NENA Standard for 9-1-1 Call Processing

Abstract: This NENA Standard document is intended to provide a model standing operating procedure (SOP) for the handling of calls received by Public Safety Answering Points (PSAPs) and to ensure consistency in the processing of emergency and non-emergency calls across jurisdictional boundaries. The document provides guidance to implementing the standard's normative requirements as well as recommendations for those operational call handling areas that should be governed by local policy.

NENA Standard for 9-1-1 Call Processing
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National Emergency Number Association (NENA) PSAP Operations Committee, 9-1-1 Call Processing Working Group

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1 Executive Overview

This standard has been developed to facilitate the processing of 9-1-1 calls by Public Safety Answering Points (PSAPs) and to serve as a basis for the development of Standard Operating Procedures (SOPs). Use of this document standardizes the method of call handling across jurisdictional boundaries. This will provide consistency in the processing of emergency and non-emergency calls and improve service to the public.

Over the course of the past decade, NENA published a number of Operational Standards and Information Documents that discuss the handling and processing of 9-1-1 calls. These documents include:

- NENA 56-501, Silent or Hang-up Calls for Service Operational Information Document
- NENA 56-001, Guidelines for Minimum Response to Wireless 9-1-1 Calls
- NENA 56-005, 9-1-1 Call Answering Standard/Model Recommendation
- NENA 56-006, Emergency Call Processing Protocol Standard

These documents were developed to serve as model standard operating procedures for those Public Safety Answering Points (PSAPs) that receive 9-1-1 calls, and to provide operational guidance in handling and processing these calls.

The present document combines and updates the current NENA standards in these areas. In undertaking this effort, NENA engaged both NFPA and APCO to ensure the harmonization of our standards. Most notable of the changes to the prior documents is the update to the standard for answering 9-1-1 calls, providing that 90% of all 9-1-1 calls be answered within 15 seconds and 95% answered within 20 seconds. The remaining call taking standards (e.g., order of answering priority, answering statement protocols, information gathering, transfer, etc.) have been updated to reflect PSAP best practices.

Emergency Call Processing Protocols, adopted from the prior specification, have been modified to distinguish those that are required from those that are recommended.

Normative requirements (e.g., SHALL, MUST) and recommendations (e.g., SHOULD, MAY) in this standard are indicated by the appearance of the applicable term in uppercase letters. Identical terms in lowercase letters have no special significance beyond normal usage.

The standards defined within this document are intended as a minimum operational SOP. PSAPs SHOULD develop local policies as appropriate.

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NENA
STANDARD DOCUMENT
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- Reflecting changes in the design of equipment, network interfaces, or services described herein.

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It is possible that certain advances in technology or changes in governmental regulations will precede these revisions. All NENA documents are subject to change as technology or other influencing factors change. Therefore, this NENA document should not be the only source of information used. NENA recommends that readers contact their 9-1-1 System Service Provider (9-1-1 SSP) representative to ensure compatibility with the 9-1-1 network, and their legal counsel, to ensure compliance with current regulations.

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This section defines keywords, as they should be interpreted in NENA documents. The form of emphasis (UPPER CASE) shall be consistent and exclusive throughout the document. Any of these words used in lower case and not emphasized do not have special significance beyond normal usage.

1. MUST, SHALL, REQUIRED: These terms mean that the definition is a normative (absolute) requirement of the specification.
2. MUST NOT: This phrase, or the phrase "SHALL NOT", means that the definition is an absolute prohibition of the specification.
3. SHOULD: This word, or the adjective "RECOMMENDED", means that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.
4. SHOULD NOT: This phrase, or the phrase "NOT RECOMMENDED" means that there may exist valid reasons in particular circumstances when the particular behavior is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behavior described with this label.
5. MAY: This word, or the adjective "OPTIONAL", means that an item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because the vendor feels that it enhances the product while another vendor may omit the same item. An implementation which does not include a particular option "must" be prepared to interoperate with another implementation which does include the option, though perhaps with reduced functionality. In the same vein an implementation which does include a particular option "must" be prepared to interoperate with another implementation which does not include the option (except, of course, for the feature the option provides.)

These definitions are based on IETF RFC 2119.

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Reason for Issue/Reissue

NENA reserves the right to modify this document. Upon revision, the reason(s) will be provided in the table below.

Document Number	Approval Date	Reason For Issue/Reissue
NENA 56-001	11/18/2004	Initial Document
NENA 56-005	06/10/2006	Initial Document
NENA 56-006	06/07/2008	Initial Document
NENA 56-501	08/23/2002	Initial Document
NENA-STA-020.1-2020	04/16/2020	Initial Document combining the 4 above.

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2 9-1-1 Call Processing

2.1 Documentation

All 9-1-1 calls for services and any attempt by an agency to provide service, regardless of the type of service, SHOULD be documented by the agency.

With the proliferation of computer aided dispatch (CAD) systems common in public safety agencies today, documentation of calls for service is essential for three reasons:

- First, by establishing a policy of documentation on all calls for service, agency administrators will be in a better position of defending not only requests for additional funding and/or personnel with true and accurate workload measures, but will also enhance their legal position in defending themselves and their agencies against service related litigation surrounding an agency's alleged failure to respond to 9-1-1 dialed calls.
- Second, by agency administrators providing clear guidance to the communications personnel on this key service related issue, their staff will benefit from the "cover" provided by management in issuing policy statements and/or procedural guidelines. Clearly, experience has shown that it is the **absence** of clear policy statements and/or procedural guidelines that enhance successful litigation against government agencies.
- Third, by establishing a policy of documentation on all calls for service, the agency can provide critical information on the sequence of factual events using audio and electronic elements such as files, call details, recordings, voice and radio transmissions associated with the incident.

2.1.1 Source Differentiation and Incident Typology

Agency administrators should have sufficient statistical data on hand to provide their executive level management teams with accurate constituent calls for service information, especially as it relates to 9-1-1 access services.

CAD systems should be programmed to accept "notational" source data for statistical purposes, and specific event codes SHOULD be developed to address all call types; examples of event codes can be found in NENA APCO 2.103.2-2019, Common Incident Type Codes [12].

Telecommunicators "set the tone" in their assignment of calls for service to responding resources (e.g. officers). The event code or literal "verbalized" title given a dispatched event also plays some role in setting the tone of responding units. In that respect, a more accurate descriptor of all call types should be developed. With that in mind, the following are offered as examples and are not meant to be all-inclusive:

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Event Type: Silent

Description: A caller has dialed 9-1-1. The incoming call is answered by the telecommunicator. No voice is heard on the other end of the line. The presence of ambient background "clutter" (e.g., music, crying, yelling) may or may not be detectable.

Event Type: Abandoned

Description: A caller has dialed 9-1-1. Prior to the telecommunicator answering the line, the caller disconnects.[1]

Lacking call types that properly discriminate one data element from another makes analysis of calls for service data, such as silent or abandoned/hang up, difficult.

2.2 Call taking standards

2.2.1 Standard for answering 9-1-1 Calls

Ninety percent (90%) of all 9-1-1 calls arriving at the Public Safety Answering Point (PSAP) SHALL be answered within (≤) fifteen (15) seconds. Ninety-five (95%) of all 9-1-1 calls SHOULD be answered within (≤) twenty (20) seconds. A call flow diagram is available in Exhibit A.

The application of the standard SHALL begin at the time of Call Arrival and extend to the time of Call Answer at the point when two-way communication can begin.

The interval between Call Arrival and Call Answer should be evaluated, at a minimum, for each preceding month using a full month of data. Determining if a PSAP has successfully met the call interval metric of 90% in 15 seconds (and 95% in 20 seconds), should be based upon the one-month evaluation. An authority having jurisdiction (AHJ) may measure this metric on a weekly or daily basis for a more detailed analysis.

2.2.2 Order of Answering Priority

It is the responsibility of on-duty telecommunicators to answer all incoming calls. All calls will be answered in order of priority:

1. Calls received on 9-1-1 or alternate emergency access numbers (AEAN)
2. Calls received on non-emergency lines
3. Calls received on administrative and/or internal phone lines

2.2.3 Standard Answering Protocol – 9-1-1 Lines

All 9-1-1 lines at a primary Public Safety Answering Point (PSAP) SHALL be answered with the phrase "9-1-1" ("Nine One One").

[1] This description would be visually or audibly reinforced if vendors of intelligent workstations and E9-1-1 controllers cause the telephone button icon on intelligent workstations to behave "differently" when a 9-1-1 hang-up "prior to answer" is detected.

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Local options depending upon preference MAY include:

- Agencies may elect to precede "9-1-1" with their agency name.
- Additional information or questions may be added, as in: "9-1-1, what is the emergency?", or "9-1-1 what is the address of the emergency?", 9-1-1 what is the location and type of emergency?" Other information, such as the operator identification number or that the line is recorded may also be added.

2.2.4 Standard Answering Protocol – Non-Emergency Lines

When answering non-emergency lines, the answering agency SHOULD be clearly identified to the caller. Multi-agency centers MAY elect to answer with a generic identifier instead of a specific agency name.

- Examples include: "County dispatch, Operator Name/Number__" or "Agency name, may I help you."

2.2.5 Minimum Standard for Information Gathering

The agency will obtain and document basic information for emergency calls. At a minimum, this information SHOULD include, when available: the location of the incident, callback number, nature of the emergency and caller identity.

2.2.5.1 Location/Address Verification

The telecommunicator SHALL verify all location information conveyed about the emergency in order to obtain the most accurate dispatchable location for emergency services response. Verification policies and associated procedures can vary based on dispatch center coverage topography and the unique characteristics of their call handling solutions.

A verified location means that the telecommunicator has taken active measures to confirm the call-provided location is accurate and the caller has actively acknowledged or corrected, in some fashion, the location information provided.

2.2.6 Transferring emergency calls

When calls need to be transferred to another PSAP, the telecommunicator SHALL advise the caller which PSAP they are being transferred to, in addition to advising the caller to stay on the line while the call is being transferred, such as "Please do not hang up; I am connecting you with (name of the agency)." The telecommunicator SHALL then initiate the transfer without delay. The telecommunicator SHALL stay on the line to announce the call to the transfer PSAP call taker/telecommunicator (a.k.a., "warm transfer" or "attended transfer"), and SHOULD relay the pertinent information, including, but not limited to:

- Location
- Callback number
- Nature of the call
- Known safety information

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A local or regional policy MAY exist between primary and secondary PSAPs, or agencies that participate in a regional system, that addresses unattended call transfers; however NENA recommends against unattended transfers.

2.2.7 Special Call Handling

Regardless of the type or source, all hang-up, abandoned, or disconnected 9-1-1 calls for service SHOULD be 1) documented; and 2) attempt made to contact the caller based upon available technology and local policy.

Wireless calls provide a specific challenge to the telecommunicator. Agencies are encouraged to build cooperative working relationships with cellular carriers to identify 24/7/365 contact points within cellular carrier organizations for customer information (e.g., security), and work with cellular carriers to address their concerns regarding confidentiality and liability. A sample contact list is available in Exhibit B.

The telecommunicator may need to contact a wireless carrier to obtain a valid callback number for calls that present to the PSAP with a 911-XXX-XXXX number, for calls in which some indicator has been given that assistance may be needed, (e.g. background noise, repetitive calls). A sample exigent circumstances form is available in Exhibit C.

2.2.7.1 Abandoned Calls

An abandoned call, sometimes referred to as a hang-up call or a short duration call, occurs:

- When the caller disconnects before the call has been received at the PSAP or can be answered by the telecommunicator, and,
- When the telecommunicator does not have enough information to determine if the call is an emergency.

If a valid callback number is available, the telecommunicator SHOULD attempt to re-establish contact once, at a minimum, based on local policy. A PSAP may have a local policy that distinguishes different procedures dependent on the source of the call.

2.2.7.2 Disconnected Calls

A disconnected call occurs:

- When the caller disconnects after the call has been received at the PSAP or answered by the telecommunicator, or
- When the telecommunicator does not have enough information to determine if the call is an emergency.

If a valid callback number is available, the telecommunicator SHOULD attempt to re-establish contact once, at a minimum, based on local policy. A PSAP may have a local policy that distinguishes different procedures dependent on the source of the call.

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2.2.7.3 Non-Responsive Calls

A non-responsive call is an open voice line call or a non-voice communication where the caller is not responding to the telecommunicator. All non-responsive calls MUST be interrogated with a TTY/TDD to determine if the caller is attempting to report an emergency using a special communications device for deaf, hard of hearing, or speech impaired individuals.

On a non-responsive call, if the telecommunicator hears background noises that indicate an emergency is occurring, such as domestic violence or difficulty breathing, the telecommunicator SHALL initiate the appropriate response. The telecommunicator SHOULD continue to monitor the open line until contact is established or the call is disconnected. If the call is disconnected, the telecommunicator SHOULD attempt to re-establish contact once, at a minimum, to determine if assistance is needed. If no direct contact (line busy, no answer, voice mail) is made after the initial attempt, any additional attempts to contact the caller SHOULD be made in accordance with local policy.

Note: There may be wireless devices that have a data subscription plan only. The telecommunicator will not be able to complete voice contact, but may receive a network recording that the device is unable to receive a voice call.

A non-responsive call in which there are no background noises SHALL be treated as a silent call.

If service is not needed, the telecommunicator SHOULD note with whom they spoke, the reason 9-1-1 was dialed (e.g., accidental, misdial), and any other explanatory or "intuitive" observations discerned from the telecommunicator's exchange with the caller. A service disposition code SHOULD be added to the call record for statistical analysis and documentation.

If in doubt as to the veracity of the caller's claim that 9-1-1 was inadvertently dialed, or that emergency services are not needed, a public safety response SHOULD be initiated, in accordance with local policy, to verify the caller is not in a threatening situation (e.g., welfare check).

2.2.8 Indicated Emergency

Any evidence of an emergency situation (e.g., background noises) requires that the telecommunicator initiate efforts to re-contact the caller to determine the nature of the incident and an accurate location for appropriate public safety response, according to SOPs established by the local agency. If attempts to contact the caller are unsuccessful, a public safety response SHALL be initiated based on the best location available and subject to local response policy. Extraordinary attempts to locate a Phase I or Phase II wireless 9-1-1 disconnect caller SHALL be made in the event that an emergency is clearly indicated.

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2.2.8.1 Silent Voice Calls

In compliance with Public Law 101-336, also known as the *Americans with Disabilities Act*, all silent voice calls SHALL be interrogated with a TTY/TDD to determine if the caller is attempting to report an emergency using a special communications device for deaf, hard of hearing, or speech impaired individuals.

2.2.8.2 9-1-1 Misdialed Calls

A call is classified as a 9-1-1 misdial when the caller stays on the line and admits to the misdial. The telecommunicator, at a minimum, SHOULD verify the location of the caller and attempt to verify that the call is actually a misdial. Any additional follow up SHOULD be in accordance with local policy.

2.2.8.3 Prank 9-1-1 calls

Suspected prank calls SHOULD be handled in accordance with local policy.

2.2.8.4 False 9-1-1 reports

Suspected false 9-1-1 calls SHOULD be handled in accordance with local policy.

2.2.8.5 Misrouted 9-1-1 calls

. Calls may be received at a PSAP that are intended for another PSAP. These calls SHOULD be transferred to the PSAP having jurisdiction for the location of the emergency, if possible and appropriate, after advising the caller of the transfer. Direct transfer capability or other enhanced transfer/relay methods to other PSAPs SHOULD be available to the telecommunicator. Telephone numbers of neighboring PSAPs bordering the PSAP jurisdiction SHOULD be made available on a frequently called number list or by single button transfer for ease of operation. Out-of-area PSAP contact information may be found in the NENA PSAP Registry or via the NLETS system. Details of the misroute SHOULD be sent to the GIS data providers of each involved jurisdiction, so they can review tier boundaries and check for technical errors.

2.2.8.6 Alternate Routed 9-1-1 calls

Alternate routed calls are activated automatically or sometimes manually when 9-1-1 calls cannot be delivered by the 9-1-1 network to the appropriate primary PSAP. Calls of this type are those routed to another PSAP based upon the Policy Routing Rules of the original receiving PSAP, the existing alternate routes established by legacy PSAPs, or those which are default routed. These calls SHOULD be transferred to the PSAP having jurisdiction for the location of the emergency, if possible and appropriate, after advising the caller of the transfer. If the PSAP having jurisdiction is unable to receive the call, local policy SHOULD dictate how to process the call.

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2.2.8.7 Foreign Language 9-1-1 calls

Foreign language translation capabilities SHOULD be available to the telecommunicator to assist in processing foreign language calls received over voice, text, or video.

2.2.8.8 Redundant Calls

Redundant calls occur when several calls have been received on the same incident. Each call SHALL be evaluated as a unique call to ensure that all pertinent and relevant information is obtained.

2.2.8.9 Repetitive Harassing 9-1-1 Callers.

Repetitive 9-1-1 callers create a type of denial of service (DoS) where their calls intentionally tie up a Telecommunicator as well as potentially block out legitimate 9-1-1 calls. In legacy 9-1-1 networks, E9-1-1 call locations have been used by PSAPs to assist law enforcement in investigating 9-1-1 abuse calls. In NG9-1-1 Core Services, new call blocking techniques can be utilized in accordance with local policy[2].

2.2.9 Incomplete or no data

2.2.9.1 Location Information Failure

In the event of a failure to provide a caller location, an attempt to determine the location (ALI or PIDF-LO) from which the call originated SHOULD be made through reverse look-up, where permitted, or by contacting the telecommunications service provider.

2.2.9.1.1 Local Number Portability

PSAPs might have difficulty determining the provider for a caller. The FCC's "local number portability" system allows consumers and businesses to keep their phone number when switching providers, which supports consumer choice and competition in the communications market. The transfer or "porting" of numbers between carriers is done by a neutral third party called the Local Number Portability Administrator (LNPA).

2.2.9.2 Caller Contact Information Failure

In the event a 9-1-1 call is received without valid caller contact information (e.g., ANI, SIP URI, Caller Line ID) displayed, the telecommunicator SHALL attempt to obtain the basic information from the caller.

At a minimum, this information SHOULD include, when available: the location of the incident, caller identity, and call back number and nature of the emergency.

[2] NENA-INF-023.1-2017 NENA Call Blocking Information Document

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2.2.9.3 Incorrect or missing database information

If the information displayed for a wireline or static VoIP call is not accurate, based on information provided by the caller, the telecommunicator SHALL complete and forward the appropriate report to be corrected.

2.2.10 Trouble reports

2.2.10.1 Equipment or network problems

All 9-1-1 call processing problems SHOULD be reported immediately according to local policy. A trouble report SHALL be submitted to the 9-1-1 System Service Provider, or appropriate supplier.

3 Emergency Call Processing Protocols

All Authorities Having Jurisdiction (AHJ) over agencies designated as a Public Safety Answering Point (PSAP) or operating as an Emergency Communication Center (ECC) for any or all of the core public safety services – law enforcement, fire, & emergency medical services (EMS) SHALL, at a minimum, establish and maintain the following operational standards governing the use of call taking protocols:

3.1 Implementation

- Each AHJ SHALL adopt or develop call taking protocols for all types of public safety service provided (e.g., Law Enforcement, Fire, EMS, Port Authority);
- Each AHJ SHALL inform affected external agencies, including but not limited to local Public Safety/Emergency Services Authorities (e.g., Law Enforcement, Fire, EMS, Port Authority) of the call taking protocols;
- Each AHJ SHALL adopt or develop approved training, certification, and recertification processes for the appropriate call taking protocol(s) with minimum requirements defined for each process;
- Each AHJ SHOULD establish a process that requires telecommunicators to maintain their proficiency and/or certifications and properly use the correct type of call taking protocols (e.g., Law Enforcement, Fire, EMS, Port Authority) for every emergency call from the public;
- Call taking protocols SHOULD be approved by the emergency call center's governing bodies, as applicable;
- Call taking protocols SHOULD be supported through evidence-based research and outcome studies where available, and, where practicable, be externally validated by an outside standard setting organization;

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- The recertification process SHOULD include minimum continuing education requirements and performance appraisal with a formal assessment of knowledge and skills after a pre-defined period of time (e.g., every 2 years);
- 9-1-1 and emergency communication centers SHALL have written policies and procedures governing proper use of, and compliance with, call taking protocols;
- Adopted call taking protocols (e.g., Law Enforcement, Fire, EMS, Port Authority) SHOULD be used for every call for service;
- Call taking protocols SHALL contain questions to facilitate correct call categorization and prioritization;
- Call taking protocols SHALL provide a specific, reproducible set of agency-approved codes for classifying calls and assigning a response, with tiered response levels and response types associated with each code;
- Call taking protocols SHOULD contain instructions that are designed to provide specific, safe, and appropriate actions for the layperson caller in order to promote the safety, welfare, and successful outcome of the call for service;
- Each agency SHOULD establish contingency plans for large-scale incidents and disasters, which may include temporary suspension of established call taking protocols.

3.2 Ongoing Maintenance / Review

- Each agency SHOULD establish a continuous quality improvement process for evaluating protocol compliance, including each area of the protocol used (e.g., address verification, chief complaint or incident type identification, caller interrogation questions, caller instructions, call classification and coding, and overall case compliance);
- Each agency SHOULD measure protocol compliance by auditing a random sampling of cases from each telecommunicator, sufficient in size to represent or closely approximate a representative sample of all cases handled by the center (e.g., Law Enforcement, Fire, EMS, Port Authority);
- Each agency SHOULD establish a process of reporting compliance scores for individual call takers and dispatchers, and for the center as a whole;
- Each agency SHOULD establish a process of regularly reviewing calls for compliance to protocol, and providing feedback on an equally regular basis, to individual telecommunicators;
- Each agency SHOULD establish a continuing education program based on results of case audits, center performance reports, and any other topics relevant to the ongoing professional development of the telecommunicator staff.

For additional information on developing a quality assurance/quality improvement program, PSAPs should review the APCO/NENA ANS 1.107.1.2015 [11], Standard for the

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Establishment of a Quality Assurance and Quality Improvement Program for Public Safety Answering Points.

4 NENA Registry System (NRS) Considerations

Not Applicable

5 Documentation Required for the Development of a NENA XML Schema

Not Applicable

6 Impacts, Considerations, Abbreviations, Terms, and Definitions

6.1 Operations Impacts Summary

The Operations Impacts of using a standardized, structured approach to call processing in 9-1-1 and emergency communication centers includes an evaluation of existing job position descriptions, training requirements and performance evaluation instruments. In addition, it provides the ability for existing systems and processes to capture individual operator-level compliance with established call taking and response protocols, and resolves other equally important operational issues.

Agencies must develop and employ a pre-determined plan for assigning specific responder types, resources, and response modes (hot or cold), based on the prioritization levels determined by the PSAP's call taking protocols. Development of such a plan will involve input, oversight, and approval from all department heads of affected public safety agencies. Agencies will need to evaluate the impact of any change in plans on costs, response times, status of available resources, and service-levels provided.

6.2 Technical Impacts Summary

The Technical Impacts of using a standardized, structured approach to call taking in 9-1-1 and emergency communication centers may vary. For example, if an emergency communication center chooses to utilize a hard copy version of a protocol system, the technical implications are minimal. If, however, an emergency communication center chooses to implement software versions of a protocol system, then pre-existing computer and network systems may be affected.

Agencies choosing to implement software versions of a protocol system must ensure that existing systems are assessed for compatibility, so that any additional interfaces or network modifications are considered prior to software integration.

Management Information Systems (MIS) vary in how statistics are defined, captured, and reported. Agencies should review existing MIS systems and applications to determine the impact of implementing this call answering standard and the call processing events

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described in this standard and NENA-STA-019.1.2018 [13], NG9-1-1 Call Processing Metrics Standard.

6.3 Security Impacts Summary

The processing of 9-1-1 calls in a Next Generation environment introduces many new cybersecurity mechanisms that will impact network and PSAP operations. The most significant changes to current practice are:

- All transactions must be protected with authentication, authorization, integrity protection, and privacy mechanisms specified in NENA STA-010 and NENA STA-75-001;
- Common authentication (single sign-on) and common rights management/authorization functions are used for ALL elements in the network;

Of necessity, PSAPs will be connected, indirectly through the ESInet, to the global Internet in order to accept calls. This means that PSAPs may experience deliberate Denial of Service (DoS) attacks on their systems. NG9-1-1 systems must manage and protect against a multitude of vulnerabilities. This will require constant vigilance to create a secure and reliable operating environment. NG9-1-1 systems must have robust detection and mitigation mechanisms to deal with such attacks.

6.4 Recommendation for Additional Development Work

The call answering and call processing metrics defined in this standard are based upon those contained in earlier NENA and NFPA documents. This working group could find no evidence that there was any scientific basis for the selection of these metrics by either NENA or NFPA. It is recommended, therefore, that the public safety community be engaged to design and implement a study of call answering and call processing metrics to support or determine values that are more appropriate.

6.5 Anticipated Timeline

Many agencies may have already implemented the provisions contained in earlier versions of this standard. In the event there are provisions that have not yet been implemented, this standard should be adopted and implemented as soon as practicable.

6.6 Cost Factors

There are costs associated with the implementation of a quality assurance (QA) protocol system. Typical costs associated with a QA protocol system implementation may include, but are not limited to, the following:

- Purchase of a commercial protocol system;
- Development of an agency-specific protocol system;
- Initial Trainer and telecommunicator training on the use of the protocol system;

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- QA processes and the personnel required to perform this function;
- On-going telecommunicator training;
- Recertification of telecommunicators;
- Integration and interfacing with current computer and network systems (if applicable);
- Initial and on-going consultation with responder agencies;
- Public Education;
- Recurring costs (software licensing, maintenance agreements, hardware/software media updates).

Costs are associated with the implementation or upgrading of management information systems (MIS) to properly measure call handling performance.

6.7 Cost Recovery Considerations

Not Applicable.

6.8 Additional Impacts (non-cost related)

The information or requirements contained in this NENA document may impact the legal statutes for states that have incorporated NENA standards with key performance indicators (KPIs) into their 9-1-1 legislation, based on the analysis of the authoring group.

6.9 Abbreviations, Terms, and Definitions

See NENA Master Glossary of 9-1-1 Terminology, NENA-ADM-000 [1], for a complete listing of terms used in NENA documents. All abbreviations used in this document are listed below, along with any new or updated terms and definitions.

Term or Abbreviation (Expansion)	Definition / Description
Abandoned Call	A call placed to 9-1-1 in which the caller disconnects before the call can be answered by the Public Safety Answering Point (PSAP) telecommunicator.
ACD (Automatic Call Distributor)	Equipment that automatically distributes incoming calls to available PSAP attendants in the order the calls are received, or queues calls until an attendant becomes available.

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AEAN (Alternate Emergency Access Number)	A 10-digit unlisted number, answered on a 24/7 basis, used to receive VoIP calls until these calls can be delivered to the selective router serving the PSAP. After E9-1-1implementation, these lines should only be used for specific routing circumstances. It can also be utilized to receive misrouted calls from other PSAPs not within the selective routing service area, operator-assisted emergency calls, default-routed wireless calls, calls routed to the PSAP via private call centers, and calls relayed from telecommunications relay services. Caller identification should be included as an option.
ALI (Automatic Location Identification)	The automatic display at the PSAP of the caller's telephone number, the address/location of the telephone, and supplementary emergency services information of the location from which a call originates.
Auto Attendant Greeting	Pre-recorded global message played upon initial call arrival at the PSAP, e.g., "You have reached 9-1-1, please stay on the line".
Auto Greeting	Pre-recorded localized message played upon initial connection to the individual telecommunicator; this is a convenience feature to standardize call answering.
Call Answer	The condition when a call is delivered to and acknowledged by a telecommunicator (or an auto greeting) and two-way communication can begin.
Call Answered Delay	The elapsed time between call arrival and call answer.
Call Arrival	The condition when a call is presented to the PSAP CPE, which may include acknowledgement by an auto attendant.
Disconnected Call	A call placed to 9-1-1 in which the call is prematurely terminated after the call is received at the PSAP (for example, an ACD queue) or after being answered by the Public Safety Answering Point (PSAP) telecommunicator. Possible reasons for these calls to disconnect include: (1) Caller establishes contact but caller's situation safety demands disconnecting (e.g., kidnapping); (2) caller encounters a signal problem (e.g., mobile network coverage is lost); (3) caller encounters problems with mobile device (e.g., low battery on phone).
ECRF (Emergency Call Routing Function)	A functional element in an ESInet which is a LoST protocol server in which location information (either civic address or geo-coordinates) and a Service URN serve as input to a mapping function that returns a URI used to route an emergency call toward the appropriate PSAP for the caller's location or towards a responder agency.

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ESRP (Emergency Service Routing Proxy)	An i3 functional element which is a SIP proxy server that selects the next hop routing within the ESInet based on location and policy. There is an ESRP on the edge of the ESInet. There is usually an ESRP at the entrance to a NG9-1-1 PSAP. There may be one or more intermediate ESRPs between them.
Non-responsive Call	Someone has dialed 9-1-1 and the call has been successfully answered by the Public Safety Answering Point (PSAP) telecommunicator, the caller did not speak, there is audio on the line such as music, yelling and/or ambient background noises can be heard (on a voice call); however, a caller is not responding to the PSAP telecommunicator. On non-voice communications, the caller does not respond to prompting by the PSAP telecommunicator.
PIDF-LO (Presence Information Data Format – Location Object)	Provides a flexible and versatile means to represent location information in a SIP header using an XML schema.
Silent Call	A call placed to 9-1-1 that has successfully passed through the 9-1-1 network and has been answered by a 9-1-1 telecommunicator. Aside from the 9-1-1 telecommunicator, no voice communication is heard from the caller's end of the emergency call. The presence of ambient (background) clutter, (e.g., music, crying, yelling) is not detectable. The telecommunicator is unable to discern that there is someone at the other end of the call.

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7 Recommended Reading and References

[1] National Emergency Number Association. *Master Glossary of 9-1-1 Terminology*. NENA-ADM-000.23-2020, approved January 20, 2020.

[2] ASTM International. *Standard Practice for Emergency Medical Dispatch*. ASTM F1258-95, Re-approved 2014.

[3] ASTM International. *Standard Practice for Emergency Medical Dispatch Management*. ASTM F1560-00, Re-Approved 2014.

[4] National Fire Protection Association (NFPA) 1201: *Standards for Providing Emergency Services to the Public*: with specific emphasis on Section 7.6 Emergency Service Protocols http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=1201&cookie%5Ftest=1

[5] 9-1-1 Magazine, April 2007; Emergency Medical Dispatch. The Protocol Evolution. By Brett Patterson, Academics and Standards Associate, National Academies of Emergency Dispatch

[6] 9-1-1 Magazine, April 2007; Protocol Systems. Call Handling Protocols, Where Do We Go From Here? By Jerry Turk, Director of Technical Development, PowerPhone.

[7] National Emergency Number Association. *Silent or Hang-Up 9-1-1 Calls for Service*. NENA 56-501, approved August 23, 2002.

[8] National Emergency Number Association. *Guidelines for Minimum Response to Wireless 9-1-1 Calls*. NENA 56-001 approved November 18, 2004.

[9] National Emergency Number Association. *Call Answering Standard/Model Recommendation*. NENA 56-005 approved June 10, 2006.

[10] National Emergency Number Association. *Emergency Call Processing Protocol Standard*. NENA 56-006 approved June 7, 2008.

[11] APCO International. *Standard for the Establishment of a Quality Assurance and Quality Improvement Program for Public Safety Answering Points*. APCO/NENA ANS 1.107.1-2015 approved April 2, 2015.

[12] APCO International. *Public Safety Communications Common Incident Types for Data Exchange*. APCO 2.103.2-2019 approved October 18, 2019.

[13] National Emergency Number Association. NG9-1-1 Call Processing Metrics Standard. NENA-STA-019.1-2018 approved July 2, 2018.

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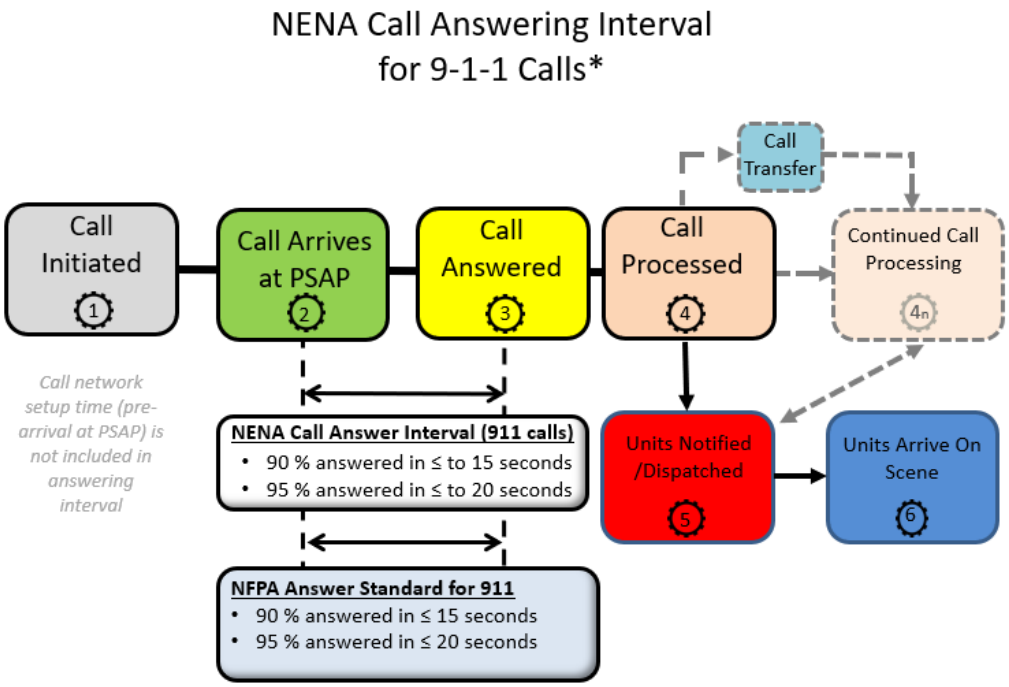
Exhibit A – Call Process Diagram



- * "Call" includes text messages and non-human initiated alerts as defined in NENA-STA-010.2 (formerly NENA 08-003).
- The NFPA standard is included here for context of other industry measurements. This NENA standard only addresses 9-1-1 call answering requirements to be measured between Step 2 and Step 3 in the above diagram.
- NENA Call Answer Interval is further clarified that calls should be answered in Less Than or Equal to (≤) either 15 seconds or 20 seconds as appropriate.
- The authority having jurisdiction defines what the jurisdiction considers to be an emergency call when applying the call answer standard.
- All operational steps in the lifecycle of a 9-1-1 call are provided for referential purposes only.

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Exhibit B – Wireless Service Providers Emergency Contact Information

PSAP service level agreements should include the contact information details, or can be found on the NENA website at https://www.nena.org/?page=CID2014. This information should be made available to telecommunicators to obtain immediate information associated with an emergency call.

Wireless service provider (WSP) contact information changes periodically, therefore PSAPs SHOULD review quarterly and update as necessary.

(Sample – insert 24x7 emergency contact information (voice and fax) for your jurisdiction here)

Carrier	24x7 Telephone number(s)
ALLTEL (ACIW)	
AT&T Mobility(ATTMO)	
Budget Mobile	
Consumer Cellular	
H2O Wireless/Locust Communication	
Jitterbug	
MetroPCS	
Peerless Network Operations Center (PLNW)	
Pocket Communications	
Simple Mobile	
Sprint/Nextel	
Telesource/Terracom	
T-Mobile/MetroPCS	
Tracfone	
US Cellular	
Verizon (VZW)	
Virgin Mobile	

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Exhibit C – Exigent Circumstances Form

To: From: (INSERT LETTERHEAD)

(include agency main voice and fax numbers)

This is an emergency request for information on the following wireless number:

(_____)_____-_____

This agency received a 9-1-1 emergency call for assistance from the above wireless telephone number.

Date of Call	**Time of Call 00:00- 24:00**	**Duration Min: Sec**	**Nature of Call**
		:	

Based on that telephone call, we believe that one or more people face immediate danger of death or serious injury. We request that you promptly provide, to the extent, available the following information necessary to initiate the appropriate response. (Please use above fax & telephone numbers.)

_____ Subscriber name, billing address, home & business phone numbers for the above number

_____ Cell site or location information for the 9-1-1 call from the above number

Requesting Agency Information

Title	**Employee**	**Signature**	**Date**

Requesting Agency Case Number: _____

Requesting Agency Dispatch Log Number: _____

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