Commonwealth of Virginia
E-911 Services Board
Call Handling Equipment Requirements

1. PURPOSE

The Commonwealth of Virginia (COV) desires to establish a contract or contracts with 9-1-1 Public Safety Answering Point (PSAP) System Contractor(s) to provide, install, receive and/or upgrade hardware and software for NG9-1-1 ready call handling equipment including computer telephony, mapping, and other E9-1-1 related products and services used in PSAP s throughout the Commonwealth of Virginia. The Contractor(s) may also provide hardware and software maintenance with the equipment or as a stand-alone offering. The State acknowledges that the PSAP industry and its suppliers are changing rapidly and as such desires to establish manufacturer-based contracts rather than product-specific, point-in-time technology requirements, allowing flexibility to accommodate open-standards-based products and new technologies.

2. BACKGROUND

The Commonwealth of Virginia has a population of approximately 8 million. Within the Commonwealth of Virginia, there are 38 independent cities and 95 counties, serviced by 121 primary wireless PSAPs that are eligible for funding through the Virginia PSAP Grant Program. These 121 PSAPs currently utilize call handling equipment from various manufacturers. The PSAPs answer the following types of calls: 9-1-1, 10 digit emergency and non-emergency calls for police, fire, emergency medical services (EMS), and other miscellaneous types of public safety calls. Calls for service vary by location and PSAP.

3. DEFINITIONS AND ACRONYMS

3.1. <u>ACD</u> – Automatic Call Distribution system
3.2. ADA – Americans with Disabilities Act
3.3. Administrator – PSAP System Administrator
3.4. ALI – Automatic Location Information
3.5. ANI – Automatic Number Identification
3.6. ANSI – American National Standards Institute
3.7. BUC - Emergency Communications Backup Center – facility located way from the main Communications Center used in the event the main center becomes uninhabitable. The facility is always in stand-by mode where agents can log-in and immediately start receiving call.
3.8. CAD – Computer Aided Dispatch system
3.9. Call Handling Equipment (CHE) – All telephone, computer, workstation, ancillary hardware products, system software, application software, operating system software, networking software and services needed for a new or upgraded PSAP System provided in accordance with the Contract. Software products include source and machine-readable object code for such product and any other related materials which are furnished to the State and/or PSAP by the Contractor for use in connection with such product.
3.10. CAMA – Centralized Automatic Message Accounting – used in PBX and Electronic Key applications to provide for the forwarding of ALI information to the 9-1-1 system provider.
3.11. CPE – Customer Premise Equipment
3.12. CTI – Computer Telephony Integration employing intelligent workstations for telephony services
3.13. E9-1-1 or "Enhanced 9-1-1 service" means a service consisting of telephone network features and PSAPs provided for users of telephone systems enabling such users to reach a PSAP by dialing the digits "9-1-1." Such service automatically directs 9-1-1 emergency telephone calls to the appropriate PSAPs by selective routing based on the geographical location from which the emergency call originated and provides the capability for ANI and ALI features.
3.14. Eligible Agency – used interchangeable with any Commonwealth of Virginia PSAP
3.15. Eligible Agency Offer – A Proposal submitted to the PSAP (Eligible Agency) for a specific new system, replacement hardware, upgrades, or maintenance on a legacy system.
3.16. ESN – Emergency Service Number
3.17. ESRI – Environmental Sciences Research Institute.
3.18. FCC Docket 94-102 – means Federal Communications Commission Order 94-102 (61 Federal

Register 40348) and any other FCC order that affects the provision of E-911 service to wireless customers.

3.19. GIS – Geographic Information System
3.20. HFS – Hierarchical File System
3.21. IP – Internet Protocol
3.22. IP/SIP – Session Initiation Protocol – an IETF standard protocol for IP-communication, enabling IP-telephony gateways, client endpoints, PBXs and other communication systems or devices to communicate with each other.
3.23. IWS – Intelligent Workstations – agent or user workstations which interact with other workstations and/or servers, are able to react to incoming services, offer the agent or user options on how to proceed, and can make decisions based on the event.
3.24. LAN – Local Area Network
3.25. LEC – Local Exchange Carrier – Telephone Company that operates within a local area called the LATA (local access and transport area)
3.26. Legacy Contractor – A Contractor who supports equipment that was previously installed.
3.27. Legacy Equipment – Equipment that was previously purchased and is currently being utilized by the PSAP.
3.28. MIS – Management Information System
3.29. MSAG – Master Street Address Guide
3.30. NEC – National Electric Code
3.31. NENA – National Emergency Number Association
3.32. NFPA – National Fire Protection Association
3.33. NG 9-1-1 – Next Generation 9-1-1
3.34. NG 9-1-1 Ready – Call handling equipment with the ability to receive SIP communications natively at the individual work station.
3.35. NOS – Network Operating System
3.36. NTP – Network Time Protocol
3.37. OS – Operating System
3.38. OSHA – Occupational Safety and Health Administration
3.39. Primary Contractor – The single point of contact for any and all issues from inception to completion of project.
3.40. PSAP – Public Safety Answering Point
3.41. SIP - Session Initiation Protocol communications protocol for signaling and controlling multimedia communication sessions.
3.42. SMS – Short Message Service – communication service component of the GSM mobile communication system, using standardized communications protocols that allow the exchange of short text messages up to 160 characters.
3.43. SNMP - Simple Network Management Protocol
3.44. Switch – A PBX (private branch exchange) used to manage and route calls in the system.
3.45. TCP/IP – Internet Protocol Suite – set of communications protocols used for the Internet and other similar networks, specifically Transmission Control Protocol (TCP) and the Internet Protocol (IP). The TCP/IP Suite defines a set of rules to enable computers to communicate over a network providing end-to-end connectivity specifying how data should be formatted, addressed, shipped, routed, and delivered to the right destination.
3.46. TTY/TDD – Telecommunications Device for the Deaf/Telephone Typewriter or Teletypewriter – user terminal with QWERTY keyboard input and printer or display output used by the hearing and speech impaired. The device contains a modem and is used over a standard analog phone line.
3.47. Turn Key – A system that has been built, installed or supplied by the contractor that is complete and ready to operate.
3.48. VoIP – Voice-over-Internet Protocol – a protocol optimized for transmission of voice through the Internet or other packet-switched networks.
3.49. VRS – Voice Recording System – refers to the existing recording system.
3.50. WAN – Wide Area Network

4.   E9-1-1 SYSTEMS

Contractors shall be committed to supporting proposed hardware, software and systems as described herein, for a minimum of five (5) years.

4.1.   E9-1-1 PSAP CTI TELEPHONE SYSTEM HARDWARE, MINIMUM REQUIREMENTS

The following is a list of E9-1-1 PSAP hardware and their associated requirements which may be requested at any time by an Eligible Agency. Hardware may be requested separately or as an entire system purchase. A Contractor shall be able to offer, at a minimum, all hardware listed below:

4.1.1.   ANI Controller and/or Controller Functions. Shall meet the following minimum requirements:

4.1.1.1.   All modules shall function independently;

4.1.1.2.   Processing bottlenecks shall not occur;

4.1.1.3.   ANI Controller shall not force incoming telephone calls to wait for an available multi- frequency receiver before presenting the call; and

4.1.1.4.   ANI Controller functions shall not use a single central controlling module or any other single device. Single point of failure shall not be permitted.

4.1.2.   Equipment Racks. Standard sizes are 19" or 23".

4.1.3.   Hard Drive Back Up/Storage. An easy-to-operate backup System for backing up the hard drive.   The process required for backup shall not interrupt normal use and/or operation of the system. The Contractor shall provide training and training manuals/guides for how to complete a backup of the Hard Drive at the time of system installation.

4.1.4.   Keyboard. A standard keyboard shall be capable of assisting with processing all telephone calls, including but not limited to voice and TTY/TDD calls. The Contractor shall provide all of the keyboard templates. The Offeror shall identify if a KVM switch is available with the solution so that one keyboard can be used to control multiple systems.

4.1.5.   Monitors. Minimum of a 20" monitor. The Offeror shall identify the recommended monitor size for the proposed solution.

4.1.6.   Mouse. All System's shall operate with standard mouse systems. The mouse shall be capable of assisting with processing all telephone calls, include but not limited to voice and TTY/TDD calls.

4.1.7.   Printers. Printers on the System shall be standard, plain paper.

4.1.8.   Punch Blocks. Standard 66 or 110 punch blocks shall be used.

4.1.9.   Telephone Sets. Telephone sets may be required at each position for parallel call processing backup to the CTI system. Telephone sets shall be pre-wired and ready for immediate use. For those E9-1-1 Systems which have a 'switch' or PBX built in then the "switch" or PBX shall use digital architecture and technology, and be modular in design if based on premise.

4.1.10.   Transmit and Receive Audio – Radio Positions Only. The telephone system is not required to perform audio switching functions between the telephone and radio systems, as audio switching is typically a radio interface function. The system shall provide external transmit and receive headset connects that connect into the radio console interface. Impedance and volume levels shall be equal to standard telephone headset, balanced, and free of hum, noise or cross talk.

4.1.11. <u>Uninterruptible Power Supply, per position.</u> Under desk UPS, minimum back up supply shall be at least 15 minutes.

4.1.12. <u>User Workstation Consoles.</u> This is an all-inclusive E9-1-1 call answering position.

4.2. *9-1-1 PSAP SYSTEM SOFTWARE REQUIREMENTS*

References to software in this Contract include, but are not limited to, the CTI application, the NOS, OS, mapping, MIS, the switch or PBX operating system and its application, and all other software required to support the PSAP system.

4.2.1. This section includes minimum requirements for software which shall be met, unless otherwise stated in the Proposal. To ensure compatibility with the PSAP's existing network and future enhancements, proposed CTI application software shall operate at OSI Level 6 (Presentation Layer) or above. The use of MIS and report functions shall not negatively impact the system performance.

4.2.1.1. The latest production version of software releases for the product line selected shall be offered. If between the time of Offer and the time of final acceptance of the new System, new releases of software are marketed and available, the most current version of the software shall be provided to the PSAP without additional charges. A condition of the final acceptance is that the PSAP shall have the latest releases of supported production version software for the entire installed product line.

4.2.1.2. All Software version updates and upgrades shall be provided to the PSAP as available provided a current software support agreement is in place at the time of the upgrade. There shall be no additional cost if a support agreement is in place. If there is a cost associated with the software upgrades, due to the lack of an agreement, the Contractor shall include an expected cost for software upgrades in its Eligible Agency Offer when the software is initially proposed.

4.2.1.3. The use of standard software products available in the marketplace is strongly encouraged for workstation and network operating systems. Proprietary CTI application software shall be written using no less than 32 bit architecture. Proprietary switch or PBX software shall be designed and written using current programming languages and techniques. Long-term software support for proprietary or non-proprietary software is required.

4.3. *MINIMUM SYSTEM FUNCTIONALITY REQUIREMENTS*

This section includes minimum system requirements which shall be met, unless otherwise stated in the PSAP's request. All system components must be NG 9-1-1 Ready (has the ability to receive SIP communications natively at the individual work station).

4.3.1. <u>Abandon Call Capture.</u> All proposed systems shall provide users and supervisors the capability to capture abandon call information, and redial the abandoned number automatically upon command with a single screen touch, keystroke, or mouse click. A list of abandoned calls shall be provided in table format, and selectable for redial with a minimum number of screen touches, keystrokes, or mouse clicks.

4.3.2. <u>Arbitration.</u> Independent arbitration of the keyboard and mouse between the telephone and other systems shall be quoted as an option. Arbitration options shall be detailed as to single/or multiple keystrokes or button strikes in the Eligible Agency Offer. Single strike option is desirable

4.3.3. <u>Automatic Redial.</u> All proposed systems shall provide each user the capability to redial

the last ten (minimum) numbers from the answered calls on their console. Redial shall occur with a minimal number of screen touches, keystrokes, or mouse clicks.

4.3.4. Call Conferencing. All proposed systems shall provide conferencing features that permit every user and supervisor on the System to conference multiple lines and trunks without regard to the type of line or trunk. Conferencing shall not degrade the quality of the audio. The State Proposal shall describe the call conferencing process, and the number of lines that can be conferenced during a single call without degradation. Adding a call to the conference shall occur immediately with a minimum number of screen touches, keystrokes, or mouse clicks.

4.3.5. Call Data Delivery. The ANI/ALI shall populate immediately upon call answering.

4.3.6. Call Holding. All proposed systems shall permit users to immediately place a call on hold with a single screen touch, keystroke, or mouse click.

4.3.7. Call Playback. All proposed systems shall provide in addition to data captured on logging recorders, a separate functionality for recording and playing back all calls for the most previous 30 minutes of operation. Playback functions shall occur with a minimal number of screen touches, keystrokes, or mouse clicks. Playback shall be audible through the headset, handset, or external speaker.

4.3.8. Call Transfer. All proposed systems shall include call transfer functionality that shall occur immediately with a maximum of three (3) screen touches, keystrokes, or mouse clicks. User and supervisor functions associated with normal call taking and monitoring shall apply to transferred calls. Users shall be capable of transferring calls manually and/or through speed dial functions from the keyboard and/or mouse. If the call being transferred is internal to the System, notification of the incoming transferred call shall be provided on the console screen of the respective user to whom the call was transferred. The user originating the transfer and all supervisors shall be able to reenter the call up to the point the call is answered at the transfer point.   If the call being transferred is internal to the System, the transferred line shall be denoted on the originating users and all subsequent users' consoles until the call is complete.   All proposed Systems shall have the versatility of transferring voice and data in a manner consistent with 9-1-1 operational standards. If more than one-keystroke is required to transfer both the voice and data, it shall be identified in the State Proposal. Call data shall be maintained for calls transferred within the System throughout the duration of the call without regard to the number of transfers.

4.3.9. Headsets. Independent headsets that transmit and receive audio adjustments are required. The Contractor shall provide the capability of independent adjusting transmit and receive audio levels from the touch screen by touch or using a mouse. The Contractor shall clearly state whether a closed relay contact for a telephone "off-hook" condition is provided by their equipment or required of the radio system for integrating the headsets into the radio interface. The relay contacts shall be floating and not connected to ground or voltage/battery. The system shall permit use of standard telephone headsets available in the marketplace without modification to the headset jack or internal wiring.

4.3.10. Help File. The system shall provide on-line help for all user functions.   Help information shall be retrievable while using the System without having to abandon a call or log off. The Help screens shall contain standard Window™ type help functions such as, but not limited to, topics, contents, search, find, etc.

4.3.11. Intercom. All proposed systems shall provide an internal intercom.   Users and supervisors shall have the capability to select whether the intercom audio is routed to their headset, handset, or external speaker.   This function shall be part of the user/position setup feature, and shall follow the user from console to console, day to day unless changed in the setup. Use of the intercom feature shall occur with a minimal

number of screen touches, keystrokes, or mouse clicks.

4.3.12. Longest Ring.

4.3.12.1. Answer. All proposed systems shall provide the capability to immediately answer with a minimal number of screen touches, keystrokes, or mouse clicks from any screen the longest ringing trunk or line in queue. The System shall denote the trunk or line classification and priority.

4.3.12.2. Identify. The System shall readily identify the trunk and/or line and classification of the highest priority unanswered call in each trunk and/or line classification group.

4.3.12.3. Queuing. All proposed systems shall automatically queue calls by priority for the longest ring, e.g. every priority one (1) call shall be answered in order of ring duration before any in subsequent priorities are answered regardless of ring duration between priorities.

4.3.12.4. Network Time Protocol. NTP is an important component to the call quality and system reliability. The Offeror will provide their solution to NTP to verify their proposed system synchs all PCs and servers appropriately.

4.3.12.5. Printing. Records and reports shall have the ability to be printed.

4.3.12.6. Query Language. In all proposed systems the use of SQL-based reporting is required.

4.3.13. Records Functionality. All proposed systems shall offer standard-based records management functionality. The Offeror shall provide, but is not limited to, the following Information as record management functionality. Accurate daily call count by trunk and line, calls per hour, average mean answering time, average call duration, and other call related information. Information shall be reportable by user, position, trunk/line, etc. A finite set of pre-programmed reports, and AD HOC reports, shall be available to users and supervisors. Report writing shall follow standard, SQL-based report writing syntax, and be user friendly in nature.

4.3.13.1. AD HOC – Users, supervisors, and maintenance personnel shall be provided the capability to query the database, and create and print reports in an ad hoc fashion.

4.3.13.2. Records Management. Use of MIS and report functions shall not negatively impact System performance.

4.3.13.3. Records Retention. A record retention feature shall allow user defined parameters for length of data storage.

4.3.13.4. Record Review and Reports. Record review and report writing functions shall be available to users, supervisors, and maintenance personnel if granted access to these functions by the System's administrator. The additional use of password protection is required for records review and report writing.

4.3.13.5. User. All proposed systems shall provide user specific information upon command. Information such as number of calls taken, trunk or line status by user, special qualifications, working assignment, and other related, operator specific information for users logged onto the System at the time of inquiry shall be provided.

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

4.3.14. Remote Access. Any new system shall provide maintenance technicians the capability of entering the system remotely using a laptop or desktop PC. Remote entry into the

system must be limited to those authorized through the system administrator function and those functions shall be password protected. Remote access connectivity must comply with the PSAP's remote access procedures in effect at the time of installation.

4.3.15. Speed Calling. All proposed systems shall include the capability to preprogram a minimum of 100 numbers into a speed calling function. Selecting a number from the speed calling group shall be accomplished from an object button or with a minimal number of screen touches, keystrokes, or mouse clicks. Look up tables of speed call groups, number selection, and automatic dialing of the number from the table shall be included.

4.3.16. Status. All proposed systems shall provide user and Trunk/Line status functions and shall be available to users, supervisors, and maintenance personnel if granted access to these functions by the System's administrator and so licensed.

4.3.17. Storage.

4.3.17.1. Initial Year Requirements. System shall have sufficient hard drive storage capacity to store system setup and data information without archiving. The Contractor shall document, in detail, the amount of computer mass storage media necessary to store all data required for the operation of the 9-1-1 PSAP System proposed.

4.3.17.2. Subsequent Year Requirements. System shall have sufficient hard drive storage capacity to archive and retrieve system set up and data information for two years. The process shall provide discrete selection for archiving and/or retrieving data by date(s).

4.3.17.3. Software Upgrades. System shall have sufficient hard drive storage to allow for reasonable growth to include future software upgrades.

4.3.18. Supervision/System Administration. Supervisors and/or System administrators shall have the following rights:

4.3.18.1. Call Monitoring. All proposed systems shall provide supervisors and/or System administrators the capability to monitor the status of all trunks and lines, silently monitor conversations of multiple trunks and lines, interrupt conversations, reassign and transfer calls, and other supervisory functions.

4.3.18.2. Information Availability. System and user specific information available to them from any console upon command. Information shall be readily accessible, easy to retrieve, current, and accurate.

4.3.18.3. Backups. Administrators shall be permitted to backup System Setup files separately from System Data and operating system files. In the event of a System failure that causes system setup corruption, administrators shall be able to reload the System Setup files without affecting any other files. Retrieving information from backup media shall be available to administrators from any positions on the System. The process required for information retrieval shall not interrupt normal use and/or operation of the System. Information retrieved shall be in a "read-only" format, and shall not be altered from the retrieval process.

4.3.19. System Alarm Notification.

4.3.19.1. Supervisors and Maintenance Personnel. All proposed systems shall provide supervisors and /or maintenance personnel the capability to query the System as to the fault(s) and its effect on the System. Alarm history, queries, reporting and printing shall be available. The system shall be capable of selecting an automatic printing function to a selected printer and/or data file for System alarms.

4.3.19.2. <u>User.</u> Users logged onto the System shall receive visual notification at each position of telephone System alarms resulting from minor and/or major faults in the System. An additional feature for audible notification is acceptable if the tone level can be adjusted and/or muted in the setup process. A minimal number of screen touches, keystrokes, or mouse clicks shall exist to extinguish audible alerts regardless of the user's position in the application at the time of the alarm.

4.3.20. System Changes.

4.3.20.1. <u>Administrative Changes.</u> All proposed systems shall provide supervisors and/or System administrators the capability to affect systemic changes from every console in the System. User assignments and qualifications, trunk and line availability, trunk and line prioritization, and other administrative functions shall be available.

4.3.20.2. <u>Tracking of Changes.</u> Data integrity is of significant importance due to the nature of the data. If a change is made in the database, a permanent, non-editable (via the application) log entry shall be made in the System that captures the user ID making the change, the date and time of the change, and the field(s) and specific data changed.

4.3.21. <u>Time Stamping.</u> New Systems shall time stamp all incoming voice, text to 9-1-1, TTY/TDD calls using the System's Internal Time Source. All new systems purchased shall record the time the call entered the System, the time it was answered, the call duration, the time completed or transferred, and the user ID shall be included in the time stamp function. The time stamp shall be referenced to an agreed upon time standard and not deviate from the RADIO AND CAD time. The Time Stamp shall be able to adjust to Daylight Savings Time and have the option of not adjusting to Daylight Savings Time, depending on the Eligible Agency's requirement.

4.3.22. <u>Trunk/Lines.</u> All proposed systems shall provide trunk and line status from any console in the System Information such as active, on hold, available, working user, working position, call duration, and other call specific information shall be provided. System shall also be able to classify multiple classifications of trunks and lines (e.g. emergency, administrative, non-emergency, jurisdiction "X", etc.)

4.3.23. <u>TTY/TDD.</u> The Contractor's telephony shall be fully integrated with the proposed TTY/TDD function. All proposed new systems shall internally, without end user intervention, immediately recognize incoming TTY/TDD calls and immediately activate functions germane to TTY/TDD calls. TTY/TDD calls shall have the same recording and reporting capabilities as voice calls. Baudot and ASCII protocol shall be supported.

4.3.24. User Setup.

4.3.24.1. <u>Colors.</u> All proposed systems shall permit the administrator to select and change screen colors for those features not systemically predetermined by color.

4.3.24.2. <u>Features and Functionality.</u> All proposed systems shall permit the administrator to select and change system features such as but not limited to: screen layout, button size, font size, location, color, and type; mouse speed and arrow size; pre-recorded voice greetings, etc.

4.3.24.3. <u>System Access Levels.</u> All proposed systems shall provide a minimum of three levels of System access – Administrator, supervisory, and user. Administrators shall be provided the capability to access, add, change, delete, etc. every feature, function, and parameter in the System. The system shall provide a selectable subset of administrator functions for supervisors and users.

4.3.24.4. <u>System Security.</u> All proposed systems shall provide the capability for system users to securely log onto the system by using a user ID and user selected password.

4.3.24.5. <u>Certification and Standards Compliance.</u> All proposed workstation consoles shall be certified as meeting the following standards and testing procedures, as applicable to workstation consoles:

- ADA
- ANSI
- ASTM
- BIFMA
- CSA
- EIA
- HFS
- NENA
- NFPA
- OSHA
- Telcordia
- UL codes
- Other certifications and standards, as applicable.
- Specific standards include:

NENA IP PSAP Standards (NENA 58-001)

Offerors must advise on how the proposed system(s) complies with the NENA IP Capable PSAP 9-1-1 Features & Capabilities Standard 58-001 and Technical Standard 08-501, NENA Interface between the E9-1-1 Service Provider Network & IP PSAP, Issue 1. While it is understood that some or all of the capabilities described in this section of the RFP may not be available at the time this document is due for response, the Offeror shall describe its plans for compliance with NENA 58-001 as it is further developed. This will allow the Eligible Agency to determine how progressive Offerors are and their dedication to Next Generation 9-1-1 development and migration.

NENA Technical /Operational Standards and Operational Information Documents

Offerors should be responsible for researching all NENA Technical/ Operational Standards and Operational Information Documents that relate to 9-1-1 CPE and 9-1-1 operations, interfaces and data. The Offeror should prepare a matrix indicating which of the standards or Operational documents that the system they are proposing meets and which of those it is not compliant. In the case on non-compliance the Offeror should explain why the system is non-compliant.

ADA Compliance

The system proposed should include fully integrated TTY/TDD functionality. The TTY and TDD interface proposed must comply with all existing and known future NENA standards, FCC rules or regulations and/or ADA requirements for handling TTY / TDD, Voice Carry-Over (VCO) and Hearing Carry-Over (HCO) calls.

4.4. OPTIONAL SYSTEM FUNCTIONALITY

4.4.1. <u>Automatic Call Distribution</u>. The Commonwealth and many PSAPs recognize the value of ACD functionality for select PSAP operations. The Contractor shall denote the ACD functions that can be achieved without additional ACD hardware and/or software. The ACD may be internal or external to the System, but either way it shall be fully integrated. If the PSAP chooses a Contractor who proposed an ACD, it is the sole responsibility of the Contractor to fully integrate the ACD functionality into the PSAP's E9-1-1 System.

4.4.2. <u>Mapping.</u> Mapping functionality shall meet the following minimum specifications:

4.4.2.1. A 911 application that displays the location for the incoming 9-1-1 call;

4.4.2.2. ESRI® based map maintenance application component for performing specific 9-1-1/public safety data maintenance, such as addressing, MSAG creation and comparison, and development of map books; (Geodatabase???)

4.4.2.3. Accommodate a 20 digit, X/Y Coordinates, and longitude and latitude ANI and ALI in compliance with FCC Docket 94-102;

4.4.2.4. Communications with the ALI data base shall be made in a full duplex mode immediately after the ANI is decoded;

4.4.2.5. Application should be able to coexist on the intelligent workstation with all other applications used. Offeror must identify any limitations or additional equipment needed to run the applications;

4.4.2.6. Application shall receive ALI from the CTI or CHE and display the location of the 9-1-1 call;

4.4.2.7. Application must ensure that rebid capabilities are included and automatic rebid is a configurable option;

4.4.2.8. Application shall plot calls on the map based on the latitude/longitude (X/Y) coordinates delivered by the provider;

4.4.2.9. Provide common mapping functions including but not limited to: Pan, Zoom, Measure Distance, Find Address, Find Common Place, find X/Y, mapping a radius around the location based on the COF;

4.4.2.10. Application shall be able to integrate and display customer provided layers;

4.4.2.11. Application shall have the ability to interface with a CAD system to provide ANI/ALI to the CAD;

4.4.2.12. Application shall be network capable and provide the ability to display all calls taken on every workstation in the PSAP;

4.4.2.13. Application shall have the ability to filter events;

4.4.2.14. Application shall have the ability to generate the closest possible address or intersection to the latitude/longitude coordinates (X/Y) for calls that utilize that location technology;

4.4.2.15. Application shall have the ability to generate reports when an agent identifies an erroneous ALI, incorrect map display, or no map display; and

4.4.2.16. Application shall allow on-going, user initiated loading of new maps and revised maps. If Contractor involvement is required to load the data, this must be identified.

4.4.3. <u>Management Information System (MIS)</u>. It is desired that the proposed system include a management information system (MIS). The MIS should be designed to provide archiving at both the primary and the secondary site. Information from the MIS must be available

historically or in real time, track the incoming and outgoing calls, provide management with real-time, historical information, and strategic management reports, be user friendly and customizable and have a unique logon per user with the ability to expire passwords after 90 days. The system should have hard drive capacity sufficient at each site to store at a minimum five (5) years' worth of data based upon current statistics and/or unlimited amount of storage time through exporting to commonly available programs (e.g. Microsoft Excel, CSV file). The Offeror should describe in detail the proposed system's ability to meet the above goals and any other capabilities not listed.

4.4.3.1. <u>MIS System Specifications.</u> The records management functions should be standards-based following SQL-based report writing syntax. Statistical reports should allow managers to run reports detailing circuit usage, response time, call duration, transfer destinations, and other call handling operations, for any date and time. The Offeror should describe how the proposed system will accomplish this and describe all other system specifications.

4.4.3.2. <u>Pre-Configured Reports</u>. Pre-configured statistical reports for commonly requested information should allow customization of the date range, shift, position, users, and the ability to run ad-hoc queries. The system should have the ability to track and generate reports on wireless, VoIP, wire line, TTY/TDD and any other standardized emergency message types. The reports should be automatically formatted for printing. The Offeror should describe how the proposed system will accomplish this and describe all other preconfigured reporting specifications, including any specific data fields excluded from ad-hoc reporting.

4.4.3.3. <u>Custom /Ad Hoc Reporting</u>. Agents and supervisors should be provided with the capability to query the MIS database, and create/ print reports in an ad-hoc fashion from historical or real time data. It is desirable that reports can be generated based on any data element. The Offeror should describe in detail the capabilities and limitations for ad-hoc reporting.

4.4.3.4. <u>Alarms.</u> The Offeror should describe how the system provides for alarms to notify the system administrators when the MIS system is not operational and what affect the conditions may have on the overall system.

4.4.4. <u>Backup Center (BUC)</u>

4.4.4.1. Primary Systems will be located at the PSAP's Emergency Communications Center Equipment Room.

4.4.4.2. Secondary Systems will be located at the PSAP's designated location.

4.4.4.3. The Primary and Secondary system will operate in tandem with no loss of functionality or degradation of performance. The PSAP's IST Network Services group will provide connectivity between the two systems, including but not limited to switches and routers, fiber backbone, and/or additional service to the Offeror.

4.4.4.4. Half of the existing E9-1-1 trunks, 10-digit emergency and non-emergency circuits, will be moved from the PSAP to the secondary systems.

4.4.4.5. The Offeror must describe in detail the call flow in the event there is a failure at the Primary PSAP. Call takers at the failed site shall not lose functionality and any re-registering shall occur automatically.

5. SYSTEM CONFIGURATION

5.1. OPERATING SYSTEM

At a minimum, the use of standard network and workstation 32-bit operating systems is required with current and future technology. Use of Proprietary operating systems is not permitted.

5.2. CONFIGURATION.

5.2.1. Stand alone and host remote will be considered.

5.2.2. Intelligent workstations and servers provided under this contract shall be Graphical User Interface (GUI) based.

5.2.3. Any System that is purchased shall be modular in that additional equipment cards or shelves can be added to increase capacity.

5.2.4. All systems shall have the capability to determine a user's function, duties or specific qualifications by the roles applied to their user ID.

5.2.5. Integration.

5.2.5.1. The Contractor shall interface the CTI system with the PSAP's CAD, mapping (if not integrated with another system) and radio systems. Integration methods employed by the Contractor shall be described, in detail, and shall not affect the warranties, agreements, or proprietary rights of existing systems' manufacturers.

5.2.5.2. The Contractor shall define the CTI telephone system fields available for transfer to the CAD, and propose varying degrees of telephone/CAD integration for the new CAD systems. At a minimum, the name, address, telephone number of the calling party, class of service and those fields that contain X/Y data for Wireless Phase II and the time of the call shall transfer to the CAD from the telephone number.

5.3. DIGITAL ARCHITECTURE

System shall be fully digital with the capability of incorporating all existing analog lines. A complete project plan along with cost for such incorporation shall be included as part of the Eligible Agency Offer. The use of analog switch technology shall not be proposed.

5.4. GROWTH CAPABILITY

The switch or PBX shall be sufficiently sized to permit System expansion. Computer power supplies, hard drives, expansion slots, etc. shall be sized to allow for System expansion based on the size of the PSAP.

5.5. RELIABILITY

5.5.1. All proposed system designs shall, to the greatest extent possible, eliminate single points of failure by using fault-tolerant or highest availability architectures. The State desired proposal to include failure diagnosis and reporting via SNMP or event log monitoring. The Offeror shall describe any reduced levels of service caused by component failure, including the operational requirements for backup and recovery.

5.5.2. Any System shall provide varying degrees of levels of fallback operations, depending on the magnitude of the fault or problem. An "all or nothing" approach is unacceptable. The Contractor shall describe each level of fallback in detail.

6. SYSTEM PERFORMANCE REQUIREMENTS

6.1. SYSTEM AVAILABILITY

6.1.1. The E9-1-1 PSAP telephone system shall be available to users 24 hours a day, seven (7) days per week.

6.1.2. The Contractor supplied hardware and software must provide E9-1-1 functionality with minimal downtime.

6.1.2.1. If the system is experience unexpected downtime, the contractor is required to be on site working to rectify the issue within an agreed upon time frame. PSAP shall be notified hourly with status updates.

6.1.2.2. The E9-1-1 functionality will be considered down whenever normal telephone operations cannot be conducted without experiencing major system alarms or conditions that inhibit or prevent the call taker from communicating with the calling party or performing vital call processing functions.

6.1.2.3. The PSAP is the final determinant for establishing criteria for system downtime. E9-1-1 PSAP telephone System downtime resulting from external causes, including, but not limited to acts of God, fire, or PSAP's negligence will be excluded from downtime calculations.

6.1.3. The System shall be capable of performing hardware/software routine maintenance and upgrades while the System is fully operational. In the event that a system has to be down the Contractor shall outline, in detail, what data/function, if any, will be lost if the System is functioning in a reduced capacity.

7. SYSTEM SUPPORT AND MAINTENANCE

System Support and Maintenance shall be made available within a resultant contract for both Legacy Equipment and new system purchases.

7.1. ANNUAL AGREEMENTS

7.1.1. Hardware Maintenance Agreements and Annual Software Support Agreements shall be priced according to current industry rates at the time of agreement request.

7.1.2. Pricing shall cover all equipment and services needed to keep the PSAP system operating to meet the expectations expressed in this Solicitation.

7.1.3. There shall be no rate variances allowed for Holidays. Contractors are expected to meet all response times 365 days a year.

7.1.4. Utilizing PSAP's are direct recipient of a resultant agreement and as such, will negotiate the terms in accordance with the requirements stated below.

7.2. HARDWARE MAINTENANCE AGREEMENTS

7.2.1. Hardware Maintenance Agreement. Agreements shall be based on an annual flat rate which will include total support and preventative maintenance for an E9-1-1 PSAP system to ensure continued operations. Contractor shall offer hardware maintenance agreements for a minimum of five (5) years, in one (1) year increments, to start after the initial one (1) year warranty period has ended. Agreements are to be executed directly between the Eligible Agency (PSAP) and the Contractor. The Contractor shall permit prepaying of maintenance cost to correspond with PSAP Grant Program Requirements.

7.2.2. Preventative Maintenance. Shall include the provision of all hardware, cleaning, diagnostics, or other activities required to maintain the manufacturer's recommended performance levels.

7.2.2.1. Replacements parts are to be made available at no additional cost.

7.2.2.2. The Contractor shall set up a procedure by which each PSAP System covered under warranty or a maintenance contract shall be visited quarterly for the purpose of preventative maintenance.

7.2.2.3. The Contractor shall develop and use as pre-approved by the PSAP, a punch list for items that are examined during the preventative maintenance visits.

7.2.2.4. This punch list must be signed by an approved PSAP representative. Upon completion of the preventative maintenance a copy of the punch list shall be left with the PSAP.

7.2.3. Response Times:

7.2.3.1. PSAPs require seven (7) days per week, 24 hours per day, two (2) hour (maximum) response time to have a representative on site for hardware maintenance services throughout the term of the maintenance agreement.

7.2.3.2. In the event that a system has failed completely, the E9-1-1 System Administrator shall be updated hourly.

7.2.3.3. Help Desk Support: Services available by telephone from hardware support technicians to system users. Contractors shall provide Help Desk Support as part of the hardware maintenance agreements.

7.2.3.4. PSAPS shall be able to communicate with the Help Desk via a toll-free number.

7.2.3.5. Phone support shall be available 24/7 to the PSAP.

7.2.3.6. If the issue that was called in cannot be resolved through remote diagnostics and repair, then a technician shall be on-site within the above stated response times.

7.2.4. Qualifications of Onsite Technicians and Help Desk Technicians:

7.2.4.1. The technician responding to system issues shall be trained and certified by the manufacturer on the system which they are servicing.

7.2.4.2. At any time during or after service rendered, the PSAP may request a copy of the certification of the technician who performed the rendered service.

7.2.5. **No Hardware Maintenance Agreement Option.** Contractor shall provide services on an as needed request. If the PSAP chooses this option for any installed Equipment, the PSAP shall be charged an hourly rate and will also be responsible for any parts necessary to repair the System.

7.3. *SOFTWARE SUPPORT AGREEMENTS*

7.3.1. Software Support. Software Support Agreements shall be based on an annual flat rate which will include total support for an E9-1-1 PSAP system to ensure continued operations. Contractor shall offer extended application software maintenance for a minimum of five (5) years, in one (1) year increments. Agreements are to be executed directly between the Eligible Agency (PSAP) and the Contractor.

7.3.1.1. Support includes installing software patches, hot fixes, service packs, and version upgrades provided by the software manufacturer. The Contractor shall notify the PSAP Manager of the availability of these within 30 days of their availability.

7.3.1.2. The Contractor shall comply with hardware, software, and intellectual property rights licensing requirements for the PSAPs use during installation and the PSAPs ongoing use after installation.

7.3.1.3. Contractor shall offer extended application software maintenance for a minimum of five years, in one (1) year increments.

7.3.1.4. The Contractor shall provide enhancement updates to the software as they become available after obtaining prior approval from the PSAP. The method to be utilized shall be specified in relation to any system impact.

7.3.2. Response Times:

7.3.2.1. PSAPs require seven (7) days per week, 24 hours per day, two (2) hour (maximum) response time to have a representative on site for software support services throughout the term of the support agreement.

7.3.2.2. Help Desk Support: Services available by telephone from software support technicians to system users. Contractors shall provide Help Desk Support as part of the hardware maintenance agreements.

7.3.2.3. PSAPS shall be able to communicate with the Help Desk via a toll-free number.

7.3.2.4. Phone support shall be available 24/7 to the PSAP.

7.3.2.5. If the issue that was called in cannot be resolved through remote diagnostics and repair, then a technician shall be on-site within the above stated response times.

7.3.3. Qualifications of Onsite Technicians and Help Desk Technicians:

7.3.3.1. The technician responding to system issues shall be trained by the manufacturer on the system which they are servicing.

7.3.3.2. At any time during or after service rendered, the PSAP may request a copy of the certification of the technician who performed the rendered service.

8. SITE SURVEY / ELIGIBLE AGENCY OFFER REQUIREMENTS

Site Surveys are required, at no charge, when a PSAP calls for an Eligible Agency Offer on a new system, replacement hardware, or upgrades. Upon completion of a Site Survey Contractor shall supply the requesting customer a formal 'Eligible Agency Offer' to address the following items as applicable.

8.1. CABLING

Contractor shall ensure that the PSAP facility is adequately wired for standard telephone and LAN Operations using a minimum quality of Category 5 and 6 cables. Contractor shall state all cable requirements in detail.

8.2. EMERGENCY POWER

Contractor shall advise the PSAP if the PSAP facility is not equipped with sufficient emergency and UPS backup power to support the CTI telephone system. If a new system is being installed the Contractor shall ensure the Emergency and UPS backup power systems are sufficient to support the CTI telephone system, collectively with everything tied into the Emergency and UPS system. The Contractor shall advise the PSAP if there is a deficiency in either emergency or UPS backup power for any PSAP that is being worked on, regardless of the type of maintenance being done on the system. Customer equipment provided under this Contract shall be connected to the UPS in a manner so that telephone service is not interrupted during primary power fluctuations or outages.

8.3. ENVIRONMENTAL

Contractor shall advise the PSAP if the PSAP facility does not meet environmental standards necessary for proper equipment functionality. Specifically, HVAC, Power and Grounding. The Contractor shall provide the operating temperature range and BTU's of heat generated for each primary place of equipment.

8.4. EQUIPMENT RACKS

Contractor shall describe in detail the placement of the equipment rack and the Contractor shall work with the PSAP location on an acceptable, agreed to, floor plan when they are completing their site survey assessment before submitting their Eligible Agency Offer and exact floor plan and design shall be included in all proposals.

8.5. GROUNDING

Contractor shall advise the PSAP if the PSAP system does not have the proper grounding available. Grounding shall conform to NEC or NFPA 1221 standards. This includes both new equipment and for maintenance on existing systems.

8.6. HARDWARE

Contractor is responsible for listing, in detail, the hardware that PSAPs will require within the Eligible Agency Offer. All equipment proposed shall be within industry standards.

8.7. HEADSETS

The Contractor shall include in the Eligible Agency Offer engineering for headset connectivity, transmission, and reception of the telephone and audio systems. Integration of the headset between the telephone and radio system is performed through the radio vendor's interface function in the radio console. The Contractor shall ensure the 9-1-1 System will interface to standard radio systems.

8.8. INTERFACE

The Contractor shall include in the Eligible Agency Offer the capability to interface with multiple systems including, at a minimum: CAD, Radio, Logging Recorders, Netclock, Data Analysis, Mapping and Agency Telecommunication Services.

8.9. LEGACY EQUIPMENT

The Contract shall include in the Eligible Agency Offer their ability to provide hardware maintenance and software support for existing equipment.

8.10. MAP SUPPORT

Contractor shall provide documentation outlining the procedures for loading new maps and uploading revised maps within Eligible Agency Offerors.

8.11. PRICING

The Contractor shall include line item charges within the Eligible Agency Offer. The charges shall include at a minimum, Turnkey Installation, System Parts, Ancillary Parts, Software and any additional options that are being proposed. Pricing shall be good for 90 days from date of quote receipt.

8.12. WAN Connectivity

The Contractor shall advise if any WAN connectivity, including recommended bandwidth, is required. All equipment required for the connectivity to a WAN shall comply with the industry standard. If WAN connectivity is proposed, Contractor shall provide, at a minimum, a complete list of equipment, including manufacturer, model, cost, revisions, a network diagram and timeline. No non-IP protocols shall be used. All connectivity or cross connect systems purchased shall be sized in a manner that accommodates moderate growth and modular system expansion for trunks, lines and ring down circuits.

9.   INSTALLATION OF SYSTEM

The PSAPs require "Turnkey" installations. The "turnkey" installation shall include all equipment, labor, materials and services for a complete and operational system.

9.1.   INSTALLATION PLAN

    9.1.1.   Scope of Work/Detail Project Plan:

        9.1.1.1.   Interfaces to existing PSAP Systems;

        9.1.1.2.   Unless otherwise stated, the Contractor is responsible for installing all equipment and cable required to support the proposed E9-1-1 System or Equipment. Cabling shall be installed to the PSAP's specifications as it relates to labeling and securing the cables;

        9.1.1.3.   Unless otherwise stated, the Contractor is responsible for removing and surrendering existing telephony equipment and cable to the PSAP;

        9.1.1.4.   The Contractor shall remove all debris that has been created as a result of the installation; and

        9.1.1.5.   Identify total installation hours to complete the project.

    9.1.2.   Key Personnel.

        9.1.2.1.   Key Personnel of the PSAP and the Contractor shall be identified; and

        9.1.2.2.   Key Personnel may be subject to background checks.

    9.1.3.   Responsibilities.

        9.1.3.1.   The Contractor shall specify, in detail, any responsibilities of the PSAP regarding the installation.

    9.1.4.   Time Line:

        9.1.4.1.   <u>Project meetings.</u>   Meetings will include: Kick Off Meeting; Set Meetings; Go/No Go Meeting; and Post Installation Conference.

        9.1.4.2.   <u>Equipment delivery.</u>

        9.1.4.3.   <u>Technicians Onsite.</u> Provide total hours per technician onsite.

        9.1.4.4.   Training.

        9.1.4.5.   Cut-Over Date.

    9.1.5.   <u>Installation Cost.</u> Turnkey installation quotes shall be itemized as follows;

        9.1.5.1.   Installation labor shall be billed at an hourly rate.

        9.1.5.2.   Material shall be billed at the proposed discount off MSRP.

    9.1.6.   <u>Support.</u>

        9.1.6.1.   Contractor shall provide on-site support during the installation;

        9.1.6.2.   A weekly status report shall be provided to the 9-1-1 System Administrator

until final acceptance certificate is signed by the PSAP.

9.1.6.3. Contractor shall provide on-site support during testing phases of implementation;

9.1.6.4. Contractor shall provide, at a minimum, 5 business days, of on-site support starting the day after cut-over date, unless otherwise approved by the PSAP. Additional days or weeks may be required depending on the complexity of the project; and

9.1.6.5. Regular On-site hours are 8:00 am till 5:00 pm Eastern Time.

9.1.6.6. Technician shall be on-site within one (1) hour of a priority system issue arising after 5:00 pm through 8:00 am when Technicians are not schedule to be on-site.

9.1.6.7. Contractor shall provide offsite support, regarding installations, until final acceptance certificate is signed by the PSAP.

9.1.7. Final Acceptance.

9.1.7.1. Signed Certificate of Acceptance includes: Date of Final Acceptance; Warranty begin date; Authorized PSAP Signature; and Counter Signature, Contractor.

10. TRAINING

10.1. TRANSFER OF KNOWLEDGE

This training shall be offered by the Contractor, as necessary, at no additional cost to the PSAP. This is the required method of training for all new system purchases including, upgrades.

10.1.1. Training shall be held onsite, unless otherwise approved by the PSAP.

10.1.2. Training should be conducted as close to the Cut Over Date as practical.

10.1.3. Training shall be conducted by qualified instructors.

10.1.4. Training times shall be approved by the authorized PSAP.

10.1.5. This training shall be held for the following personnel:

- PSAP Administrators;
- PSAP Users; and
- PSAP Trainers.

10.1.6. Topics to be covered shall include, at a minimum:

10.1.6.1. All aspects of the E9-1-1 system, including but not limited to:

- System Functionality;
- MIS Reporting; and
- Configuration.

10.1.7. Training participants shall receive, and be able to retain individual copies of applicable training materials at the time the course is conducted.

10.1.8. Transfer of Knowledge training shall be completed prior to final acceptance is signed.

10.1.9. Additional Transfer of Knowledge training shall be available free of charge after final acceptance via Computer Based Training courses.

10.2. COMPUTER BASED TRAINING

This training shall be offered by the Contractor, as necessary, at no additional cost to the PSAP. This is the preferred method of training for continuing education and refresher training.

10.2.1. This training shall be held for the following personnel:

- PSAP Administrators;
- PSAP Users; and
- PSAP Trainers.

10.2.2. Topics to be covered shall include, at a minimum:

10.2.2.1. All aspects of the E9-1-1 system, including but not limited to:

10.2.2.2. System Functionality;

10.2.2.3. MIS Reporting; and

10.2.2.4. Configuration.

10.3. *MAINTENANCE TRAINING*

This training shall be offered by the Contractor, as necessary, at no additional cost.

10.3.1. This training shall include the training of PSAP Maintenance Technicians

10.3.2. Training outside the PSAP area will only be considered for the maintenance training.

10.3.3. Travel shall be paid by PSAP.

10.3.4. Topics to be covered shall include, at a minimum:

10.3.4.1. All aspects of the E9-1-1 system, including but not limited to:

10.3.4.2. System Functionality;

10.3.4.3. MIS Reporting; and

10.3.4.4. Configuration.

11. MANUALS

All manuals shall be provided to the PSAP at no additional charge at time of equipment installation. PSAP shall have the final determination on method of delivery.

11.1. *MANUALS THAT SHALL BE PROVIDED INCLUDE:*

11.1.1. Operational and Administrative Requirements;

11.1.2. Configuration Requirements; and

11.1.3. Safety Requirements.