SOUTHERN MICHIGAN PSAP ALLIANCE (SMPA)

REQUEST FOR PROPOSAL

Customer Premise Equipment (CPE)

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1. INTRODUCTION AND ADMINISTRATION

1.1 Introduction and Project Description

Located in Southern Michigan, the governing bodies for the Public Safety Answering Points (also known as PSAPs) located in Barry, Berrien, Calhoun, Hillsdale, Lenawee, and Jackson counties have joined together into a unified planning effort to migrate E9-1-1 capability to Next Generation 9-1-1. This group, called "Southern Michigan PSAP Alliance," is hereinafter referred to as SMPA. Calhoun County Consolidated Dispatch Authority (CCCDA), by letter of understanding, will be the lead agency and contractor on behalf of the SMPA.

CCCDA is formally soliciting proposals on behalf of the SMPA, through a Request for Proposal (also known as RFP) process, from qualified entities (contractors) for the purpose of acquiring a Next Generation 9-1-1 (NG9-1-1) shared emergency services IP based Customer Premise Equipment (CPE) telephone system. The CPE telephone system must be scalable and support multiple PSAPs. While this RFP proposal is for Barry and Calhoun county PSAPs, the proposed system must be scalable to include Hillsdale and Lenawee Counties, with a minimum of 30 additional workstations, in the future. The proposers must specialize in CPE telephone systems including bringing together component subsystems into a whole and ensuring that those subsystems function together as well as project management, integration, implementation, training and go-live assistance.

1.2 Location

The project locations are 9-1-1 Systems located throughout Southern Michigan. Spreadsheets containing 9-1-1 System participant information, point of contacts for each system, and 2014 statistical information related to workload and technologies are attached hereto as Attachment A. The contractor must provide a solution for Barry and Calhoun counties within the context of this RFP, but the proposed solution must be expandable to encompass Hillsdale and Lenawee Counties and additional PSAPs in the future.

1.2.1 Barry County Demographics

Barry County is a suburb of the Grand Rapids Battle Creek area with a population approaching 60,000 residents and geographical area of approximately 576 square miles. No significant increase in population is expected over the next 10 years and staffing projections do not include any increases for at least the next five years. The 9-1-1 center currently receives on average approximately 53,000 calls for service per year on a well-managed Vesta Pallas system rapidly approaching its end of life. The system is eleven years old, installed in December of 2004. Four – 911 consoles are each supported with a Computer Aided Dispatch (CAD) workstation and Radio console. The 9-1-1 configuration is supported by two tandems or selective routers located in Grand Rapids and Southfield, MI. Barry County has an ethanol storage facility. The County does not host any large special events on a regular basis. These factors need to be considered in new communication system.

While the County does not have a physical backup center, it can forward 9-1-1 calls upon activation of a manual transfer to Allegan County. If the manual transfer doesn't work, PSAP staff call the resolution center to effect the change-over. If the administrative phone system fails completely, the public is notified (for administrative calls) to call the Sheriff's office.

AT&T is the local exchange carrier providing 8 combined - 911 trunks delivered via twisted pair facilities. Four wireless carriers also provide service to the center; AT&T, Sprint, Verizon, and T- Mobile. Twenty lines on the Nortel system provide connectivity including administration, EOC, inbound only, out bound only, Fax, and VoIP services. Two ALI circuits provide redundancy and internet access is provided by AT&T on T1. Two T1 trunks exist for redundancy. All traffic delivery (9-1-1 and administration) appears to be via T1.

Currently the PSAP administrative phone system is not interconnected with the County's administrative phone system. The County's System is a Shore Tel VoIP system and the PSAP cannot transfer administrative calls from the Vesta Pallas to the County system. Another significant issue is Phase II rebid. Telecommunicators may ask for updated location information (rebid) but if dispatchers are sharing calls there is a risk that one may end up with outdated location information. All calls 9-1-1 and administrative are answered and handled via workstation software interface.

Barry County call volumes:

Year	Wireline	Wireless	VoIP	7 Digit /Emergency and Non-Emergency
2012	12,562	5,301	226	53,998
2013	13,101	6,059	211	56,601
2014	11,694	6,162	220	47,430
Average	**12,452**	**5,841**	**219**	**52,676**

From the statistical perspective the number of wireline calls received by the PSAP from 2012 to 2013 increased by 539 calls and wireless calls increased by 758 calls. In 2013 to 2014 wireline calls reduced by 1407 calls and wireless calls increased by 103 calls. Over this three year period the 7 digit emergency/non-emergency calls averaged 52,767 calls per year. The County is following the national trend of decreasing wireline calls and increasing wireless calls for service.

Operating systems appear to be consistent throughout the building with most PCs running Windows 7 except the Magic reporting server which runs an older version.

Reporting from the current 9-1-1 system is cumbersome and labor intensive, and only providing basic statistics for the County. More complex statistics however require download of data into another package for the purpose of analysis and ad-hoc reporting.

The existing radio system is a 4 position Motorola MCC7500. The system is well suited to a County of this size and currently appears to be functioning well.

The current audio logging system is provided by DSS. Of the 24 channels available, Barry County uses twenty. Barry and the other Counties involved have not reported any concerns or issues with the service provided by DSS. One item to note, is the lack of redundancy with the DSS logging system. Barry also has instant audio recording available at each dispatch workstation. Recording time is set to default at a minimum of one hour and is also integrated with the radio console.

The current CAD system is provided by Logisys and was installed in early 1995. It has few interfaces to external systems such as RMS but does have an interface to ProQA and interacts with mobile systems. The system is updated once or twice per year.

The building itself is in excellent condition with a 260 foot tower on the property. Although real estate on the tower is limited, there is no need expressed for additional hardware to be mounted in the near future. The Emergency Manager for the county is also located in the building, providing ease of coordination during an event. Fiber is not currently available in the building and the Barry team is not aware of facilities available nearby. It must be noted that fiber facilities are located approximately ¼ mile from the building. The PSAP owns a single Onan generator with an auto switch to eliminate manual startup of the unit. The generator is tested weekly and twice a year it is tested under full load. It is in good working order and is serviced under a regular maintenance program. Barry also has a UPS for the building which is due for replacement in 2016.

County PSAP staffing is currently 10 dispatchers and 4 supervisors. All Telecommunicators are full time and no increase in staffing levels is projected over the next five years based on projected population growth estimates of approximately 9,000.

The equipment room has sufficient space and HVAC cooling to accommodate new CPE equipment. Power requirements will be dictated by the choice of CPE vendor as each has different requirements depending on site configuration. Generally space for a 6 foot rack, 2 separate 120V 20A circuits, and eighteen inches of clearance around all sides of the rack is available.

1.2.2 Calhoun County Demographics

Calhoun County Consolidated Dispatch Authority (CCCDA) jurisdiction is 781 square miles and serves a population of 153,000. In 2010 Calhoun County successfully consolidated 3 county centers into a single entity and now operates as CCCDA with 8 positions and a supervisor position. CCCDA dispatches 9 Law Enforcement, 19 Fire/Rescue and 3 EMS agencies.

Calhoun County Call Volume Information:

Year	Wireline	Wireless	VoIP	7 Digit /Emergency and Non-Emergency

Year	Wireline	Wireless	VoIP	7 Digit /Emergency and Non-Emergency
2012	23,451	87,944	5,863	138,785
2013	20,748	82,503	9,440	134,406
2014	20,995	10,9943	6,491	136,911
Average	**21,731**	**93,463**	**7,265**	**136,701**

AT&T and Frontier Communications provide exchange carrier service to the County with selective routers located in Grand Rapids and Muskegon respectively. AT&T provides 13 combined wireline/wireless/VoIP trunks and Frontier provides 3 combined trunks. The Primary PSAP currently functions with a Vesta Pallas 9-1-1 call handling solution with 7 direct inbound trunks on PRI and 3 POTs lines for Back up. These lines do not include backup centrex lines, fax or support services lines. Internet access for the PSAP is provided via contract with the county.

The CAD system is comprised of a SunGard ONESolution running Windows 2008 OS. The last CAD upgrade was performed in July 2015 and the system was installed in Dec 2013. A text paging interface, ProQA and a Police RMS interface are integrated into the system and data is transmitted to mobile units from CAD as required. CAD mapping is provided by SunGard with an upgrade to Pictometry data installed in June 2015, but it's not yet operating in the live environment. All workstation positions at the PSAP are equipped with Motorola MCC 5500 radio consoles for dispatch.

The County currently uses the DSS Equature logging solution for recording of voice and radio traffic. The system was installed in 2010 with a capacity of 72 channels and 57 channels currently in use. Logging is currently performed trunk side and at each workstation.

The PSAP is currently configured for the optimum number of workstations (nine) with no room for further growth, however, the maximum staffing level is currently only five personnel on duty. The County has some challenges in terms of event management. An annual balloon festival and airshows in Battle Creek increase the transient population in the summer months and several hazardous material storage sites, major highways crossing through the County, and railway lines create logistical routing issues and potential spill concerns.

Power and hot water for the center are covered by one single large UPS, an Eaton Powerware unit which is serviced twice a year. The generator is a fairly new 2010 Cummins fueled by natural gas and well maintained. Although the unit is close to the street and in an open enclosure, the area is fenced in and secure. The generator is covered under a regular maintenance program and serviced twice a year. Calhoun does not use an Automatic Call Distribution (ACD) system for presenting calls and did not report any situations where calls were being missed or not answered in a timely fashion.

Power requirements will be dictated by the choice of CPE vendor as each as different requirements depending on site configuration. Generally space for a 6 foot rack, 2 separate 120V 20A circuits, and eighteen inches of clearance around all sides of the rack are adequate preparations.

1.3 Project Approach

The SMPA is soliciting RFPs for the purpose of selecting a qualified entity (contractor) to propose an IP based Customer Premise Equipment (CPE) telephone system that supports Emergency Services IP Network (ESinet) and NG9-1-1 capabilities.

The response to this RFP shall include an executive summary as to why you believe your firm or entity is the most qualified to provide the IP based Customer Premise Equipment (CPE) telephone system, response to all technical requirements, references, project management and implementation strategy, and project cost including maintenance for six years.

Contractor must demonstrate proven success on previous projects of similar size and complexity, and have experience in implementing such projects including project management, integration, implementation, training and go-live assistance.

The RFP must describe which hardware solutions and professionals were involved in other similar successful projects, as well as which professionals would be assigned to this project. Contractor must provide at least five (5) references of similar size and complexity including a timeline from contract signing to implementation for each reference.

1.4 Project Scope

The project scope will consist of all aspects related to the installation, implementation, training, go-live and post go-live support and overall project management of a new CPE telephone system for Barry and Calhoun Counties.

The selected contractor shall complete the following requirements identified below:

A. Obtain CPE RFP document

B. Participate in pre-bid conference – The pre-bid conference is optional, but highly recommended for any successful bidder

C. Respond to RFP

D. Finalists must:

   a. Provide onsite proposed CPE demonstration Review of existing telephony equipment

   b. Participate in an interview process with the selection committee

   c. Setup visits with client references based on selection committee preference

E. Finalist selected will:

   a. Enter into good faith contract negotiations to insure a timely contract signing
   b. Work closely with Calhoun and Barry counties to meet the implementation timeline requested
   c. Integrate with the PFN 911 network designed as an Emergency Services IP Network (ESinet)
   d. Provide timely resources for project management, implementation, training and go-live support

2. ADMINISTRATIVE REQUIREMENTS

2.1 Letter of Intent to Bid

Qualified entities (contractors) who intend to submit a proposal in response to this request for proposal for a customer premise equipment (CPE) telephone system must submit the Letter of Intent to Bid contained herein (Attachment B). The Letter of Intent to Bid must be received at CCCDA's Administrative Office (via postal service or electronic mail to hsnyder@calhouncountymi.gov) by 10:00 am (EST) on March 7, 2016.

2.2 Required Information Contained in RFP Response

All responses shall clearly state how the contractor will meet or exceed the requirements of each phase of this RFP. The contractor must demonstrate experience in the design, installation and implementation of an IP based customer premise equipment (CPE) telephone system that provides for thorough integration with multi-agency PSAPs, multi-jurisdictional computer aided dispatch (CAD), mapping, radios, recorders, and any additional hardware or software not specified. The contractor must also be able to address the issues associated with integrating such technologies as Automatic Call Distribution, Geographical Information Systems, Instant Messaging, Multimedia Messaging Service, Short Message Service, Voice-over-IP, Wi-Fi, and video.

In addition, the following specific information is required:

A. Description of the firm and project team(s).

B. Submission of Attachment C – Reference Worksheet. Vendors shall provide at least five (5) references relevant to CPE Telephone System Implementation within Emergency Services IP Network (ESinet).

C. Professional resume(s) of all key personnel assigned to the project.

D. Proposed project schedule for each PHASE.

E. Completion of Attachment D; Project Pricing Worksheet and Maintenance.

F. Compliance with Attachment F; 911 network, built and operated by Peninsula Fiber Network (PFN).

G. Schedule for all installation, implementation and professional positions assigned to the project.

H. Primary e-mail address to which any correspondence shall be sent regarding this RFP, also included in the letter of intent.

I. Any other information the contractor deems necessary to assist in determining the best fit for the CPE project for SMPA.

J. Insurance requirements which shall at a minimum include:

   a. All insurance policies obtained for the project shall include each individual participating PSAP (including the PSAP's governing body), and their duly authorized representatives as additional insured parties. All costs associated with meeting these requirements shall be considered incidental to the contract.

   b. The contractor shall, at its own expense, obtain and maintain during the life of the contract liability and property damage insurance which shall protect the contractor, each respective participating PSAP (including the PSAP's governing body), and its respective officers, agents and employees, and shall also protect any subcontractor performing work under the contract, from claims for damages for personal injury (including accidental death) as well as from claims for property damage which may arise from the performance of work under the contract, whether such work is performed by the contractor, by any subcontractor, or by anyone directly or indirectly employed by the contractor or by any subcontractor, and the amounts of such insurance shall be as follows:

      i. Liability including contractual liability and property damage insurance in any amount not less than Three Million Dollars ($3,000,000) for injuries (including death) to anyone person, and subject to the same limit for each person, in an amount not less than Three Million Dollars ($3,000,000) on account of anyone accident.

      ii. Automobile liability and property damage insurance with bodily injury liability in any amount not less than Three Million Dollars ($3,000,000) each person, and Three Million Dollars ($3,000,000) each occurrence and property damage liability in any amount not less than Three Million Dollars ($3,000,000) each occurrence.

      iii. Workers Compensation insurance in any amount not less than the statutory limits that may be required by the State of Michigan and employer's liability in any amount not less than One Million Dollars ($1,000,000).

      iv. Certificates of Insurance must be submitted to SMPA prior to the start of the work.

      v. Certificates of Insurance must be written by companies acceptable to SMPA and the policies must be approved by SMPA. The insurance shall not expire prior to the time of completion of the work. All policies shall provide that not less than thirty (30) days' notice of material change or cancellation shall be given to the additional insureds.

K. Additional information requirements may be distributed via an addendum(s). In the event that it becomes necessary to provide additional clarifying data or

information, or to revise any part of this RFP, revisions, amendments and/or supplements will be emailed to all participants submitting a Letter of Intent to Bid (Attachment B).

2.3 Right to Reject

SMPA reserves the right to reject any or all submittals without liability or cause, and may reject any submittal if the contractor credentials do not meet the requirements set forth by SMPA. SMPA also reserves the right to limit the number of applicants receiving an interview.

2.4 Termination

Failure to comply with the terms and conditions as herein stated shall be cause for cancellation of the contract. SMPA will give written notice of unsatisfactory performance and the contractor will be allowed thirty (30) days to take corrective action and accomplish satisfactory control. If at the end of the thirty (30) days, SMPA deems the contractor's performance still unsatisfactory, the contract shall be canceled. The exercise of its right of cancellations shall not limit SMPA's right to seek any other remedies allowed by law. SMPA reserves the right to award the contract to the lowest responsible contractor's proposal.

2.5 General Requirements

The proposals will be opened at 2:00 pm (EST), March 25th, 2016. One (1) original and Twelve (12) copies of the completed proposal along with a digital copy in PDF format must be submitted and clearly marked "SMPA RFP for CPE."

1. RFP RELEASED: February 12th, 2016 at 10:00 am (EST)
2. Letter of Intent to Bid/Written Questions: March 7th, 2016 by 10 am (EST)
3. RFP SUBMISSION DEADLINE: No later than 2:00 pm (EST), March 25th, 2016
4. RFP SUBMISSION LOCATION: Mail or Drop-Off Address

   CCCDA Administrative Office
   ATTN: SMPA
   315 W. Green St.
   Marshall, MI 49068

   Note: Faxed or e-mailed submissions will not be accepted.

5. Schedule of Events (all times are EST – Eastern Standard Time):

Date and Time	Activity
February 12th, 2016 – 10:00 am	RFP Released/Available
February 25th, 2016 – 11:00 am	Pre-bid Conference – Contractors are encouraged to participate in person, or via conference call, and ask questions
March 7th, 2016 – 10:00 am	Deadline for contractors/vendors written questions and letter of intent to bid to be submitted via email to: HSnyder@calhouncountymi.gov
March 14th, 2016 – 4:00 pm	Contractors/vendors written questions will be answered in writing and distributed via email by 4:00 pm
March 25th, 2016 – 2:00 pm	RFP Responses DUE and Public Opening
March 28th – April 22nd, 2016	Initial Evaluations and Vendor Finalists Selected (Finalists will be announced no later than 4:00 pm on April 29th)
May 9th – May 20th, 2016	Evaluations, Demos, onsite visits and Interviews with Finalists
May 23rd – June 30th, 2016	Negotiations, and Contract Award (approximate timeline only)
Aug 1st – Nov 30th, 2016	CPE Installation, Training and Go-live Support

2.6 Evaluation and Discussion of Proposal

The proposals, if any, submitted by vendors shall be evaluated solely in accordance with the criteria set forth. SMPA may conduct discussions with any contractor/vendor who submits an acceptable or potentially acceptable proposal. Bidders shall be accorded fair and equal treatment with respect to any opportunity for discussion or revision of proposals. During the course of such discussions, SMPA shall not disclose any information derived from one proposal to any other bidder. All proposal information will be kept confidential until an award is made and a contract is signed. After contract award and signing, all information pertaining to this process will be subject to Calhoun County Consolidated Dispatch Authority's Freedom of Information Act Policy.

2.7 Negotiations

SMPA reserves the right to negotiate specifications, terms, and conditions, which may be necessary or appropriate to the accomplishment of the purpose of this RFP. SMPA will require the RFP and the contractor's/vendor's proposal be incorporated in full or in part as contract documents. Once a contractor(s) is selected, a contract(s) will be negotiated with the successful bidder(s). If SMPA cannot reach an agreement with the successful bidder(s), an alternative bidder may be pursued.

2.8 Reserved Rights

SMPA reserves the right at any time and for any reason to cancel this RFP, to reject any or all proposals, or to accept an alternate proposal. SMPA reserves the right to waive any immaterial defect in any proposal. SMPA may seek clarification from a contractor at any time and failure to respond promptly is cause for rejection.

2.9 Award

Award shall be made by SMPA to the most responsive and responsible contractor whose proposal is determined to be the most advantageous to SMPA. All contracts as a result of this award will be with the contractor/vendor and CCCDA.

2.10 Hold Harmless

The successful bidder(s) shall agree to save and hold harmless and defend SMPA and their respected counties from and against any and all claims, demands, suits, and liability for death or injury to any person or damage to or loss of property, which injury, loss or damage is caused by or arises out of the execution of this contract of agreement.

3. PROJECT MANAGEMENT

3.1 Project Team – Project Manager(s)

The CONTRACTOR must assign Project Managers who are familiar with CPE systems, 911 networks, IP networks, and any additional proposed system(s). The COUNTIES will determine and conduct bi-weekly project meetings on site and/or via conference call as specified by the COUNTIES. The COUNTIES reserve the right to conduct more frequent project meetings during any phase of this project.

Substitution of the Project Manager or other key employees by the CONTRACTOR must require the express written permission of the COUNTIES. The COUNTIES may require the removal of any employee from work, and the CONTRACTOR must replace such employee upon demand by the COUNTIES. The CONTRACTOR's management must commit to supporting the qualified and COUNTIES pre-approved Project Manager assigned to this project for the duration of the installation and acceptance time periods.

3.2 Project Team – Technicians

PROPOSERs must provide a list of proposer and manufacturer support technicians who will provide support services on this project including:

1. Relevant employment history and training of technicians. All personnel will be subject to criminal background check.
2. List must include number of certified technicians and levels of experience on the IP network solution that are within two hours of the COUNTIES remote locations.
3. List must include number of certified technicians and levels of experience on the IP network solution that are within four hours of the COUNTIES remote locations.
4. It is a requirement that the proposers have the necessary technical expertise and proven experience with similar equipment and configuration as proposed.

3.3 Project Team – Technician Training

All persons who will be providing support on any system must be adequately trained to perform installation and ongoing maintenance. The COUNTIES reserves the right to audit qualifications of anyone working on the system at any time and to reject any technician or persons providing support on the project. It is the responsibility of the proposer to ensure that all technicians meet the initial training and subsequent training requirements for all work and proposed systems.

3.4 Project Team – Support Technicians

The CONTRACTOR must provide a list of support technicians to the 911 Coordinator at least every six months or whenever there is a change in personnel or with the following information:

- The number of certified technicians, and the name of certified technicians with their respective levels of experience on the proposed solution, within **two** hours of the COUNTIES data centers and/or remote locations.
- The number of certified technicians, and the name of certified technicians with their respective levels of experience on the proposed solution, within **four** hours of the COUNTIES data centers and/or remote locations.

3.5 Project Implementation – Project Manager

The CONTRACTOR must assign Project Managers who are familiar with CPE and 911 networks, IP networks, and any additional proposed system(s).

3.6 Project Implementation – Project Plan

The PROPOSER must submit a narrative that details the complete CPE system Project Plan. The plan must include details on how the conversion process will not interrupt present E911 service and operations. Major areas of concern are:

- Project timeline, including a guaranteed “live” date for BCCD and CCCDA PSAPs
- PSAP CPE system installation or upgrade plan
- Proposed migration plan for transitioning into the new methodology
- Analog, digital, and IP network interface testing to gateways and PSAP location
- ALI interface testing
- CAD, logging recorder, administrative PSTN services, and PBX lines interface testing
- A detailed Acceptance Test Plan (ATP) for all analog, digital, and IP network functions.

3.7 Project Implementation – Gantt Chart

PROPOSERs must submit a task-oriented Gantt chart (using MS Project 2000 or later version) that details the CPE System installation.

The Gantt chart must be broken down to identify host and remote Data Center and PSAP location installations. The COUNTIES reserves the right to approve the Gantt chart.

The proposed start date for the project must use a “contract date” MM/YYYY and specify each project task in weeks or months. The Gantt chart tasks must include all details to support the project plan.

3.8 Project Implementation – Project Meetings

The COUNTIES will determine and conduct bi-weekly project meetings on site and/or via conference call as specified by the COUNTIES. The COUNTIES reserves the right to conduct more frequent project meetings during any phase of this project.

3.9 Project Implementation – Unexpected Costs

All costs resulting from oversights, equipment failures, and/or unexpected events that affect the CONTRACTOR's ability to fulfill the contract requirements remain the responsibility of the CONTRACTOR. The COUNTIES must approve any requested changes before implementation of such changes and before incurrence of additional costs.

3.10 Acceptance – Test Plan

The following acceptance test plans are required as described in the following subsections. The CONTRACTOR must perform a pre-cut test plan and a post-cut test plan. If the COUNTIES determines that the CPE system has not passed a performed test, the COUNTIES will provide the CONTRACTOR with a written description of the way(s) in which the system's performance was unsatisfactory. The test plans must include the CTI, VRS and mapping applications. The document will also include a limited but reasonable period for the CONTRACTOR to resolve the problem. The CONTRACTOR is responsible for preparing the test plans and the COUNTIES will approve the test plans.

Some caveats for acceptance testing follow:

- In measuring acceptance, system failure resulting from external causes, including, but not limited to, acts of God or fire, will be excluded from the acceptance testing.
- Upon discovery that the system or any part thereof requires correction, the COUNTIES reserves the right to continue use of such system or part until it is convenient to the COUNTIES for change implementation.
- If the system does not function because of a problem in the CONTRACTOR's new hardware or operating system, it is the CONTRACTOR's responsibility to define and document the problem and furnish the corrective action to repair the problem.
- The COUNTIES will notify the CONTRACTOR in writing when the CPE system has passed/completed the final acceptance test.

3.11 Acceptance – Pre-cut and Post-cut Installation Testing

The CONTRACTOR must be responsible for pre-cut testing of the incoming analog and digital 911 trunks, Telco analog POTS lines, ring-downs, and digital interfaces between 911 and administrative telephone system. The CONTRACTOR must re-test all interfaces post-cut.

3.12 Acceptance – Pre-cut—Preliminary Testing Plan

A preliminary acceptance-testing plan is required in this RFP response. A testing plan must be developed by the CONTRACTOR and approved by the COUNTIES. Once accepted by the COUNTIES, testing at the initial installation at each PSAP will use the test plan.

3.13 Acceptance – Failure Prioritization

The following failure priority level definitions are for use as criteria in preparing the Systems and Acceptance Testing process:

1. Priority One

   Priority One failures are major system failures that render the 911 and/or administrative telephone system completely unusable and/or inoperable and are operationally unacceptable by the PSAP Director and/or the 911 Coordinator.

2. Priority Two

   Priority Two failures are major and minor system failures that significantly reduce 911 and/or administrative telephone system operability and usability and are operationally unacceptable by the PSAP Director and/or the 911 Coordinator.

3. Priority Three

   Priority Three failures are minor system failures that minimally reduce 911 and/or administrative telephone system operability and usability and are operationally acceptable by the PSAP Director and/or the 911 Coordinator only during the acceptance-testing phase.

4. Priority Four

   Priority Four failures are minor system failures and punch list items that have little to no effect on 911 and/or administrative telephone system operability and usability and are operationally acceptable by the PSAP Director and/or the 911 Coordinator only during the acceptance-testing phase.

3.14 Acceptance – Final Testing Plan

A final acceptance testing plan is required before placing any system in service. Expectation is that final acceptance testing will commence immediately upon system cutover and proceed for 60 consecutive Priority One, Two, or Three Failure-free days. If a Priority One Failure occurs during the final acceptance testing period, the final acceptance testing period stops and the failure or failures are expediently fixed to the COUNTIES's satisfaction. During this period of interruption, the system must continue to operate with the greatest degree of reliability possible given the respective failure(s). At the COUNTIES's sole discretion, the final acceptance testing period of 60 consecutive failure-free days will restart the first business day after repairs are complete.

The CONTRACTOR must complete all pre-cut testing at least ten business days before beginning scheduled training to assure a quality-training environment for the COUNTIES personnel.

3.15 Acceptance – Pre-cut-Acceptance Testing Responsibility

Until delivered, implemented, tested, and accepted by the COUNTIES, the CONTRACTOR must be responsible for all materials, hardware, and software provided. The CONTRACTOR shall certify in writing to the COUNTIES when the system is installed and ready for testing. Only the COUNTIES will determine the degrees of system failure and operability for acceptance testing purposes. The CONTRACTOR must supply any required test equipment.

3.16 Acceptance – Pre-cut—Acceptance Testing—Transfers

The CONTRACTOR must coordinate the support of AT&T (Bell South) network services to test all incoming 911 trunks and related PSAP transfer codes.

3.17 Acceptance – Measurable Testing Processes

Testing must include a measurable testing process for each functional and technical aspect of the specifications listed in the CONTRACTOR's proposal and system performance measurements based on the telephone activity to date in the PSAP. This testing serves as a sign-off process for payment to the successful CONTRACTOR.

4. GENERAL CPE REQUIREMENTS

4.1 Section Deliverables

The following subsections describe the expected deliverables for the Host/Remote CPE ANI/ALI Controller system (the system) portion of this project. These sections represent technical and operational requirements that need to be addressed in order for a proposal to be accepted. Some items may expand on or simply reiterate requirements found in previous sections of this document but may require emphasis, or may also apply to solutions in this venue without deviating from the intent of those previous requirements.

Proposed solutions must be scalable to support future NG911 IP features and requirements such as Multi-line Telephone System (MLTS) comprised of common control unit(s), telephone sets, and control hardware and software. This includes Emergency Services IP Network (ESinet) and premises based systems, i.e., Centrex and PBX, Hybrid, and Key Telephone Systems owned or leased by 911 Governmental Authorities and non-profit entities, as well as for profit businesses.

4.2 Responsibility for Equipment

The CONTRACTOR must assume complete responsibility for any tools, test equipment, and other items that are the property of the CONTRACTOR throughout the implementation phase of the contract. The COUNTIES assumes no responsibility for lost or damaged items that the CONTRACTOR may leave on the premises.

4.3 Site Clean-Up

The CONTRACTOR must perform clean-up tasks each day of the upgrade or construction/installation. At the end of each day of construction/installation, the CONTRACTOR must restore the premises to its original condition, or as close as possible. The COUNTIES understands that some items may remain for the next day's work; however, the condition of the site must be such that ongoing construction and/or installation materials left haphazardly throughout the premises shall not impair the operation of the existing communication/computer facilities.

4.4 System Completion

The CONTRACTOR must install the equipment and software and begin the acceptance phase within 180 days from the effective date of the Contract. In the event delays occur, the CONTRACTOR must submit a written request for an extension of installation time to:

Phyllis Fuller, ENP
Director, Barry County Central Dispatch
2600 Nashville Rd.
Hastings MI, 49058

Richard Feole
Interim Executive Director
Calhoun County Consolidated Dispatch
315 W. Green St.
Marshall, MI 49068

The request must contain the nature of the delay, anticipated time of completion, and the effect the delay will have on overall system completion. The COUNTIES will respond to the request with a written reply.

4.5 Copy of Software

The CONTRACTOR will supply a copy of the software source code to the COUNTIES or a Source Code Escrow Agreement. The Escrow Agreement will be subject to negotiation, if necessary. This protects the COUNTIES in the event the CONTRACTOR is no longer doing business, or is unable to provide adequate support. The CONTRACTOR shall keep the software source code current with all new customizations and new releases of the product(s). All costs associated with maintaining the latest version of Source Code in Escrow must be included in the proposal.

4.6 Data Center

The Host (CPE ANI/ALI controller), mapping servers, voice recording system, time clock system, ALI database management system (DBMS) and other systems must be housed in two data centers. The actual location for the data centers will be determined after the evaluation of the network solutions provided in response to the network section. The data centers shall be a hardened facility able to withstand hurricanes, flooding, lightning incidents, and other weather-related problems. The facilities shall be secure with card key access and security cameras monitoring entrances, exits and other key areas.

4.7 Technical and Functional Description

CPE shall have the capability to provided administrative phone functionality as well as E9-1-1, and must include:

- A technical description of the proposed system, including features and capabilities.
- A functional description of the proposed system.
- A network description and diagram of the proposed system including the type of connectivity required, including bandwidth and protocols.
- A complete itemized list specifying manufacturer, model, description and quantity of all equipment proposed.

4.8 Network Requirements

CPE shall comply with the 911 network built and operated by Peninsula Fiber Network (PFN) including Emergency Services IP Network (ESinet), session initiation protocol (SIP) and related protocols, such as Realtime Transport Protocol (RTP) further documented in Attachment F.

4.9 References and Experience

The proposal must include a minimum of 5 references from public safety entities of similar size and complexity for whom the Vendor has provided similar solutions within the past 3 years.

Provide a full description of the experience you have had in implementing enhanced 9-1-1 systems. Include experience with multi-PSAP implementations.

5. DETAIL CPE REQUIREMENTS

5.1 CPE

5.1.1 CPE—VoIP

The system must use VoIP switching technology. The system must be capable of supporting online monitoring, system administration, and maintenance positions, either locally or remotely, through a virtual private network (VPN) IP solution.

5.1.2 CPE—Audio Signal Processing

The system must utilize VoIP CODEX techniques to support any CODEX audio signal protocol entering the central CPE equipment from direct VoIP Internet service providers.

5.1.3 CPE—Interface, Control Functions, Standards

The system architecture must consist of a complete Host system with interface modules to external circuits. The control functions must combine into a fully redundant system. The architecture must conform to NENA standards and requirements.

5.1.4 CPE—Component Failures

The complete system architecture must be such that the failure of any one component or module will not result in total system failure, but only the loss of the equipment associated with that module or device. The system requires redundancy and/or distributive architecture to reduce system failure.

5.1.5 CPE—System Monitor

The system must be equipped with a monitoring capability located at the data centers. The system must be capable of providing information in a type of display format that supports monitoring of all voltages, power breakers, and system alarms of the communication equipment. Upon a failure condition, the system monitor must display an alarm message. Major or critical and user-defined alarms must alert PSAP and support personnel from any of the PSAP locations via SMTP, SMS, and/or e-mail. 911 Management must be part of the notification process.

5.1.6 CPE—System Expansion

The system must be capable of meeting today's sizing requirements as described in Attachment E. Furthermore the area noted as Equipped—includes, but is not limited to, equipment, software, and wiring necessary to provide a working system at time of cutover. Wired—includes, but is not limited to, cabinet, shelves, backplane wiring, and power necessary to expand the system by simply adding appropriate interface cards, modules, and peripheral equipment.

The system configuration must have adequate processors or servers and an expandable infrastructure to support a 50 percent growth capacity as outlined in the exhibit as listed above.

5.1.7 CPE—Environmental

All equipment must remain operational at ambient room temperatures of 35 degrees F to 120 degrees F and relative humidity from 0 percent to 95 percent. The recommended equipment and operations room temperature is 60 degrees F to 80 degrees F and relative humidity varies between 30 and 60 percent.

5.1.8 CPE—Federal Communications Commission (FCC) Rules Conformity

All central communications equipment must conform to FCC Rules Part 15, Class A (commercial, non-residential radiation and conduction limits) for EMI.

5.2 Equipment/Malware

5.2.1 Back Room Equipment

It is unknown if the remote system locations will contain back room equipment. The following bulleted items only pertain to CONTRACTORS that utilize back room equipment at the remote CPE locations.

1. Maintenance Support

   The CONTRACTOR must provide a maintenance position with the system at each PSAP location to facilitate accessing any local back room server, gateway, or device for maintenance support.

2. Maintenance Position—Local-Equipment Rack

   A CONTRACTOR-supplied 19-inch or 23-inch by 7-foot equipment rack or cabinet must house the maintenance position. Support of a 17-inch or larger LCD black monitor, keyboard, and mouse must be in a manner that would allow COUNTIES or CONTRACTOR service personnel view and access from a seated position. Space is a concern and a foldable “rack-mounted” type maintenance terminal in the equipment room is preferred. If the maintenance position must have multiple keyboards, monitor, and mouse access to multiple servers, gateways, or devices, etc., CONTRACTOR must use a keyboard arbitrator-sharing device to minimize the amount of equipment because room space is very limited.

3. Maintenance Printing—Equipment Room

   Each equipment room may require a maintenance printer to assist CONTRACTOR’s maintenance personnel when printouts are necessary. These maintenance printers are not required to be as robust as PSAP printers. In addition to the local equipment room printer, the local maintenance position must have a configuration that supports use of common PSAP printers within the ESinet network.

4. Maintenance Access—Remote

   The system must support remote maintenance, such as a protected and firewalled Internet VPN, or other secure connection. The system must support remote access into the system to perform tests; view alarms, diagnostics, real-

time call-taker, and trunk activity; or reconfigure the system. Remote entry into the system must be limited to those authorized through the system administrator function and be password protected.

5. Maintenance Access—System Reconfiguration

   The system must support remote access from on-site and off-site personnel to each of the 2 PSAP systems and must support performance of the following minimum tasks:

   a. Modify the answering positions parameters
   b. Modify the call-taker login ID information and permission
   c. Modify the 911 trunk parameters
   d. Modify the central office (CO) line parameters
   e. Modify the ring down line parameters
   f. Assign a module or a port to give the user the ability to:
      i. Quickly view a multitude of system settings for each entity (911 trunk, call-taker, etc.)
      ii. Reconfigure advanced settings to adapt the system to the exact requirements of a particular setup without technical assistance from the manufacturer
      iii. Customize the system according to the operational preferences of a particular setup
      iv. Upgrade the system for new or expanded uses
      v. Safeguard the system by backing up the system database
      vi. Troubleshoot the system

5.2.2 Malware

Software solutions that can detect all forms of malware must protect the systems' servers and workstations.

5.2.3 Malware—Software Updates

The updating of these software packages must be manageable from one administrative location within the closed IP network.

5.3 Host/Remote

5.3.1 Host/Remote—VoIP

The hosts and remotes must support VoIP technology. The system must support, locally or remotely, on-line monitoring, system administration, and maintenance positions through a VPN IP solution.

5.3.2 Host/Remote – Administrative Interconnection

It is a requirement that the administrative phone system at each PSAP send and receive calls to and from the new IP network. It is the responsibility of the CONTRACTOR to

provide a mechanism to convert analog administrative traffic to digital or digital to analog administrative traffic as required.

5.3.3 Host/Remote—Audio Signal Processing

The hosts and remotes must support all audio signals presented via coder-decoder (CODEC).

5.3.4 Host/Remote—Control Functions and Standards

The host/remote system architecture must consist of a complete system with interface modules to external circuits. The ANI/ALI control functions must be fully redundant. The architecture must conform to NENA standards.

5.3.5 Host/Remote—Uptime Requirements

The COUNTIES requires 99.999 percent availability for all applications deployed.

5.3.6 Host/Remote—Redundancy

There must be no single points of failure. Each host must automatically switch between its primary and secondary system and be transparent to the call-taker. Remote locations must have the capability for full functionality off either host location.

5.3.7 Host/Remote—Redundant Devices—Load Share

Each host must be capable of load-sharing between its redundant devices.

5.3.8 Host/Remote—Redundant Devices—Load Support

Each host must have redundant operating systems, software applications, and hardware infrastructure designs that support 100 percent of the originating or terminating traffic in the event of simplex operation. The PROPOSER must provide a description and diagrams of their solution. Such description and diagrams must show how redundant devices, servers, etc., are configured and used to protect and support the mission critical applications. It is desirable that both hosts operate simultaneously.

5.3.9 Host/Remote—Component Failure

The PROPOSER must provide a written description of the impact of any component failure and the actions required to mitigate the operational impact.

5.3.10 Host/Remote—Security—Call-takers System Log-on—Prompts/Features

The system must provide a secure logon capability and must prompt each call-taker to logon with a user name and password. Upon successful logon by a call-taker, all personalized features, functions, call routing by call type, and capabilities must be available to the call-taker. A call-taker's log-on credentials must provide the call-taker with the ability to function at all remote locations without re-establishing profiles.

5.3.11 Host/Remote—Administrative Security—Tracking File

The system must track all logon and log off times and activities. All call-taker and system administrator activities must be preserved using a centralized tracking file. The tracking file must be available so that the COUNTIES can audit configuration changes and administrative actions. The tracking file must preserve activity for a minimum of 60 days. The tracking file must include unsuccessful logon attempts.

5.3.12 Host/Remote—Administrative Security—System Password Lifecycle

The system must provide the ability to expire passwords on a configurable time basis. When logging on, appropriate expiration warnings must be presented to all users. Users must be able to change their password and restart the time-based password expiration period.

5.3.13 Host/Remote—Administrative Security—System Password Composition

The system must support highly secure passwords composed of:

- At least eight characters
- Upper and lower case letters
- At least one number and one special character (0-9, @#$ %^&*(), etc.)

5.3.14 Host/Remote—System and Workstation Expansion

The host and remote systems and workstations described in these specifications must meet current requirements and must be scalable to meet future expansion. The proposed solution must support a 50% growth of the entire system such as adding additional remote and/or host locations and/or workstations. In addition, it is required that the network be capable of supporting connections to additional networks.

5.3.15 Host—Equipment Footprint

The CONTRACTOR must provide rack-mounted servers in lieu of tower models, seven foot cabinets, and rack-mounted 1U monitor/keyboards for all hosts.

All required hardware, parts and pieces must be completely contained inside the cabinets at all host locations.

5.3.16 Remote—Equipment Footprint

The remote devices must be compact and flat mountable on customer-provided plywood surfaces, if applicable. The remote equipment must be secured.

5.3.17 Remote—Limited Survivability

In the event network connectivity or host support is lost for any reason, remotes must be independently survivable and provide uninterrupted support of any locally terminated administrative lines.

5.3.18 Remote—Alternate Host

Remotes must be able to automatically switch between primary and alternate hosts should either host require a planned out-of-service maintenance or in the event of a system failure.

5.3.19 Host—System Monitor

Each host system must be equipped with a monitoring capability and must be monitored by the CONTRACTOR's quality assurance center or network operations center, and the COUNTIES. Upon a failure condition, the system monitor must display an alarm message. Major or Critical alarms must alert CONTRACTOR support services and network operations centers, and the COUNTIES via SMTP, e-mail, cell phone text.

5.3.20 Host/Remote—Equipment Locations

The CPE system CONTRACTOR will install host/remote workstations at the locations provided in the table below.

Client Locations 911 Work-Name	Street	City, State	Zip Code	Stations
Barry County Central Dispatch	2600 Nashville Road	Hastings, MI	49058	4
Calhoun County Consolidated Dispatch	315 W Green Street	Marshall, MI	49068	9

5.3.21 Printing—Common Network

CONTRACTOR must network the PSAP 911 workstations and MIS/maintenance work-stations within the communication centers so that all workstations can utilize a common printer. The networked laser printer must be included in this proposal to support all PSAP workstations, including all statistics/MIS workstations and any maintenance workstation.

5.3.22 Workstation—Answering Position Equipment

The system must provide users with the ability to perform required and routine telephony functions with a minimum impact and/or conflict with computer aided dispatch (CAD) and/or radio operations.

5.3.23 Workstation—Hardware

The provider must provide an Intelligent Workstations (IWS) that will support their environment. If a PC is required than it must be a minimum Intel dual core processors 2.5 ghz or better with all necessary audio and data interface equipment. Power supplies, hard drives, expansion slots, etc., must have sufficient size to permit 50 percent system expansion, the most current stable Microsoft operating system (OS) upgrade, and support two monitors. The PCs must have multiple USB 3.0 ports in the front and rear of the PC. Due to limited space at the console, the case for the PC should be slim line to maximize cabinet space for additional PCs, if possible.

Note: The second monitor is required for the integrated map display contained within this Scope of Work. However, the workstation PC should be minimally equipped to support an integrated map solution.

5.3.24 Workstation—Hardware Requirements—Cable Extensions

The system must include video, keyboard, keypad, mouse, and speaker cables for each PSAP workstation.

5.3.25 Workstation—Software—Operating System Requirements

The 911 application software must be compatible with the most current stable Microsoft Professional or higher.

5.3.26 Workstation—Headset/Handset—Radio Interface

The system must support use of the same microphone and speaker or headset to control the radio and telephone functions. The radio systems interface function in the radio console performs the integration of the headset between the telephone and radio systems.

The system shall support a headset interface such that if it's integrated into telephone/ radio positions, only one headset shall support both telephone and radio communications. If the telephone is off hook, the audio presented in the headset shall be switched from the radio to the telephone.

5.3.27 Workstation—Headset/Handset—Existing Headsets

The PSAPs use carbon impedance matching handsets and headsets, but must maintain electret handsets and headsets in case of a radio interface failure. It is desirable that the system support both electret and carbon impedance matching handset/headsets via an option setting, so that the PSAPs are not required to maintain different impedance matching handset/headsets. When headset is connected to the telephone, the ringing of the phone should be done in the HEADSET; not aloud for that position.

5.3.28 Workstation—Keyboard Sharing

Independent arbitration of the keyboard and mouse between the telephone, Telecommunications Device for the Deaf (TDD), and CAD is a requirement. The system must support switching between applications with a single keystroke or mouse click and take effect in less than one second. Input devices should be stand-alone and/or have the capability for a single keyboard and mouse to control all operations. The arbitrator should have a minimum of five ports supporting USB PC interfaces plus one common port. The PC must not power the arbitrator; it must have independent power.

5.3.29 Workstation—Keyboard

If a PC is provided the attached keyboard must be a Dell model KB1421 capable of processing all telephone calls, including voice, TDD/Teletypewriter (TTY) calls, and CAD functions.

5.3.30 Workstation—Keypad

The keyboard keypad must be able to dial telephone numbers or input numbers as required. The keypad must also provide access to the speed dial list and offer a last number redial function. The list must support the last numbers dialed at the workstation. The preference is compatibility with Genovation Keypads.

5.3.31 Workstation—Keypad-External Keypad Type

CONTRACTOR must provide an external keypad or intelligent mouse to ease repetitive keystroke operations. This option must include extension cabling as described in the wiring cable extension requirement in Attachment E, Price Proposal Pages, and CPE.

5.3.32 Workstation—Logging Recorder Interface

Each workstation must provide an adjustable audio output to the logging recorder interface, so that audio level can easily interface to the existing DSS Corp's Equature Recording System. This interface must "mute" when the workstation is not active, so background conversations are not offered to the logging recorder. It is the required responsibility of the CONTRACTOR to terminate the logging recorder interface to a 66-block, which should be located in the equipment room near the existing logging recorder-interface blocks.

5.3.33 Workstation—Logging Recorder—Contact Activated

The workstation and connectivity to the logging recorder 66-block must support a single pole, single throw, normally open, dry contact closure. The contact should close only when the workstation is in a voice conversation mode.

5.4 ALI System

5.4.1 ALI System

The ANI/ALI controller systems must interface to the on-site PSAP ALI links provided by the PSAP 9-1-1 service provider. All coordination efforts supporting the installation of the proposed solution are the responsibility of the CONTRACTOR and not the COUNTIES. The CONTRACTOR must coordinate the ALI and CAD link installations with the network provider. The COUNTIES will order new ALI links, if required. If it is necessary, the COUNTIES are willing to sign a Letter of Authorization (LOA) so that the CONTRACTOR can facilitate these responsibilities.

5.4.2 ALI System—Display

The workstations must parse the type of call information from ALI, such as wireline, wireless, and VoIP, and uniquely display the information and individually support all MIS call statistic requirements.

5.4.3 ALI System—Interconnections

At a minimum, the redundant ALI outputs from the system must be high speed IP ALI connections and support current wireless NENA ALI formats.

5.4.4 ALI System—I/P Support Requirements

The system must support IP ALI when the ALI service providers can support the newly standardized NENA ALI format. The CONTRACTOR must be responsible to re-engineer, re-configure, and maintain any future IP ALI connectivity as part of this procurement process as long as the COUNTIES maintain a software support contract and the ALI provider supports NENA's approved IP ALI recommended standards.

5.4.5 ALI—Print Capabilities

The answering position must have an interface port for automatic electronic archiving and/or printing the ALI and the TDD/TTY conversation upon call release.

5.4.6 CAD Interface—Port Type

The system must have one redundant CAD port for use in a future CAD procurement and two additional interfaces at each PSAP.

One paired set (two) of interface ports will support the on-site CAD systems; an additional third port will interface to the logging recorder (if the recorder is capable of using an ALI feed.)

5.4.7 CAD Interface—Data Requirement

The CAD outputs from the system must include ALI, wireless, and VoIP information. At a minimum, workstation position, name, address, telephone number of the calling party, the time of the call, call receive time, call hold and release time, and wireline, wireless, and VoIP data must transfer to the respective CAD fields from the telephone system.

5.4.8 CAD Interface—Wireless Mapping Support

The CAD port should support the third-party mapping solution by outputting the X and Y of wireless and VoIP calls, including, but not limited to, the Confidence Factor (COF) and Confidence Percentage (COP) prior to answering the call.

5.4.9 Wireless and VoIP ALI and MLTS compliant Formats

The system must provide a method for formatting multi-line telephone systems ("MLTS") as well as the ALI for calls with 20-digit ANI (callpath associated signaling-CAS) and/or ten-digit (non-call-path associated signalingNCAS) so the Calling Party Number (CPN) appears in the same location as it does for wireline calls. This formatting or "normalizing" must provide the CPN to the ANI callback list for CAS, NCAS, MLTS and VoIP calls received.

5.5 Master Clock System

The COUNTIES require that the system and all workstations be time synchronized to a master time clock source. It is the desire to utilize the existing Master Clock from NetClock Model 8183.

While it is preferable to retain the NetClock Model 8183 the COUNTIES will entertain other options as long as they can incorporate all of the PSAP hardware including workstations, PC's, mobiles, servers, radio etc.

If a separate master clock is proposed, the CONTRACTOR must provide master clock/global positioning system (GPS) master clock time equipment as part of the ANI/ALI controller solution. The master timing source (MTS) will interconnect and synchronize all CPE equipment in the communications centers to a National Bureau of Standards (NBS)-derived time signal. Sharing of the existing antenna system, if supported by the manufacturer, is encouraged. In addition, the CONTRACTOR must ensure that:

1. The MTS system shall provide a best source for all master clock CPE work-stations, servers, and components.
2. The MTS must consist of a fully redundant system.
3. The master clock shall comply with the NENA 04-002 PSAP master clock standard.
4. The master clock shall comply with the National Fire Protection Association, NFPA 1221 standard.
5. The master clock antenna system must include secondary lightning protection. All outputs of the master clock system must include secondary lightning protection.
6. The master clock must be capable to synchronize all workstations and servers.
7. The master clock must be able to interface with COUNTIES Computer Aided Dispatch (CAD) system.

5.6 Trunk Interface

5.6.1 Trunk Interface—Analog CO Type

The system must support two-wire CO-type telephone line interface that could be loop or ground start. All telephone line interfaces must provide Caller ID with name functionality. The local exchange carrier (LEC) and/or the on-site PBX system will provide the actual telephone service.

5.6.2 Trunk Interface—Analog CO Type—Transmission Levels

The system must support analog two-wire CO-type line interface transmission level adjustments up to a 5.0db gain. When interfacing to an analog PBX interface this equalizes transmission levels to the workstation.

5.6.3 Trunk Interface—CAMA Type

The system must comply with current 7-, 8-, 10-, and 20-digit CAMA and all current NENA ALI protocols. This analog interface must support MF wink, CAMA-type central office trunk interfaces.

5.6.4 Trunk Interface—(DS1) Digital Interfaces

The system must support DS1 digital CAMA, loop start reverse battery supervision, ISDN PRI National 2 and Q-SIG Protocols. The numbers of digital trunks that require support for each site are listed in Attachment A.

5.6.5 Trunk Interface—Redundant D Channels

The system must support ISDN PRI N2 with one “D” channel per DS1 or two redundant “D” channels when two or more ISDN PRI N2 circuits provide connectivity to the public switch telephone network (PSTN).

5.6.6 Trunk Interface—NENA Signaling Standard

It is required that the system can be equipped to support 20-digit standard signaling if the COUNTIES elects to add this feature in the future.

5.6.7 Trunk Interface—Forced Release

If a trunk is off hook for more than a PSAP-defined amount of time, the system should alert maintenance personnel that a potential error has occurred. Authorized PSAP personnel or maintenance personnel should be able to force a trunk to release a call via an access code or maintenance command.

5.7 PSAP

5.7.1 PSAP-to-PSAP Transmission Requirements

The PSAP Remote/ANI/ALI Controller Host connectivity must interface in a digital session initiation protocol (SIP) manner and support high-quality voice transmission without any detectable degradation of audio quality. The PSAP Remote/ANI/ALI Controller Host connectivity must support TDD/TTY transfers.

5.7.2 PSAP-to-PSAP Data Requirements

It is mandatory that the network connectivity between the PSAPs’ ANI/ALI controllers support the communication of Caller ID, ANI, and the transfer of ALI between the networked CPE sites.

5.7.3 PSAP Controller to Administrative Telephone System Interface

The PSAP ANI/ALI controller to administrative telephone system connectivity must interface in a DS1 digital manner, if supported, and support high-quality voice Transmission without any detectable degradation of audio quality.

5.7.4 PSAP Controller to Administrative Telephone System Data Requirements

The PSAP ANI/ALI controller to administrative telephone system connectivity must support the transferring of Caller ID and ANI.

5.7.5 PSAP Interface Testing

The CONTRACTOR must support interface testing with each PSAP's CAD, logging recorder, mapping, and administrative telephone system providers where appropriate. Integration methods employed by the CONTRACTOR must meet the COUNTIES's approval and not affect the warranties, agreements, or proprietary rights of the existing systems' manufacturers.

5.8 Call Features

5.8.1 Alternate Routing

The system must have the ability to alternately route E911 or administrative calls and maintain ANI or Caller ID to a designated alternate, agent group, or alternate networked PSAP when:

1. All agents are busy at the targeted group of workstations
2. No call-takers are logged in
3. On a pre-programmed, no answer, timeout basis.

Alternate routing of E911 and administrative calls to non-networked PSAPs or public safety agencies is required. However, maintaining Caller ID or ANI is not required, but is desirable, if the call routes over the PSTN.

5.8.2 Abandoned Call Information

The system must be capable of collecting the ANI digits and processing the ALI lookup regardless of the condition of the call (e.g., online or hang-up.) The system must collect the digits immediately after any seizure event on the 911 trunk and then process the ALI lookup. The ANI/ALI of the abandoned caller must be available for viewing by the call-taker.

5.8.3 Active Call Priority Queue Management

The system must have the ability to automatically prioritize active calls over abandoned calls in the 911 ACD queue, when enabled. It must also be possible to process abandoned calls by clicking on a dedicated "Abandoned Calls" button on the answering position to avoid keeping them in the queue for too long. The PROPOSER must describe in detail the active call priority queue management and how this process works with wireless calls.

5.8.4 Call Information

The workstation must display the ANI/ALI or Caller ID information of any active 911 or administrative call. The system must also provide additional information on the call, such as the ANI, the emergency services number (ESN), the circuit ID or name, the status of the 911 caller (online or hang-up), and call statistics (e.g., number of Emergency calls waiting in the ACD queue and on hold.)

5.8.5 Call/Line Indicators

The answering position must indicate incoming emergency and non-emergency calls by both audible and visual means. All 911 trunks must have a different audible and visual signal from other call types. The answering position must also have the ability to visually display the status (idle, busy, ringing, on hold, and out of service) of each emergency and non-emergency line.

5.8.6 Call Back

The system must have the ability via a single key or icon to ring back (call) a wireline, wireless, TTD/TTY, or VoIP 911 caller by using the ANI or Caller ID received or embedded in the ALI response. Call-takers use the ANI or embedded ANI to call back a 911 caller by dialing the caller's telephone number received during the E911 call setup.

This feature needs to support call backs based on different NXX codes within the home area code because long distance calls require a prefix of "1."

5.8.7 Call Back—Automatic Prefix

The ANI/ALI controller system must support an automatic method to prefix the ANI call back format to meet the requirements for toll calls and access PBX/Centrex lines when necessary.

5.8.8 Call Back—Group Configuration

The call back group must be configurable exclusively for call backs and not used for general system speed-dial or outgoing call applications.

5.8.9 Call Feature—Answer Control

The call-taking application must offer a feature button that allows a call-taker to selectively answer 911 calls when the call-taker is in a training environment.

5.8.10 Call Feature—Disconnect

The call-taking application must support release of an existing E911 call at any time, regardless of whether the calling party has hung up.

5.8.11 Call Feature—Hold

The answering position must allow the call-taker to place 911 or administrative calls on hold with a single keystroke or mouse click. The duration of a call on hold and the user that placed the call on hold must be available to the individual agent or system agents. The PROPOSER must describe the maximum number of calls that can be placed on hold per answering position. This number should be configurable by the PSAP. After placing a call on hold, the workstation should support the origination or termination of a new call.

5.8.12 Call Feature—Hold—PSAP-defined Timeout

Timeout of calls based on user-defined parameters should present the call to the agent that originally placed the call on hold. After a different no-answer time-out, the call will be presented to the group, while maintaining the age of the call and informing the answering agent that the call was previously on hold.

5.8.13 Call Feature—Hold—Retrieval

To assist in retrieving the proper call, the call-taking application must present to all call takers within the call group a list of calls on hold, showing the ANI, the ESN, the trunk number, the agent who put the call on hold, and the time and date that each call was placed on hold. The system must support retrieval of 911 calls placed on hold at another call-taker's position.

5.8.14 Call Feature—Hold—Storage

The ANI/ALI controller system must store the ANI/ALI information while the call is on hold, hence avoiding repetition of the ALI request.

5.8.15 Call Feature—Monitor—Workstation Access

Any authorized call-taker or supervisor log-on profile must have the ability to listen to another call-taker's telephone conversation from any workstation.

5.8.16 Call Feature—Join—Workstation Access

The system must allow any authorized call-taker or supervisor to enter an in-progress call-taker conversation from a system workstation from an idle state. The call-taker, supervisor, and caller are then part of a multi-way conference. The system must allow any authorized call-taker or supervisor workstation or VoIP station to enter into an existing call by clicking on the appropriate icon, activating a soft button, or entering a feature code.

5.8.17 Call Feature—Barge In—Workstation Access

The system must allow any authorized call-taker to barge into an existing call by clicking on the appropriate circuit indicator on the workstation screen. Upon entering any 911 or administrative call for which ANI/ALI or Caller ID information is available, such information must be immediately displayed on the call-taker's display.

The system must allow any authorized call-taker or supervisor workstation or VoIP station to barge into an existing call by clicking on the appropriate icon, activating a soft button, or entering a feature code.

The system must allow any call-taker to block the caller from hearing and talking with the remaining parties in the conference.

The system must allow any call-taker to block any party from hearing any conversation from the remaining parties in the conference. The call-taker must hear the caller's conversation at all times.

5.8.18 Conference Calling

The system must provide the call-taker with the ability to remain on a call and add a new party (e.g., AT&T Language Line Services) to the conversation without regard to the type of line or trunk. Conferencing must not degrade the quality of the audio. Any party must be able to drop out of the conference, leaving the others talking as long as at least one of the other parties possesses central office supervision on his/her connection. This feature must support up to four parties in any combination of inside or outside parties.

5.8.19 Conference Call Setup

The system must support conference call activation by using a single keystroke without putting the caller on hold in a non-attended fashion. The caller may or may not remain online at all times. The system must support placing a minimum of four parties in a conference simultaneously.

5.8.20 Conference

An icon or window must contain an indication for each party involved in the conference besides the call-taker. Each status icon must provide the following indications: line number, trunk number, privacy mode, mute mode, and TDD/TTY.

5.8.21 Prioritization of Calls in Que

1. It is preferable that 9-1-1 calls be answered before administrative lines according to first-in-first-out priority.

2. The CPE must present visual ALI information prior to answer, and shall allow the call-taker the discretion to override the first-in-first-out priority and answer 9-1-1 calls based upon ALI or other criteria.

3. CPE shall have the capability to prioritize call answering based upon CPN (Call Party Number), PANI (Pseudo ANI) or multiple calls from the same ALI; such as a cell site and sector.

5.8.22 Auto (Pre-recorded) Announcements/Attendant

The system shall support the use of pre-recorded announcements at the PSAP's discretion. It is desirable that these announcements include:

1. A pre-recorded announcement directed to callers in queue based upon the type of line (i.e., 9-1-1 or administrative).

2. A dynamic, incident specific announcement to callers in queue.

3. An announcement directed to callers in queue based upon certain geographic parameters (e.g., callers within a certain radius of an incident receive the announcement)

4. A text message equivalent for TDD/TTY or text message callers

5.8.23 Distinctive Ringing

The CPE shall provide distinctive ringing to audibly differentiate 9-1-1 calls, Text-to-9-1-1 sessions, administrative calls, and internal transfer calls.

5.8.24 Speed Dial

Each PSAP shall have its own distinct speed dial library. The call taker shall have a one-touch speed dial library of a minimum of ninety (90) speed dial numbers (up to 12 digits each). The speed dial shall be easily programmable at the individual PSAP. Additional speed dial capabilities should be described in detail in the proposal.

5.8.25 Ringback/Callback

The system shall be capable of calling back the 9-1-1 caller after disconnect by Ringback (providing a ringback signal on the incoming trunk) or by callback (dialing over a telephone line the ALI received during the 9-1-1 call). The operator shall not have to choose which method to use.

5.8.26 Supervisor Silent Monitor and Override

1. The system shall support the ability of a PSAP supervisor or trainer, from another position, to bridge onto and silently monitor any active call in the PSAP.

2. The system shall support the ability of a PSAP supervisor or trainer, from any position, to bridge onto and take part in any active call in the PSAP, without degrading the audio of the call.

5.8.27 Supervisor Silent Lights

CPE System must have the capability to indicate the status (on-phone and off-phone) of each call-taker. Furthermore, the CPE must connect to CCCDA's status indicator lights which light-up when the phone is off-hook.

5.8.28 Auto-Messaging base on Geographic Location

It is desirable that the system provide a method to quickly record a message and then associate it with a specific geographic area. For example, if a red SUV was in the ditch at mile marker 96 on West Bound I-94, a message could be recorded to the effect of "If your call is about a red SUV at mile marker 96 on I-94, help is on the way – Thank you for calling – You may hang up by pressing 9. If it is about anything else, a call taker will be right with you." This message could be associated with a geographic area, such as the two-mile stretch of I-94 from mile marker 96 to mile marker 95. Any callers who are geographically located in this area would hear the message. If they do not press 9 they will be sent to the next available call taker.

5.8.29 Existing System Functionality

It is the desire to retain a similar look and feel as well as the functionality of the Vesta Pallas 2004 system. Proposers are encouraged to explain how the proposed system either duplicates or enhances the current system functionality and features.

Some of the highlights that are important to users include:

1. Separate windows for separate functions. Line area is a separate window
2. Caller ID on all lines
3. Ability to transfer all calls include non-emergency and administrative lines to surrounding counties (not just 911 calls)
4. Line prioritizing for non-emergency and admin lines—currently only prioritizes E911 calls but would to also prioritize the non-emergency calls ahead admin calls
5. Searchable index for all preprogrammed phone entries
6. Integrated text-to-911

5.8.30 Existing VOIP System Compatibility

It is a requirement by Barry County to interface the administrative ShoreTel VOIP phones with the proposed CPE.

5.9 Voice Recording

5.9.1 Instant Recall Recording (IRR)

The system must be capable of supporting IRR functionality in the PC console.

5.9.2 IRR—Station Call Recording Storage

IRR must be accessible by an easy-to-use Windows-type interface, must provide a minimum of eight hours of recording time, and must be accessible from any authorized workstation in the system with rights associated via logon.

5.9.3 IRR—Erasure of Old Calls

An option must be to erase all old calls on either a timed-basis or when the disk drive in the PC console reaches a certain percentage of full.

5.9.4 IRR—Radio Channel Recording

The ability to record the selected and unselected (two) radio channels in addition to 911 workstation voice traffic simultaneously is required.

5.9.5 IRR—Call Type/Text Information

All recordings must indicate the type of call (911 or administrative) and allow the call-taker to enter textual information about the call, if desired. For 911 calls, the ANI of the caller must be automatically stored with the call recording.

5.9.6 IRR—Separate Recording and Playback

In addition to data captured on logging recorders, the system must provide separate functionality for recording and playing back all calls, voice, text and TDD/TTY, for the

previous twelve hours of operation. Playback functions must occur within one second of a minimal number of keystrokes, or mouse clicks.

5.9.7 IRR—Recording Storage

The voice recording must be physically stored on the local hard drive of the call-taker workstation in an individual file for each call.

5.9.8 IRR—Recorder VCR Controls

The IRR must provide VCR-like controls. The recorder must support marking and moving to any portion of the call.

5.9.9 IRR—Speaker Interface—Recall Recorder

The workstation must provide two jack boxes and an output port for an interface to an external speaker at the position. This must allow the call-taker to playback the recording to the speaker port or headset/handset ports.

5.9.10 IRR—Recall Recorder Minimum Features

At a minimum, the IRR must provide the following features:

1. Play
2. Pause
3. Stop
4. Play forward/Fast forward
5. Rewind
6. Repeat
7. Forward file to another position
8. Display ANI
9. Display Calling Line ID (if available)
10. Copy or “save”

5.10 Speed Dialing/Calling

5.10.1 Erroneous ANI Spills

Upon receipt of an erroneous ANI spill from the tandem, the PSAP/Remote and ANI/ALI Controller/Host system must forward all of the ANI digits received to the call-taker.

5.10.2 System-Wide Speed Calling

The answering position must allow the call-taker to automatically dial a pre-programmed system-wide speed dial number with the push of a single button.

5.10.3 Individual Speed Calling

The answering position must allow the call-taker to automatically dial a pre-programmed individual speed dial number with the push of a single button.

5.10.4 Speed Dialing—Quantity

The system must provide for a minimum of 2,500 system-wide speed calling numbers.

5.10.5 Speed Dialing—Primary and Secondary

Speed dialing must be capable of performing primary and secondary dialing for calling, transfers, conferences, and other functions, such as long distance access, card numbers, and PIN access. Primary is defined as system-wide speed dial. Secondary is defined as per remote location. The speed dial should be able to incorporate hook flash and pause features in the dial string.

5.10.6 Speed Dial—Libraries

Speed dial libraries must be PSAP specific and stored in a database that resides on network storage at the respective PSAP data centers and support a method such that any updates communicate to all workstations and do not require individual updates.

5.10.7 Speed Dial—Library Search

Users must have the ability to search the speed dial library for a given entry by typing the first few letters of the entry.

5.10.8 Speed Dial—Icons

Speed dial locations must display as a button or icon. Each button or icon must provide access to a single entry, a group of entries, or a group of groups. The system administrator must have the ability to assign the descriptive label that appears on the buttons.

5.10.9 Speed Dialing—Alphanumeric

Speed dialing must support the ability to dial alphanumerically, for example, 1-800-CALL-ATT.

5.10.10 Speed Dialing—Mouse/Keyboard

Speed dial access must be available by either a simple mouse click, keyboard entry, or a combination of both.

5.10.11 Speed Dial—Workstation—Preprogrammed List

The call-taker speed dial must allow the call-taker to quickly access frequently called telephone numbers from a pre-programmed list. The list must provide access to a minimum of 2,500 telephone numbers arranged by logical categories. Descriptive tabs, such as Hospital, Administrative, and General, must properly identify each list. The speed dial must allow the call-taker to click on the list tab in order to select the corresponding speed dial list and speed dial number.

5.10.12 Speed Dial—Workstation—List Button

Each speed dial entry in the speed dial list must be assignable to a button on the call taker's screen. Each entry must also be capable of direct dialing on the currently selected circuit, a particular circuit, or group of circuits.

5.11 Security

5.11.1 Security—Administrator System Log-on Password Lifecycle

The system must provide the ability to expire passwords on a configurable time basis. The system, when logging on, must support appropriate warnings and periods to allow valid users the ability to change their passwords and restart the time-based expiration period, provided the PSAP elects to activate this feature.

5.11.2 Security – Call Takers Administration System Log-on Password

The system must support strong passwords composed of:

- At least eight characters
- Uppercase and lowercase letters
- One number and one special character (for example: 0-9,!@#$ %^&*(),)

5.11.3 Security—Unauthorized Access

The System must support security features to satisfy the COUNTIES's and PSAPs' network security requirements (using, for example, routers or firewalls). Failed logon attempts must be captured along with the date and time.

5.12 TDD/TTY

5.12.1 TDD/TTY—Detection

The system must be capable of detecting and alerting PSAP personnel that an emergency call originates from TDD/TTY equipment. The system must allow detection of emergency calls originating from ASCII-type TDD/TTY equipment, as well as originate both Baudot protocol and ASCII protocol calls from their answering positions.

5.12.2 TDD/TTY—Communication—Position Keyboard

The system must allow call-takers to communicate with TDD/TTY callers directly from their 911 answering position keyboards, without requiring the use of any external device. The system must allow call-takers to manually connect to emergency calls originating from ASCII-type TDD/TTY equipment, as well as originate both Baudot protocol and ASCII protocol calls from their answering positions.

5.12.3 TDD/TTY—Preprogramming

The answering position must allow users to store and access (send) a minimum of 20 pre-programmed TDD/TTY messages, as well as to print previous TDD/TTY conversations. Separate event type tabs, such as Police, Fire, EMS and General, must group the pre-programmed messages for quick reference.

5.12.4 TDD/TTY—Conferencing

The system must support a conference between a TDD/TTY caller and a minimum of three other parties in either 911 call-taking mode or administrative call-taking mode.

5.12.5 TDD/TTY—Interface

The TDD/TTY feature must display the caller and the call-taker's conversation separately as it takes place (real-time.) It must also contain all the user pre-programmable messages grouped into related categories such as Police, Fire, EMS, and General.

5.12.6 TDD/TTY—Call Transfer

The TDD/TTY function must allow a call-taker to transfer a TDD/TTY call to another call taker position. For example, if a call-taker answers a call, the call may need to be transferred to a fire dispatcher for appropriate handling.

5.12.7 TDD/TTY—Americans with Disabilities Act (ADA) Requirements

The TDD/TTY function must allow the call-taker to alter its operation to comply with ADA requirements for Hearing Carry Over (HCO) and Voice Carry Over (VCO) calls. Controls to allow the selection of the appropriate mode must be available in the TDD/TTY window or display at all times.

5.12.8 TDD/TTY—Message Length

The length of the message and number of characters received or transmitted must be unlimited.

5.12.9 TDD/TTY—Compliance

The TDD/TTY interface proposed must comply with all existing and known future FCC and/or legal requirements.

5.12.10 TDD/TTY—Interface with CAD

The TDD/TTY interface proposed must provide a capability for TDD/TTY text conversation with the caller to be shared with CAD, utilizing a standard interface protocol.

5.13 Transfer

5.13.1 Transfer—Intelligent

The system must be pre-programmable so that a PSAP may develop a single Standard Operating Procedure (SOP) for transferring calls regardless of the type of incoming port supporting the call or the type of telephone facilities. For example, VoIP calls, POTS lines with Centrex transfer features, and ring down lines.

The system must have the ability to support all of the various different digit strings and maintain the original ANI when feasible.

This feature should support a minimum of four different incoming call types.

5.13.2 Transfer—Selective Router

The system must provide the capability for a call-taker to transfer an established E911 call, via the selective router, with a minimum of mouse clicks or via one button, to another PSAP or some other destination.

5.13.3 Transfer—PSAP-to-PSAP

The system must provide the capability of transferring a 911 call received via a digital, analog, or IP interface that provides ANI (or Caller ID) to an alternate PSAP that is networked via the proposed PSAP-to-PSAP network solution. The transferred call must transmit the original ANI or Caller ID with ALI to the alternate networked PSAP. The tandem network will not perform the PSAP-to-PSAP transfer; the transfer must use the new proposed network interface.

5.13.4 Transfer—Unsupervised

The system must provide unsupervised transfers without using a tandem feature. After the loss of current, lack of ground, or after detecting the outbound call on-hook status, the call must release. This specification must support any inbound or outbound lines.

5.14 Wireless

5.14.1 Wireless SMS Text Messaging and Video Presentation

The workstation must be capable of receiving and transmitting wireless SMS Text messages as well as accepting wireless video images. If the system is not presently capable of doing so, the workstations must be capable of supporting this feature without hardware replacement of any component in the future.

5.14.2 Wireless—Queue Management

The system must keep only one call in the 911 ACD queue for any given CPN. A new call with the identical CPN must replace the existing one in the queue and keep its priority.

5.14.3 Wireless and VoIP Call Handling

The system must present wireless and VoIP calls and must include all standard call handling features. Handling of wireless and VoIP calls must be transparent to the call taker in that all telephony features and functions at the call-taker position are the same as that of a wireline call. Single step ring back and automatic ALI re-bids are mandatory. The call-taker must not have to perform a manual ANI ring back or manual ALI queries for wireless calls.

5.14.4 Wireless—Auto ALI Rebid

The system must automatically update latitude/longitude (X/Y) coordinates at regular PSAP-determined intervals to the CAD port supporting the third-party mapping solution.

This feature must be configurable as to the number and frequency of intervals on a per wireless provider basis.

The system must be capable of automatically re-bidding ALI for wireless calls on a per carrier basis. The COUNTIES intends to activate automatic wireless re-bidding. However, certain carriers are experiencing voice-blanking problem when wireless handsets are resending the GPS information. This feature selection requirement allows each PSAP to re-bid automatically wireless carriers not experiencing the problem and manually re-bid carriers with problems on an as needed basis. This capability should be able to be set per PSAP.

5.15 Workstation

5.15.1 Workstation—ALI Display—Advance

The system must provide the ability to display ALI information to the call-taker before the call is answered.

5.15.2 Workstation—ALI Calls in Queue View

The system must allow supervisors and/or call-takers to view, in real-time, concise ALI information of all 911 calls in queue at the PSAP. The system must be capable of providing queue information at each workstation similar to a reader board functionality where the color of each queue description line indicates the current threshold (number of calls waiting) reached by that queue. Selective Answer provides this functionality.

5.15.3 Workstation—ALI Display—Simplified Call Wrap-Up

The system must keep ALI information on the workstation screen after completion of the call, giving call-takers the opportunity to reference the information even after the caller has hung up.

5.15.4 Workstation—ALI Parsing

The system must appropriately and consistently display ALI data when interfacing with different ALI providers that send their information in various formats (e.g., wireline, wireless, and VoIP.) These unique call identifiers must be searchable in the MIS reports.

5.15.5 Workstation—Audio Volume Control

The volume control must be user adjustable to control the incoming call volume at the answering position's headset/handset. Minimum volume set for ringing must not turn off or lower to zero. Separate volume controls are required for the radio interface ports so PSAP personnel can adjust workstations so that radio and telephone connections are similar in audio levels. Some radio systems' telephone interfaces do not support independent volume adjustments and CPE audio adjustments may be necessary.

5.15.6 Workstation—Other Applications

The system must provide an open application-programming interface (API) to support other software applications that would reside on the same PC console to receive information from the 911 system and administrative lines. This interface must provide, at a minimum, call status and ANI/ALI information to client programs.

5.15.7 Workstation—Other Applications—Alert

In the event that the call-taker is using another application, the answering position must alert the call-taker when a 911 call arrives. The alert shall be an audible and a visible alert. In addition, it must be possible for the call-taker to switch to the 911 application with the click of one button.

5.15.8 Workstation—Previous Calls

At a minimum, the system must allow the authorized call-taker to view the last 100 calls, per logon profile, with ANI/ALI information released at an answering position or a particular answering position. It must be possible to initiate a callback, if necessary, or just view the details of previous calls. To prevent loss of data, the system must save previous call information to disk.

5.15.9 Workstation—Relay Control

The answering position must be capable of supporting access to individual and common control relay modules (dry contact closures.) The common control relays are for purposes such as opening PSAP doors. The relay control must provide for a minimum of four relay contacts.

5.15.10 Workstation—Right Click Operation

The system must allow the call-taker to use the right click on the mouse to access the answering position features. For example, by clicking a circuit button with the right mouse button, the call-taker can choose to release it or put it on hold.

5.15.11 Workstation—System Sounds and Icons

The system must support administrator modifications to the system sounds and button icons with proper administrator password protection.

5.15.12 Workstation—Shortcuts

The system must support administrator assignment of single or multiple features to function keys on the answering position to activate the following functions:

- Priority Answer
- Release
- Transfer to any speed dial entry
- Agent Ready/Agent Not Available
- Hold/Hold Release
- IRR Play and Pause

- IRR Previous Message

Every workstation feature should be duplicable via an ALT style of keyboard similar to MS Windows ALT keyboard shortcuts so that any feature can have a shortcut on the keyboard or external keypad.

5.15.13 Workstation—Software—Custom Screen Layouts

The system must support customizable screen layouts for individual PSAP personnel preference. In addition, the system must support saving and retrieving individual screen layout profiles per unique call-taker profile login code.

5.15.14 Workstation—Screen Layout Lock

The screen layout must automatically lock when the call-taker logs in to the answering position, if a PSAP elects to enable this feature. When enabled, this feature must prevent the call-taker from modifying the layout.

5.15.15 Workstation—Screen Layout Restore

The system must allow the supervisor to restore the original screen layout.

5.15.16 Workstation—Intercom

The system must have an internal intercom. Users and supervisors must select whether the intercom audio routes to their headset or handset. Use of the intercom feature must occur with a minimal number of keystrokes or mouse clicks.

5.15.17 Workstation—Instant Messaging (IM)

IM must be available from each PSAP workstation and be configurable or disabled according to individual PSAP requirements. The system must support IM between any networked PSAP.

The system must identify and store all IM for up to one year. The system must allow authorized PSAP personnel access to all IMs from a common location within each PSAP for up to one year.

5.15.18 Workstation—Call Tagging

It is desirable to allow a call-taker to tag a 911 call and then be able to run an MIS report on tagged calls. PROPOSERS must describe how this feature would work.

5.16 Mapping

5.16.1 Mapping—Integration with CAD

The mapping function within the CPE software must be able to interface with the existing LOGISYS CAD map and the Sungard CAD map.

The mapping interface must provide latitude/longitude coordinates and/or address (if available) for all calls, and this information must be provided for all wireline, wireless

and VoIP service providers. The interface must further provide the class of service (if available), re-bids of wireless caller.

5.16.2 Mapping—CAD Interface Connectivity

Currently, the interface between CAD systems and the mapping system is serial, but the COUNTIES intend to have a higher-speed interface. PROPOSERS must describe their interface options and interface conversion if needed.

5.17 MIS

5.17.1 MIS—Records Management/Reporting System

An MIS Records Management/Reporting System must be provided as part of the system. The PROPOSER must describe the type of records management and reporting system proposed. The PROPOSER must provide specific information regarding the system's capabilities and limitations. If "canned" type reports are available, the PROPOSER must include a brief description and sample of each report.

5.17.2 ALI Administrative Support

The workstation and ANI/ALI controller system must support a method of providing a report that would include a screen shot of the ALI information as presented, and a manner in which the workstation that was supporting the 911 call can provide comments about the inaccuracy or discrepancy of the ALI information. This report, when concluded, must be available for on-site personnel and the COUNTIES via internal system e-mail, internal network, or by other means that do not require PSAP personnel to print and then fax.

5.17.3 MIS—Call Detail Records (CDR)—All Terminated Calls

The system must have the ability to provide CDRs after every offered or terminated call. The record must include, but not be limited to, ANI, seizure time, position answered, answer time, time in queue, disconnect time, incoming trunk number, etc. This data must be available at the PSAP and to COUNTIES via login from any workstation or maintenance terminal.

5.17.4 MIS—Call Detail Auditing

The system must be capable of creating CDRs and system event records with the information gathered from workstations and COUNTIES systems in the event that a call center's quality of service comes into question. The COUNTIES would use these records to audit the events of the call in order to determine if processing occurred in a reasonable fashion.

Call detail reports must include all ALI data in parsed searchable formats that can produce weekly, monthly, and annual reports based on any ALI data.

In addition to the above requirements, an individual call event must be available that would be used to audit the individual call event including all call state changes, transfer codes, incoming and outgoing trunk information, transfer agent, ALI re-bid attempts

such as initial, manual re-bid, and multiple auto re-bids, in order to totally reconstruct the events of the call.

5.17.5 MIS—CDR—Contents

Call detail and/or MIS information related to the individual PSAP call event must include all events, such as time call was presented, actual call answer time, position, call-taker login, transfer, transfer trunk, etc.

5.17.6 MIS—CDR Transmission

The system must support sending the records to a number of different destinations, such as to a printer to create a hard copy or to an MIS package to create a database record.

MIS CDR Information should transmit automatically via a CAD-type port when the workstation releases the call, if the PSAP elects to enable this feature.

5.17.7 MIS—CDR Retrieval

All CDRs should be retrievable by the ANI or any other keyword search in the record, such as ALI, CPN, ESRK/p-ANI, ESQK, ESN, community, etc.

5.17.8 MIS—CDR—No Record Found

The MIS system must track and produce a report that is accessible from the PSAPs and the COUNTIES of any ALI query classified as a “No Record Found” (NRF.) The report should include the original ANI, time and date of event, trunk, and position number. Should the system experience any failure including an ANI failure (for example; mis-match between the ANI and ALI TN) then the system must generate a report that indicates this failure. This report should be pushed out to, or notification to, the COUNTIES as well as the PSAP.

5.17.9 MIS—CDR—Availability

Call detail and MIS information must be available from the standard workstation via unique login. Off-site availability is also required at the COUNTIES. The system must be able to store, archive, and retrieve CDRs for the past 12 months (rolling) for both PSAPs.

5.17.10 MIS—Call Detail—Automatic ANI/ALI Record

The system must be equipped so that CDRs automatically match to ALI records. The system must support PSAP administrative personnel sorting, displaying and/or printing the resulting records from any workstation.

5.17.11 MIS—Call Detail—Automatic TDD/TTY Archiving

The system must have a means to automatically archive a two-way TDD/TTY call. The TDD/TTY call data should be accessible via an ANI, ALI, date, time or wildcard search method. A distinction should show how to identify the caller and call-taker, plus a third-

party if added. The PROPOSER must describe how their solution works to identify all parties on a call.

5.17.12 MIS—Reports—Group Performance

The number of calls offered, the number of calls answered, the number of calls overflowed to another group, and the number of lost calls are important pieces of data when trying to determine if the performance of a group of agents meets requirements. Detailed MIS group performance reports must be available at the PSAPs and at the COUNTIES.

5.17.13 MIS—Combined Reporting—Local

The MIS must support accurate accounting of incoming and outgoing 911 trunk groups, Centum Call Second (CCS) any call offered, and trunk busy traffic analysis reports.

5.17.14 MIS—Individual PSAP Reports

Individual PSAP MIS reports must be available on any workstation. In addition, individual PSAP MIS reports must be available on the network in conjunction with the individual PSAP MIS administrator's login.

These reports must include, but not be limited to, the following metrics:

- Number of calls offered
- Number of calls answered
- Number of calls overflowed to another PSAP
- Number of calls transferred—identifying the receiving agency
- Number of outgoing (non-transferred) calls
- Number of abandoned calls

These reports must also include data on how long calls wait in queue before reaching a call-taker, as well as providing count and percentage of calls not answered, calls answered within ten seconds, and other customer-specified intervals.

All reports must be available to the COUNTIES. Also, all individual PSAP and combined regional reports must be accessible from the COUNTIES.

5.17.15 MIS—Real-time Activity Tracker

The real-time activity tracker must be available at each workstation. It must be user-friendly, customizable and capable of generating user-defined reports for varying times. The system must be able to auto-schedule the generation of pre-defined reports, including, but not limited to, hourly and daily call volume, including the busy hour/day, by position and by PSAP. The system must support saving customized reports for future queries.

5.17.16 MIS—Real-time—Abandoned Call Reporting

The system must provide real-time and historical reporting on the number of callers that hang up before reaching an agent and how long callers waited before hanging up. This report must be exportable and internally supported.

5.17.17 MIS—Real-time—System Activity Monitoring

The system must support real-time monitoring of emergency trunk activities, 911 call queuing, and 911 console activities. The system must count the calls as they enter the queue. Call accounting must include but is not limited to the following:

- Incoming calls
- Outgoing calls
- 911 wireline/wireless calls
- Administrative calls
- Alternate Emergency Access Number calls
- Native VoIP calls
- Abandoned calls
- SMS calls (Short Message System)
- MMS calls (Multimedia Messaging Service)
- TDD/TTY calls
- Transferred calls

5.17.18 MIS—Ad Hoc Reports

The system must provide users, supervisors, and maintenance personnel the capability to query the database, and create and print reports in an ad-hoc fashion. The PROPOSER must describe capabilities and limitations for ad-hoc reporting, including available data fields. The PROPOSER must clearly note exclusion of a specific data field from ad-hoc reporting.

5.17.19 MIS—E911 Call Data Records

The MIS system must incorporate the E911 call data records for the ability to search by, sort by and identify the following fields (at a minimum):

- Date/time
- ANI
- ALI
- TDD/TTY text
- SMS/MMS
- Call-taker
- Position
- Flag
- ESN
- Community name
- Duration
- Answer time

- Ring time
- Hold time
- Class of Service
- Abandoned calls
- Transferred calls
- Wireless calls
- Non-wireless calls
- Ring time
- Trunk or line

5.17.20 Class of Service MIS—ALI Supplemental Information

Any supplemental information received in the ALI record including, but not limited to, ESN, Business, Residence and Notes, must be in a report. Parsed ALI reporting is desirable. PROPOSER must describe capabilities, limitations and available data fields for reporting. PROPOSER must note exclusion of a specific data field from ad-hoc reporting.

5.17.21 MIS—Changes to Data

The MIS system must track and store all changes to MIS data. The system must safeguard and protect the integrity of this data.

5.17.22 MIS—Query Languages

The MIS system must use standard off-the-shelf data management software such as MS SQL, etc. Use of proprietary query languages is strongly discouraged.

5.17.23 MIS—Canned Reports

At a minimum, the system must provide a variety of “pre-configured/canned” reports, in both tabular and graphic formats, providing information on:

1. System overview reports for any specified time. These reports should group appropriately within the specified time. For example, an annual report should provide monthly totals; a monthly report should provide daily totals; a daily report should provide hourly totals. At a minimum, the following reports should be included:
    - Inbound calls
    - Outbound calls
    - Abandoned calls
    - Transferred 911 calls
    - Transferred administrative calls
    - Wireless calls
    - Non-wireless calls
    - Administrative calls
    - AEAN calls
    - TDD/TTY calls

- SMS
- MMS
- Duplicate caller report
- Ring-time statistics
- Trunk and line utilization
- Busy hour report
- Busy day report
- Busy month report

2. Call-taker overview report that identifies the following totals for 911 calls and administrative calls, individually and in comparison with other personnel during the specified time, to include:

   - Total calls handled
   - Percentage of total number of calls handled
   - Average ring time
   - Number and percentage of calls answered within 10 seconds
   - Average hold time
   - Average call duration
   - Total duration of all calls

3. Each pre-configured/canned report must allow customization of the date range and the ability to run ad-hoc queries. These reports must include, but not be limited to:

   - Total calls received
   - Abandoned calls
   - Calls by position
   - Calls by call taker
   - Calls by PSAP
   - Calls by type (9-1-1 or Administrative)
   - Calls by class of service
   - Average time to answer
   - Average length of call
   - Shift Summary
   - Call taker summary
   - PSAP summary
   - Event log
   - Distribution of calls over time (hour of day, week, month, etc.
   - Distribution of call transfers by agency, ESN
   - Geographical Distribution – number of calls received by ESN
   - Distribution of calls per Trunk, phone line Integrated Text-to-9-1-1 Solution

5.17.24 MIS—Viewing

Records and reports must be viewable from the screen. Printing records and reports as the only means of viewing is unacceptable.

5.17.25 MIS—Status

User and trunk/line status functions must be available to users, supervisors, and maintenance personnel if granted access to these functions by the system's administrator.

5.17.26 MIS—Electronic Formats

The MIS package must support saving all maintenance logs, statistics, CDR, parsed ALI information, and TDD/TTY conversations in electronic format. The data generated from these reports must be exportable to off-the-shelf database or reporting software. The MIS package should support backing the files up to a removable medium, such as a CD or DVD, for secure storage.

5.17.27 MIS—Enterprise

The MIS package should support the total history of the caller and include any call handling efforts. For example, one PSAP answered the call and then transferred to another PSAP. The enterprise solution should support the accountability of any transferred calls. This feature must continue to isolate any other PSAP call data and only support transferred or conference calls.

5.18 ACD

5.18.1 ACD Ring Feature

The PSAP/Remote and ANI/ALI Controller/Host system must minimally be capable of providing a feature that allows the call-taker to determine the oldest 911 and/or CO line-type (plain old telephone system—POTS) calls and answer in a minimum amount of keystrokes or mouse clicks. This is a "ring all" application. The call-taker should:

- See ring time
- Deliver the longest ring/highest priority
- Be able to configure ring all in some PSAPs
- The system should automatically queue 911 or non-911 trunk priority for the longest ring. For example, a call-taker will answer every 911 call in order of wait duration before answering any subsequent calls regardless of wait duration between calls.

5.18.2 ACD Call Routing

The counties may decide to use ACD call routing schemes that support call flows that offer calls based on personnel logins. For example, personnel are assigned several logon profiles, which are currently used to allow the same PSAP employee to logon as a "Call-Taker" profile versus "Fire Dispatch" profile from any workstation. This feature allows the PSAP administration to staff the individual call flow requirements with high flexibility.

It is a minimum requirement to allow PSAP personnel to join different call flow queues or groups based on logon or similar easy-to-support methods.

Any method proposed needs to support the MIS individual agent requirements as outlined in this document. If multiple logon profiles are required, then the MIS reports can accrue by individual profiles into a consolidated report to accurately measure and report personnel performance.

5.18.3 ACD Queuing Feature

The system must support multiple queuing in a manner similar to the present system. The current queuing feature continues to present the call to the original ACD group if the PSAP user-defined timer expires. After the first group timer expires, the system advances the presentation of the call to pre-defined alternate group(s) while continuing to maintain the aging of the call and offer to the first queue.

5.18.4 ACD Bypass—Selective Answer

The Host must present calls on trunk buttons or icons with concise ALI and call age information, which would allow call-takers to override any ACD feature and selectively answer calls based on key information, such as location via ALI or time in queue in a non-ACD mode.

This requirement allows PSAP personnel to selectively answer calls presented via the ACD queue when emergencies may require that the ACD queue solution be by-passed.

5.18.5 ACD Message Board

Group and individual ACD real-time call statistics must be viewable from a wall-mounted solution if available and would be visible from the PSAP dispatch and supervisor positions at locations to be determined.

5.18.6 ACD Additional Functionality

1. Parameters that allow call processing based upon PSAP selected variables

2. Call processing based upon call taker skill level

3. The PSAP must be able to change voice announcement dynamically, and record them either through a telephone interface or WAV file.

4. The call-taker shall have the capability to temporarily remove themselves from the ACD queue by changing status to “busy”. It is desirable that the supervisor position be notified when this occurs.

5.19 Additional Requirements/Information

5.19.1 Equipment Rooms

The equipment rooms have limited availability of new space to support the installation of the upgrade or replacement system. The new CPE footprint at the remote locations should not be larger than the current footprint. The data center footprint can be as large as needed.

5.19.2 Uninterruptible Power Supply (UPS)

UPSs will be provided by the Counties. The CONTRACTOR must provide the COUNTIES with the UPS requirements for their CPE hardware.

5.19.3 Training—Materials

Sufficient copies of end user training documentation and copies of administrative training documentation must be included in this project in electronic format, CD or DVD format in addition to paper for each workstation.

Each telephone system station must have a feature guide that explains the commonly used features.

Participants must receive individual copies of applicable training materials during training. The CONTRACTOR must authorize reproduction of these and any subsequent training materials provided.

The PROPOSER must provide a detailed explanation and instructions on adding or modifying user software features, such as speed dialing, call-taker pass-codes, etc.

5.19.4 In-Service Coordination

The CONTRACTOR must coordinate the in-service activities with the related network service providers. The COUNTIES will order the network circuits based on the recommendations of the CONTRACTOR. Problems and troubles will be reported by the remote locations to the network provider and relayed to the equipment provider. PROPOSERS must describe how this will be accomplished.

5.19.5 Removal/Reuse

The CONTRACTOR must be responsible for coordinating the removal and/or reuse of existing equipment and cables abandoned because of the new system installation.

5.19.6 Restoration

The PROPOSER must describe the intervals that workstations, servers, devices, PSAP CPE, and map systems are backed up during warranty and maintenance so that total restoration can be performed if a component or device needs replacing.

The CONTRACTOR should use a program that will duplicate the hard disk drive of a workstation to a CD or network storage device. This will allow for a quick, full restoration of the workstation, if need be. PROPOSERS must explain in detail how they will accomplish the restoration on the workstations, servers, ANI/ALI controller, map system, if applicable.

5.19.7 Reusable Components

This requirement must consider any components that are maintainable and reusable from the 911 system and then augmented with new components to complete the spares kit.

5.20 Project CONTRACTOR Requirements

5.20.1 Single Point of Contact

The CONTRACTOR must have a single point of contact for any CPE issue. There must be a single point of contact established for the network provider to report problems to the CONTRACTOR for the purpose of issue resolution.

5.20.2 Support—Day of Cut

The CONTRACTOR must have a sufficient number of knowledgeable technical and workstation support personnel on site to assist COUNTIES and PSAP personnel the day of the cut.

5.20.3 Contractor Expertise

The CONTRACTOR must possess technical and functional design experience. The CONTRACTOR must be well established in the design, delivery, and maintenance of the proposed solution for the counties. The PROPOSER must demonstrate the products, technical expertise, experienced technicians, and project management skills for the proposed solution(s).

5.20.4 Electrical Code

The CONTRACTOR must ensure that all equipment is properly isolated and grounded and that the probability of lightning damage is minimal. The installation shall be in accordance with industry engineering practices and consistent with applicable local and state codes.

5.20.5 Equipment System Manuals

The CONTRACTOR must provide, to the COUNTIES, three complete sets (paper copies, if available) and one electronic or CD copy of all manuals for equipment procured and supplied as part of the contract. The CONTRACTOR must also provide one complete set of all manuals for each PSAP.

5.20.6 Interface to Current Logging Recording Systems

The CONTRACTOR must interface to the current DSS Equature Portal logging system. Please explain the connectivity and operation of the CPE in conjunction with the logging system.

5.20.7 Host Site Interfaces

Each host site CPE must have an adjustable audio output to the logging recorder systems so that audio level can easily interface to a logging recorder system. The CONTRACTOR must terminate the logging recorder interface to a 66 block which should be located near the logging recorder interface blocks or other location as determined by COUNTIES.

The CONTRACTOR must supply separate Demarcation jacks dedicated and label the interfaces. These jacks will be located within the host facilities near the logging recorder systems.

Each host site CPE must have two high speed ports: the ports are for the logging recorder ALI feed. The port outputs must support current and proposed NENA ALI formats.

5.21 CPE Installation Requirements

5.21.1 TELCO Demarcation

The CONTRACTOR shall be responsible for providing connectivity between the equipment and network and any Telco or PSAP.

5.21.2 Transient Voltage Surge Suppression (TVSS)

External secondary TVSS devices shall protect all telephone-equipped ports on the ANI/ALI controller that connect to, or could connect to, private or leased-line facilities, including CO POTS, 911 trunks, DS1 facilities, IP Gateway, or other telephone lines terminating on the system.

5.21.3 TVSS—United Laboratories (UL)-Listed

These devices must be UL-listed as TVSS or Transient Voltage Surge Suppressors. These devices must meet or exceed UL standard 497A.

5.21.4 TVSS—Clamping Voltage

The TVSS devices must be rated no higher than a clamping voltage of 250 volts (.25kV) or less for plug-in TVSS, or commensurate with the service voltage on hard-wired TVSS. The clamping time should be between one to five nanoseconds.

5.21.5 TVSS—Degradation of Service

The TVSS must in no way degrade the audio signaling to the workstation.

5.21.6 Wiring—Cables

The network will be at least 100 Base-T Ethernet utilizing at minimum CAT 5e twisted pair cable with 1000 Mbps gigabit cable and meet TIAIEIA-568 criteria for CAT 5e cabling and connections. All CAT 5e cable runs must be certified and warranted for a period of 15 years. Cable jackets will be pink in color. All cable runs will extend from a CONTRACTOR-provided patch panel in the equipment room to each operator position and terminated on an RJ-45 jack positioned as close to the workstation as possible. Any patch panels or hubs should be sized to accommodate growth of ten positions without the need to purchase additional hardware. The cables and jacks should be labeled and marked with a marking scheme approved by the COUNTIES prior to installation. All cables will be marked within three inches from terminations at each end and be clearly visible. Jacks will be marked on the exterior cover. No splicing, over bending, metal staples, over tightening of cable ties and stretching of cables will be

acceptable. All results from cable testing and certification will be submitted to the COUNTIES. A layout diagram of patch panels and jacks at each console will be given to the COUNTIES.

5.21.7 Wiring—Cable—Terminations

The CONTRACTOR must label and identify all termination points, jacks, patch panels, and cables by circuit number, position, port, etc. COUNTIES 911 Management and PSAP staff must approve labeling schemes during the installation process, since they are ultimately responsible for the system.

5.21.8 Wiring—Data Patch Panel

All PBX and ANI/ALI station ports and workstations, ALI links, maintenance terminals, ANI/ALI 911, CO ports, Telco lines, etc., must terminate on a CONTRACTOR-provided data patch panel to allow for end user patch cord fault isolation.

5.21.9 Wiring—CAD Ports

The CONTRACTOR must provide dedicated CAD port jacks near the PSAP-owned CAD, logging recorder, and mapping equipment. The current CAD system uses RS-232 ports.

5.21.10 Wiring—Workstation

The CONTRACTOR must provide the console jacks and cabling. The CONTRACTOR should terminate the wiring runs to wall-mounted patch panels. Six jacks must terminate at each 911 workstation. The CONTRACTOR must wire four of the jacks to the TIA/EIA 568B standard.

The CONTRACTOR must connect the remaining two cables to RJ-11 jacks.

The CONTRACTOR must clearly label the jacks at each branch location; the jack number should match the position number where it is located. For example, call-taker position 1 should have jack #1 installed. The jacks themselves must be labeled A through F and correspond with the patch panel located in the equipment room or wiring closet.

The jack labeled as “F” is the RJ-11, reserved for voice logger applications, and will terminate on a 66-style block.

The jack labeled as “E” is the RJ-11 reserved for telephony applications that will be required.

The CONTRACTOR must state the wiring required to support the workstations in their workstation replacement. The COUNTIES intends to have surplus structured wiring available at each workstation for future applications.

5.21.11 Building Ground

The CONTRACTOR must confirm that the building ground meets or exceeds the equipment manufacturer's minimum ground specification of the proposed solution. National Electric Code allows a resistance to the surrounding soil of 25 ohms. NENA suggests that five ohms is highly recommended by most equipment manufacturers. As part of this response, The CONTRACTOR must detail the equipment manufacturer's specification for building ground. The successful CONTRACTOR is not responsible to correct any building ground issues. However, the CONTRACTOR does need to state that the grounding system meets manufacturer's specifications or does not.

5.21.12 Common Grounding Point

The rack or cabinet must include a common grounding bar capable of supporting additional external components, such as Telco-provided ALI modems, etc., and then connect to the common PSAP equipment room grounding system.

All 911-related equipment must be isolated from the other equipment, such as the radio, so that if the radio tower takes a lightning strike, the energy does not leak over into the 911 equipment.

5.21.13 Electrical Isolation

Each call-taker position frame/chassis ground must be electrically isolated from the common equipment to eliminate ground loops due to ground potential differences as per NENA recommendations.

6. WARRANTY AND MAINTENANCE

6.1 Warranty – Minimum Warranty Requirements

The PROPOSER must describe the manufacturer's warranty as well the associated labor warranty. The warranty shall be a minimum of three years. Options for four-, five- and six-years 24x7x365 maintenance contract coverage on all parts and labor for both PSAPs must also be included.

6.2 Maintenance – Maintenance Tier 1 and Tier 2

PROPOSERs must define Tier 1 and Tier 2 maintenance plans.

PROPOSERs must provide individual maintenance pricing for each of the PSAPs. This must include detailed pricing for each of the PSAPs if the individual PSAP elected to perform a Tier 1 self-maintenance program with Tier 2 CONTRACTOR/manufacturer on-site support. PROPOSERs must include in this response any pre-requests for Tier 1 self-maintenance programs, such as number of PSAP personnel requiring certification and PSAP scope of responsibilities, etc. The Tier 1 maintenance will be considered after the initial three year warranty period.

PROPOSERs must include annual Tier 1 maintenance costs, as well as maintenance costs for years four, five, and six, if available. Each PSAP may elect to migrate to full self-maintenance or may elect Tier 1 maintenance on an annual basis coterminous with the maintenance contract.

Maintenance costs should be at the component level as much as possible for the CPE system including ANI/ALI controllers, mapping, workstations, recorders and associated components.

6.3 Maintenance – Full Support

PROPOSERS must specify pricing for continuing full CONTRACTOR repair and maintenance of the total CPE system after the expiration of the initial three-year warranty period. Such pricing must be for years four, five and six. PROPOSERs must provide prior experience or history in maintaining similar 911 systems of similar size and scope to the COUNTIES.

Individual pricing is required. PROPOSERs must define any requirements of the PSAP to perform any duties that could be maintenance in this response.

6.4 Maintenance – Remote Maintenance 24 x 7 x 365

PROPOSERs must describe their process for remote monitoring and repair and maintenance. PROPOSERs must describe how the facilities and staff will support this capability.

6.5 Maintenance – Response Time—Interruption of Service

If a failure interrupts the delivery of 911 calls, the responsible party must provide a qualified technician, on site, ready and equipped to handle the problem within two hours of notification by network provider. Within 15 minutes of notification, the CONTRACTOR should have remotely accessed the PSAP CPE to diagnose the problem and notified the PSAP of the corrective action. If a site visit is required, it should occur within two hours. The CONTRACTOR should have sufficient staff on duty to receive problem reports from the network provider without delaying response.

6.6 Maintenance – Response Time—Non-Interruption of Service

Response time for any equipment failure that does not interrupt delivery of 911 calls must be within eight hours of notification, with a qualified technician ready and equipped to handle the problem.

The CONTRACTOR should have sufficient staff on duty to receive problem reports from the network provider without delaying response.

6.7 Maintenance – Level of Spares Availability—Two Hours and Eight Hours

The PROPOSER must detail the level of spare parts that will be available for service personnel to install within a two-hour timeframe from the initial receipt of service call. The CONTRACTOR is responsible for the repair and maintenance of the equipment.

CONTRACTOR must include one very robust regional spares kit designed to support redundant critical system components. The robust spares will be located at the data center.

In addition to redundant system components, both data centers will house non-redundant recommended spares. In addition, two spare keyboards with mouse must be available on site at both data centers. One PC and monitor should be available at both data centers, in addition to any other workstation components that authorized on-site PSAP personnel could replace easily. This spare equipment should be stored in a manner that it will be ready for placing in service with minimum effort. It is not the intent of this requirement to purchase additional software licenses, only replacement hardware.

The PROPOSER must detail the level of spare parts that are available for service personnel to install within an eight-hour timeframe from the initial service call. The CONTRACTOR is responsible for the repair and maintenance of the equipment.

6.8 Maintenance – On-site Operating System and PSAP Databases Restoration

CONTRACTORS must configure all systems in a manner that both the operating system and user-defined databases are backed up and easily available should any server, PC, or software controlled device require a total field replacement.

6.9 Maintenance – Manufacturer Support Requirements

The proposed PSAP CPE must meet or exceed ten years of manufacturer support. A letter signed by a manufacturer company official (on official company letterhead) must be included in this proposal. The CONTRACTOR must support non-ANI/ALI controller or telephone system manufactured equipment such as PCs, Microsoft OS, monitors, miscellaneous equipment, etc., for five years or more. The PROPOSER must acknowledge this specification in a letter included in this proposal from a company official from the proposing CONTRACTOR and manufacturer.

6.10 Maintenance – Mean Time between Failures (MTBF)

PROPOSERs must include MTBF details to support the recommended spares.

6.11 Maintenance – Repair Logging/Reporting

PROPOSERs must explain the process to log and report all trouble reports and outages to the PSAP. PROPOSERs must describe the frequency, delivery method, and information provided to the PSAP to ensure proper response.

6.12 Maintenance – Repair Tracking Off Site

PROPOSERs must describe the methods used to track system problems or errors and problem resolution timelines locally. Complete trouble history must be available when requested. Web access is highly desirable.

6.13 Maintenance – Repair Tracking On-site History Log

PROPOSERs must describe the method used to maintain an on-site log at each PSAP that will track problems, resolutions, and upgrades performed both on-site and remotely. The affected PSAP must document actions taken on trouble tickets entered by the PSAP; the on-duty supervisor must receive notification of the resolution and action taken prior to departure of service personnel.

7. TRAINING AND DOCUMENTATION

7.1 Training – System

The PROPOSER must describe all associated training that is included in the proposal. Training is required for system administrators, supervisors, dispatchers and call-takers. The PROPOSER must also include any Tier 1 system maintenance training that is included should the COUNTIES elect to perform tier 1 maintenance duties on the proposed CPE system hardware and software.

7.2 Training – User Requirements

The CONTRACTOR must provide training on all system functions prior to acceptance of the system. Training must include sufficient information and experience to familiarize personnel (administrative and supervisors) with all system functions, features, and operations for their particular assignments.

7.3 Training – Criteria Review

The COUNTIES must review all training material and course presentation prior to the actual training. This requirement will allow the COUNTIES PSAP and administrative personnel an opportunity to “fine tune” material and any presentations, if applicable.

7.4 Training – CPE System

The PROPOSER must provide detailed explanations and instructions on adding or modifying user software features, such as speed call and call-taker pass codes.

7.5 Training – Times/Instructors/Aspects

The time when the training courses are given is subject to the COUNTIES’s approval. Qualified instructors must conduct training and may receive support from training aides, computer-based tutorials, or other individualized learning materials. The training must cover all aspects of the CPE end-user, supervisor and administrator including MIS and CPE related GIS/mapping.

7.6 Training – User/Administrative/Supervisory

Administrative, user, and supervisor training must occur at each of the remote locations unless otherwise agreed to by the COUNTIES.

7.7 Training – Tier 1 Maintenance

The PROPOSER must provide detailed explanations and instructions for performing maintenance diagnostic practices and system repair on the operational system or hardware and for addressing performance issues.

If this training is performed at an off-site location, the tuition must be included for a minimum of ten personnel. It is highly desired that an on-site Technical Training course be available for PSAP and COUNTIES personnel because travel costs for multiple personnel can be prohibitive.

The PROPOSER must identify and provide costs for any troubleshooting techniques that would assist in supporting the CPE system.

New hires or additional PSAP personnel may require maintenance training later. PROPOSERs must include how they would support these requirements.

7.8 Documentation

The CONTRACTOR of the selected system must provide the COUNTIES with a minimum of four sets of all available system documentation in CD or DVD format, as well as one set per host and remote location.

Required documentation is:

- Complete technical and maintenance information and documentation to support the system and support outlined in the final contract;
- Database structure diagram
- Operations instructions, including backup, recovery, and maintenance procedures
- User's manuals, to include the CPE system and any sub-systems;
- Any other documentation the CONTRACTOR considers applicable to the administration and use of the system under contract;
- Operating system manuals
- As-built drawings in the current AUTOCAD or Visio format or other agreed upon graphic format.

8. REFERENCES

Please provide at least five (5) references of similar size and complexity to the SMPA multi-county and multi-PSAP environment, including a timeline from contract signing to implementation and go-live, for each reference.

Please provide the following information for each reference (see Attachment C work-sheet):

- Agency Name
- Agency Contact Information
- Date CPE Contract signed
- Value of CPE Contract
- Date of CPE implementation/go-live
- Brief description of the environment and hardware installed
- Brief description of the project management and implementation process
- Brief description of any issues and their respective resolution

9. COST PROPOSAL

Detailed, line item pricing, including multi-year payment plans.

Cost breakdown must include (see Attachment D worksheet):

- Hardware (if itemized, must include brief description; part numbers are optional)
- Software (if itemized, must include brief description of each module)
- Interfaces (if itemized, must include brief description of each interface)
- Custom Development (if applicable)
- Integration Services
- Training Services (include training all dispatchers and option for train the trainer)
- Implementation Services (include go-live support and post go-live follow-up)
- Project Management Services
- Maintenance (include warranty period and up to six years of CPE maintainability)

Pricing must be all inclusive for the first three years with maintenance costs for years four, five and six, or if a hosted solution is proposed the cost for the first year and costs for years two through six.

ATTACHMENT A – SMPA PARTICIPANTS AND PSAP STATISTICS

Southern Michigan PSAP Alliance – System Participants

Name	Agency	Contact Orientation	Email	Phone
Phyllis Fuller	Barry County Central Dispatch	Primary	fullerp@barry911.org	269-948-4825
Don Glasgow	Barry County Central Dispatch	Secondary	glasgowd@barry911.org	269-948-4800
David Agens	Berrien County	Primary	dagens@berriencounty.org	269-983-3060
Dale Backus	Berrien County	Secondary	dbackus@berriencounty.org	269-983-7111
Rich Feole	Calhoun County Consolidated Dispatch	Primary	rfeole@calhouncountymi.gov	269-781-9709
Doug Sanford	Hillsdale County 911	Primary	d.sanford@co.hillsdale.mi.us	517-523-9911
Tracy Peter	Hillsdale County 911	Secondary	t.peter@co.hillsdale.mi.us	517-523-9911
Jason Hamman	Jackson County Sheriff	Primary	jhamman@co.jackson.mi.us	517-768-7957
David Aungst	Lenawee County 911	Primary	david.aungst@lenawee.mi.us	517-264-5378

Population Estimate as of 7/1/2013 by the US Census Bureau

	PSAP Staff	# of Positions	County Census	9-1-1 Calls		Non-Emerg./Admin		Calls for Service Dispatched
				Inbound	Outbound	Inbound	Outbound	
BARRY	17 - FT	4	59,097	94,120				36,819
BERRIEN Niles City PSAP	6 - FT 2 - PT	5	155,252	122,655		242,166		131,862
BERRIEN County PSAP	33 - FT 1 - PT	10						
CALHOUN	34 - FT 2 - PT	9	135,012	113,386	9,818	136,911	91,599	163,246
HILLSDALE	9 - FT 7 - PT	5	46,101	81,276				25,861
JACKSON	19 - FT 2 - PT	5	160,369	283,240				
LENAWEE	19 FT	5	99,188	34,492		133,171		85,390

	CAD	MCT	TELEPHONY	9/1/2001 TRUNKS	CURRENT BACKUP	RADIO CONSOLES	RECORDING SYSTEM
BARRY	Logisys	Talon MCT	Vesta Pallas (end of life)	AT&T	Allegan	MCC7500	DSS
BERRIEN	Tyler (New World)	Tyler (New World)	Positron Lifeline	AT&T and Frontier	Niles	MCC7500	NICE IP System (Van Belkum)
CALHOUN	SunGard OneSolution		Vesta Pallas (end of life)	AT&T and Frontier	6 Position Back-Up Center Trunk Default Route - Kalamazoo	MCC5500	DSS
HILLSDALE	ID Networks	ID Networks	Vesta Pallas (installed 2011)	AT&T and Frontier	Phones go to Sheriff's Dept.	MIP5000	DSS
JACKSON	Tyler (New World)	Tyler (New World)	Aurora Vesta	AT&T	Jackson Police Department	MIP5000	NICE (Van Belkum)
LENAWEE	Tyler (New World)	Tyler (New World)	CML (End of Life)	AT&T and Frontier	Frontier to Monroe/AT&T to Hillsdale	Zetron	DSS

ATTACHMENT B – LETTER OF INTENT TO BID; DUE MARCH 7TH, 2016 – 10:00 AM

CCCDA Administrative Office
ATTN: SMPA
315 W. Green St.
Marshall, MI 49068
hsnyder@calhouncountymi.gov

REFERENCE: Letter of Intent to Bid

This is to notify the Southern Michigan PSAP Alliance (SMPA) that it is our present intent to submit a proposal in response to the request for a Customer Premise Equipment (CPE) solution, designed for Next Generation 9-1-1 (NG9-1-1) shared emergency services IP network (ESinet) and telephony systems.

The individual to whom information regarding this RFP should be transmitted is:

Name: _____

Company: _____

Address: _____

City, State, & Zip: _____

Phone Number: _____

Facsimile Number: _____

E-mail Address*: _____

Sincerely,

_____ _____
Name (Signature) Date

_____
Name (Printed) & Title of Representative
*Primary means for all communications.

ATTACHMENT C – REFERENCE WORKSHEET

Agency Name: _____

Agency Contact Information: _____

Date CPE Contract Signed: _____

Date of CPE go-live: _____

Value of CPE Contract: _____

Brief Description of the environment and hardware installed: _____

Brief description of the project management and implementation process: _____

Brief description of any issues and their respective resolution: _____

ATTACHMENT D – PRICING WORKSHEET

	On Premise	Hosted (optional)
Total of all Hardware:		
Total of all Software:		
Total of all Interfaces:		
Total Custom Software:		
Total Integration Services:		
Total Training Services:		
Total Implementation Services:		
Project Management Services:		
Total Solution Cost: (including 3 years of Maintenance)		
Maintenance year 4:		
Maintenance year 5:		
Maintenance year 6:		
Grand Total Solution Cost: (including 6 years of Maintenance)		

ATTACHMENT E – CPE SIZING REQUIREMENTS

Host	Equipped	Wired
Data Center Server(s)		
Digital ports		
Digital CAMA ports		
Analog 911 CAMA trunks		
Administrative Non-emergency 10-digit Trunks—Analog		

Calhoun County	Equipped	Wired
PC Workstation with 19" LCD TFT Monitor		
Headset/Handset Interface to Radio		
Video, Keyboard, Mouse 10-foot Extension Cables (one set per workstation)		
Integrated Mapping per Position		
Voice 1 Channel—Radio IRR		
PSAP Voice IRR		
External Keypad		
Keyboard Arbitrator		
CAD Ports (3)		
System Speed-call		
PSAP Common Networked Laser Printer		
Equipment Room—Maintenance Printer		
Analog 911 CAMA Trunks		
Administrative Non-emergency 10-digit Trunks—Analog		
Equipment Room Compact Maintenance		
End User Training		
Backroom Equipment, Racks, Jack Panels		

Barry County	Equipped	Wired
PC Workstation with 19" LCD TFT Monitor		
Headset/Handset Interface to Radio		
Video, Keyboard, Mouse 10-foot Extension Cables (one set per workstation)		
Integrated Mapping per Position		
Voice 1 Channel—Radio IRR		
PSAP Voice IRR		
External Keypad		
Keyboard Arbitrator		
CAD Ports (3)		
System Speed-call		
PSAP Common Networked Laser Printer		
Equipment Room—Maintenance Printer		
Analog 911 CAMA Trunks		
Administrative Non-emergency 10-digit Trunks—Analog		
Equipment Room Compact Maintenance		
End User Training		
Backroom Equipment, Racks, Jack Panels		
User Training		

ATTACHMENT F – NETWORK REQUIREMENTS

The CONTRACTOR must comply with the 911 network built and operated by Peninsula Fiber Network (PFN). PFN delivers E9-1-1 emergency service voice and related caller data to PSAPs via a private, secure, redundant, and monitored, IP network.

The PFN 911 network is designed as an Emergency Services IP Network (ESinet). This network is compliant with the concepts envisioned in various NENA "Next Generation
9-1-1" documents and TIDs. Voice traffic on the network uses session initiation protocol (SIP) and related protocols, such as Realtime Transport Protocol (RTP). Associated 911 call data (ANI/ALI data) on the network are sent using telnet and http protocols. Both XML and ASCII text formats are supported.

XML is the preferred format on a going forward basis. Other IP protocols, such as FTP are possible and may be supported in various ways on a backwards compatible or unique case by case basis.

The PFN 911 network is presently an IPV4 network. Most of the PFN 911 network is addressed in private 10.x.x.x IP address space. PFN is the address space authority and administrator. Migration to an IPV6 network is anticipated at some point in the future, and connections should be capable of supporting the protocol.

In general, there is no NAT, PAT, or other IP address manipulation used within the PFN 911 network. However, various internal security measures, such as the use of access lists in routers and other traffic monitoring, have been implemented at PFN's discretion. Various other security measures (in response to changing needs) have been implemented over the life of the network. The PFN 911 network is an NG9-1-1 ready transitional network, supporting legacy interface methods to PSAP CPE equipment. If a PSAP wishes to connect or operate CPE using PFN 911 network services directly, their connection arrangement may require a firewall or back to back user agents.

PFN's primary goal is to preserve the overall integrity of the network. The PSAP and their CPE vendor should be prepared to deal with any possible SIP or RTP issues that arise from such firewall manipulation of IP headers and packet content for non SIP friendly firewalls.

The reader should note that standards concerning NG 9-1-1 IP networks are still in development. These standards are evolving, and will continue to evolve. PFN has a commitment to align the 911 network with all such future standards. However, PFN does not commit to implementing or supporting any particular present or future standard. Put another way, the network is what it is at any given point in time.

The following interface descriptions are available today.

V-1 RFAI VoIP SIP interface over IPv4

This interface is the “native” voice interface to the PSAP from the IPSR. RFAI is the interim VoIP interconnection standard intended for use until i3 is complete and ready for adoption as needed. It offers reduced hardware costs, maximum flexibility, and access to evolving PFN 911 features and services. Based on RFC-3261 and supported RFC’s covered by the NENA i3 draft and guided by the ATIS RFAI standard, RFAI uses G.711u for media and supplemental standard headers to convey emergency service signaling information. Currently only SIP over UDP is supported but TCP is available when necessary or for specific legs requiring it.

The CPE interface in this model represents a RFAUA or SIP UA that is used by the upstream IPSR to signal downstream the inbound emergency sessions. Based upon requirements, topology hiding can be used to anchor RTP media to the same signaling IP or to force path selection, e.g., traffic engineering. These anchors are virtual and can be applied as needed, scaling up to many instances per IPSR/ESRP installation.

The IPSR/ESRP supports a flexible model for egress, i.e., toward the CPE or gateway, trunks by called (R-URI/To Field) entity for SIP traffic separation policies. This functionality supports unique R-URI and other header manipulation for each provisioned resource placed in an egress group composed of the resource list and a weighted selection metric for each entry. A model that supports both serial and parallel forking and per resource along with robust manipulation of headers, invoking a B2BUA when necessary.

The IPSR/ESRP supports the following RFAI, SIP and other features:

1. REGISTRAR, not included by default nor recommended, each IPSR/ESRP can provide a mated registrar server when required.

2. OPTIONS, Heartbeat Monitor. The IPSR/ESRP will ping RFAUA’s with an OPTIONS message to determine reachability. Based upon topological awareness, destination resources are utilized according to predefined order of preference and reachability. The IPSR/ESRP will respond to server based OPTIONS messaging and forward OPTIONS messages destined for other UAs.

3. Conferencing. The IPSR/ESRP implements the conference-aware focus UA of RFC-4579. This gives the IPSR/ESRP the ability to support ad-hoc conferences within the context of all egress SIP trunking via an integrated B2BUA instance. Note: currently RFC-4575 is not supported; as well RFAI’s INFO model is on the roadmap.

4. TN-Based Routing. Ability to route on multiple number fields, e.g., ANI, p-ANI and ESRK/ESQK using intelligent SIP header analysis.

5. Legacy Trunk group based routing and awareness. Utilizing RFC-4904 or IP screening the IPSR/ESRP can simulate trunk group routing via properly marked URIs or SIP signaling source IP Addresses, e.g., call default routed by specific ingress gateway source IP.

6. Flexible SS7 support for NENA and other MSC to Legacy SR over SS7 protocol interworking's via SIP-I/T supporting ingress gateway or softswitch. Requires prequalification of ingress Signaling Gateway Controller and its support of either SIP-I or SIP-T. See NENA 05-501 for Guidelines connecting MSC to SR over SS7.

7. Intuitive provisioning interface supported by flexible XML described UI. This allows for simple adaptation or augmentation of the standard ESRP Admin interfaces without impacting or disrupting other stable or currently used screens. The ESRP Admin installation will provision the IPSR/ESRP out of the box which is in itself a collection of default screens created for the stock release. These can be modified or extended to either replace or add functionality, e.g., if a third party ALI subsystem vendor exposed an interface via SOAP it can be consumed and provided integrated into standard IPSR/ESRP screens provided by PFN. Any SOAP interface can be utilized if exposing simple record storage model via RPC. In the future RESTful will be supported. *it will require professional services or other contract to update custom screens for upgrade purposes. However the standard interface is considered stable and will stay backwards compatible in the current roadmap.

   PSAP CPE implementing RFAUAs should implement two SIP UAs on diverse hardware for redundancy. Each RFAUA should be capable of registering one user id with two distinct SIP proxies concurrently when using optional registration. SIP parallel forking is supported for cases where there is no negative impact for signaling both RFAUAs simultaneously for a single call, i.e., SIP Loop.

The IPSR/ESRP supports signaling the CPE ring group entity or queue via R-URI and To Header called party indication in SIP user portion. This is a 10 digit number and is based on FIPS state and county designations and a reusable local 4 digit identifier. Example: 1260230001(Branch County MI) 1 is for locations within world-zone one, 26 is FIPS Code for State of Michigan and 023 is FIPS code for Branch County. The last four digits, 0001, would indicate the first agency assignment or some other identifier unique to the agency indicated. At a minimum 0001 should route to the default agency behind the RFAUA instance. Either RFAUA should be able to accept INVITEs sent from any proxy at any.

All 911 calls to the PSAP site can be sent as SIP invites arriving from any proxy to which the CPE UA is registered or is provisioned for non-registrar installations. The user ID should be a "pilot" or "hunt group" number within a call distribution scheme used by the CPE vendor and the PSAP. That is, additional INVITEs should be accepted until all operator positions and incoming call queue slots are busy. At this point, the UA may return a busy, and the network will execute pre-defined alternate call routing to properly route the call.

Alternatively, the UA may take action independent of any pre-defined plan developed to forward the call if the PSAP wishes to implement (and be responsible for) their own call overflow plan.

All PSAP functionality, such as call barge in, supervisor monitoring, call recording and call detail logging, etc., are the responsibility of the CPE hardware and software, i.e., these functions are not intrinsically provided by the network

MI911 CPE Data Interfaces

These interfaces listed below are presented from most to least desirable (in order). The least desirable interface is available for backward compatibility to “traditional” E911 Customer Premise (PSAP) Equipment (CPE.):

D-1 Data Accessed via HTTP

This interface available for additional development and implementation.

This interface supports ALI, multi-media, and other PFN 911 and Public Safety data. The data is retrieved via a URL from a web server. HTTP ALI data may be obtained by the ANI or pANI associated with the call as part of the URL. This is the preferred ALI retrieval system.

Alternatively, ALI data may be posted at a URI associated with the position answering the call. Note that location of ALI data without an ANI or pANI will require that the network know the associated answering position. For example, each answering position must have a distinct SIP user id. This method of ALI retrieval is intended to support “PSAP-in-the-phone” applications, such as an emergency or temporary PSAP location.

PFN will provide standard web page templates that may populated by ALI data, suitable for direct display at the PSAP via a web browser. Alternatively, CPE vendors may provide custom templates.

An example of a web browser is Google Chrome, however, other browsers may be used. Since this is a web-browser-based data access method, it is expected than many nontraditional public safety applications, such a storm tracking on a map, or highway condition displays, will use this interface.

The precise details will be determined by the public safety application, not by the network. The purpose of listing this interface is to establish a future framework consistent with the concepts of NENA‟s „future path‟.

D-2 PIDF ALI Data Attached to SIP Headers

(general and complete availability is pending completion of industry standards)

The NENA i3 standard covers attachment of ALI information in body parts of SIP messages. This allows for ALI type information to be conveyed along with the call. The IPSR/ESRP currently supports interoperability where ALI information can be appended to INVITEs using a legacy connector for the ALI subsystem. However since critical timing aspects of wireless calls have not been aligned with the i3 concept, all routing must be performed traditionally and the initial call delivery will not wait for a response to the Initial ALI query.

The ALI (Automatic Location Information) associated with a call will be attached to the SIP Invite message as a MIME attachment. This signaling technique has been more clearly defined in IETF RFC 4119 (see also http://tools.ietf.org/search/rfc4119). A full discussion is beyond the scope of this whitepaper.

The network supports this form of ALI interface.

Since SIP and the associated protocols support various media, including non-voice (video, text messaging, etc), as well as voice, we anticipate this type of "ALI" connection will be preferred for many end-user to PSAP communications.

PFN proposes that the D-2 option, when combined with SIP as the preferred voice interface will be the preferred interface.

D-3 XML Data Encapsulated in TCP Packets

In this interface, the PSAP CPE, operating as a TCP client, uses the NENA V4.0 XML specification to query the ALI system, process and display the XML ALI response.

The PFN 911 network implements a variation of NENA document 02-010; see also: http://www.nena.org/technical-xml-schemas [These variations are available from PFN.]

The PSAP call position or ALI agent acts as a TCP client that connects to two redundant TCP ALI servers. The messages generally follow the examples in Exhibit 23 or the Best Practices document.

The network fully complies with the NENA standard, and has also expanded the feature set beyond the limitations of the NENA document based on real world experience.

For example, the PFN 911 network adds additional XML tags, such as <FDAY> ("Formatted" DAY) that returns the day in the format yyyy-mm-dd, in addition to the NENA <DAY> format as described in the NENA document. PFN 911 includes both tags in the ALI response string, so the PSAP can use the NENA form, and ignore the FDAY form, or vice versa.

PFN plans to evolve the XML ALI interface to comply with the latest versions as recommended by NENA. The present XML query and response string includes a "version" header that CPE can use to control the exact format version of the XML that is received. Examples of this are listed in the appendix to this white paper. This mechanism can be used to provide an orderly and seamless transition thru older, current or future XML versions as they evolve.

The D-3 interface is extensively used throughout the network.

D-4 Traditional NENA ALI Queries and Text Responses Encapsulated in TCP Packets

This interface is identical to the traditional RS-232 serial data ALI interface (described in D-5 below), except that the ALI string is sent in a TCP packet, rather than via a serial data interface.

Certain telecom standards refer to this as RFAI (request for assistance interface). PFN supports, but does not endorse this type of connection arrangement.

This connection arrangement is an alternative to legacy serial data connections at the PSAP site. The PSAP CPE is connected to the network via an Ethernet connection (or redundant connections, as required.) The PSAP system initiates a TCP connection to the ALI servers. In all other regards, operation is identical to a traditional NENA-type ALI interface.

The PFN 911 network can format the ALI response string on a per-site basis, as specified by the PSAP or the CPE vendor.

D-5 Traditional NENA Serial Data ALI Links

This interface is depreciated. It is supplied to provide legacy backward compatibility with traditional PSAP CPE. The PFN 911 network provides dual RS-232 serial ALI interfaces at the PSAP site. NENA 10-digit ALI query strings and text-only ALI responses are supported. The format of the ALI response can be configured on a site-by-site basis.

This interface differs from D-4 above only in that the PFN 911 network provides protocol/media converters to convert Ethernet/telnet connections to RS-232/serial data connections to support legacy equipment.

CONTRACTOR can contact Phil Bates, Program Manager Indigital at 260-469-2010, with any questions regarding the network or CPE connectivity.