road classification established above. It will include point (junction) impedance factors for Stop signs, Traffic lights, and open intersections. It is recommended that the County starts with the existing parameters and domain values as a point of departure and modifying that to suit County needs. Once established, the segments and points will be attributed with the appropriate values. The consultant will carry out a field verification of speed limits through actual field verification. The results of the field verification will be compared to the initial values and changes in the designation of impedance factors will be adjusted as needed. 7. Update of Segment Speed Limits - The consultant will work with the County to establish standard speed impedance based on the road classifications established above. We recommend starting with the existing speed values as a point of departure and modifying that to suit County needs. Once established, we will attribute the segments with the defined speed values based on their classification. The Consultant will carry out a field verification of speed limits through actual field verification. The results of the field verification will be compared to the initial values and changes in the designation of impedance factors will be adjusted as needed. Field Validation and Verification – Field validation and verification will be necessary to insure that we have assigned the proper impedance values to the road segments and points. Field validation requirements will be based on the quality and quantity of source data input. Project Timeline (days from grant award) • 30 - Secure consulting services • 45 - RCL Data Model Update • 90 - Road Segment Geometric Update • 90 - Road Point Geometric Feature Development • 120 - Road Segment Attribute • 120 - Road Classification • 150 Update of Segment Impedance Factors • 165 - Update of Segment Speed Limits • 190 - Field Validation and Verification Task 2 – Data Maintenance Tools – Project

Description The County would like to purchase maintenance tools to assist in the maintenance of our road, address, and parcel data. The tools will also allow for the maintenance of the routable network that will be developed within task 1. The software will work in conjunction with our current GIS software and data and will simplify the process of maintaining the County data. The software will automate some manual tasks and provide a more efficient way to maintain and validate the County data. Implementation Strategy and Work plan We anticipate this project will include: 1. Acquire software – The County will purchase maintenance software from a qualified vendor. 2. Install and Configure software – The vendor will install and configure the maintenance software on the County GIS workstations. 3. Workflow Creation – The vendor /consultant will work with the County to develop and configure custom maintenance workflows. 4. Training and Documentation – The consultant will provide training and documentation to the County users. Project Timeline – Task 1 (days from grant award) • 30 – Contract with consultant • 50 – Configuration of software with Locality data set • 60 – Development of Workflows • 75 – Training Project Sustainability Ongoing maintenance of the data will be performed as part of the roadway update process.

How will the equipment purchased will support future technologies for PSAP readiness?:
How will Equipment purchased support future technologies for PSAP readiness? The equipment and services purchased under this grant will provide the PSAP with the ability to improve the call dispatch functions.

Budget and Budget Narrative:
Attached

Evaluation:
Evaluation data will be collected throughout the project as specific milestones are achieved. The data sources will include regular project status reports, milestone testing and acceptance documents, and final project acceptance documents. Project milestones and status reports will follow our specific objectives: Project Objectives 1. Secure the services of a qualified consultant 2. Perform the office tasks necessary to develop and populate the routing data 3. Perform the field work necessary to verify and validate the routing data 4. Implement the routing data set within the GIS 5. Implement the routing data set within the PSAP 6. Test and validate 7. Deploy to live system As part of the overall project, a Project Management Document shall be developed that incorporates each stage of the project, and provides an audit trail associated with final outcomes, final project metrics, and achievement of specific project deliverables.

Attachments

Campbell_Routable_Network_Budget.pdf

Budget and Budget Narrative Section

Budget and Budget Narrative – Purpose

The tasks described above will be performed for the fee shown in the table below.

Task 1	Development of Routable Network	Fee
	RCL Data Model Update	$5,000
	Road Segment Geometric Update	$17,500
	Road Point Geometric Feature Update	$15,000
	Road Segment Attribution	$5,000
	Road Classification	$2,500
	Update of Segment Impedances	$2,500
	Update of Segment Speed Limits	$2,500
	Field Validation and Verification	$10,000
	Total Task 1 Fee	**$60,000**

Task 2	Data Maintenance Tools	Fee
	Road and Address Maintenance Software	$7,500
	Parcel Maintenance Software	$7,500
	Install and Configuration (on-site)	$2,500
	Develop Workflows	$5,000
	Training (on-site)	$2,500
	Total Task 2 Fee	**$25,000**
	TOTAL PROJECT FEE	**$85,000**