

Section 1 Administration

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1.1 Scope.

- 1.1.1 These standards shall cover the installation, performance, operation, and maintenance of Public Safety Answering Points and the associated emergency communication systems.
- 1.1.2 These standards shall not be used as a design specification manual or an instruction manual.
- 1.1.3 Unless specified otherwise herein compliance with these standards is required by July 1, 2012.

1.2 Purpose.

The purpose of these standards shall be as follows:

- 1.2.1 To specify operations, facilities, and communications systems that receive emergency calls from the public.
- 1.2.2 To provide requirements for the retransmission of such emergency calls to the appropriate emergency response agencies.
- 1.2.3 To provide requirements for dispatching of appropriate emergency response personnel.
- 1.2.4 To establish the required levels of performance and quality of installations of emergency services communications systems.

1.3 Application.

These standards shall apply to emergency 911 systems that include, but are not limited to, dispatching systems, telephone systems, and public reporting systems that provide the following functions:

- 1.3.1 Communication between the public and emergency response agencies.
- 1.3.2 Communication within the emergency response agency under emergency and non-emergency conditions.
- 1.3.3 Communication among emergency response agencies.

1.4 Equivalency.

Nothing in these standards is intended to prevent the use of systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety over those prescribed by these standards.

- 1.4.1 Technical documentation shall be submitted to the local authority having jurisdiction to demonstrate equivalency.
- 1.4.2 The system, method, or device shall be approved for the intended purpose by the authority having jurisdiction.

Section 2 Definitions

2.1 General.

The definitions contained in this Section shall apply to the terms used in these standards. Where a term is not defined in this Section or another Section within these standards, it shall have the definition provided in the N.C. 911 Board Statutes. Where a term is also not defined by the N.C. 911 Board Statutes, it shall be defined using its' ordinarily accepted meaning within the context in which it is used. Merriam-Webster's Collegiate Dictionary, 11th edition, shall be the source for the ordinarily accepted meaning.

2.2 Official Definitions.

2.2.1 Public Safety Answering Point (PSAP). As defined in GS 62A-40(18): The Public Safety Agency that receives an incoming 911 call and dispatches appropriate Public Safety Agencies to respond to the call. See 47 CFR 20.18(b) for basic 911 services, defined as:

Basic 911 Service. CMRS providers subject to this section must transmit all wireless 911 calls without respect to their call validation process to a Public Safety Answering Point, or, where no Public Safety Answering Point has been designated, to a designated statewide default answering point or appropriate local emergency authority pursuant to § 64.3001 of this chapter, provided that "all wireless 911 calls" is defined as "any call initiated by a wireless user dialing 911 on a phone using a compliant radio frequency protocol of the serving carrier."

See GS 62A-40(9), Enhanced 911 Service, defined as:

Directing a 911 call to an appropriate Public Safety Answering Point by selective routing or other means based on the geographical location from which the call originated and providing information defining the approximate geographic location and the telephone number of a 911 caller, in accordance with the FCC Order.

2.3 General Definitions.

2.3.1 Backup Public Safety Answering Point. A structure used to house a part of the control equipment of an emergency reporting system or communications system; also, a normally unattended facility that is remote from the Public Safety Answering Point and is used to house equipment necessary for the functioning of an emergency communications system.

2.3.2 Circuit. The conductor or radio channel and associated equipment that are used to perform a specific function in connection with an emergency call system.

2.3.4 Communications System. A combination of links or networks that serves a general function such as a system made up of command, tactical, logistical, and administrative networks supporting the operations of an individual PSAP.

2.3.5 Comprehensive Emergency Management Plan (CEMP). A disaster recovery plan that conforms to guidelines established by the Public Safety Answering Point and is designed to address natural, technological, and man-made disasters.

- 1 2.3.6 Computer-Aided Dispatch (CAD). A combination of hardware and software that provides data
2 entry, makes resource recommendations, and notifies and tracks those resources before, during, and after
3 emergency calls, preserving records of those emergency calls and status changes for later analysis.
- 4 2.3.7 Computer Aided Dispatch (CAD) Terminal. An electronic device that combines a keyboard and a
5 display screen to allow exchange of information between a Telecommunicator and one or more computers
6 in the system/network.
- 7 2.3.8 Control Console. A wall-mounted or desktop panel or cabinet containing controls to operate
8 communications equipment.
- 9 2.3.9 Coordinated Universal Time. A coordinated time scale, maintained by the Bureau International
10 des Poids et Measures (BIPM), which forms the basis of a coordinated dissemination of standard
11 frequencies and time signals.
- 12 2.3.10 Dispatch Circuit. A circuit over which a signal is transmitted from the Public Safety Answering
13 Point to an emergency response facility (ERF) or emergency response unit (ERU) to notify the emergency
14 response unit to respond to an emergency.
- 15 2.3.11 Emergency Call Processing/Dispatching. A process by which an emergency call answered at the
16 Public Safety Answering Point is transmitted to emergency response facilities (ERFs) or to emergency
17 response units (ERU) in the field.
- 18 2.3.12 Emergency Response Unit (ERU). A first responder to include but not limited to a police vehicle,
19 a fire truck, and an ambulance.
- 20 2.3.13 Logging Voice Recorder. A device that records voice conversations and automatically logs the
21 time and date of such conversations; normally, a multichannel device that keeps a semi-permanent record
22 of operations.
- 23 2.3.14 Notification. The time at which an emergency call is received and acknowledged at a Public
24 Safety Answering Point.
- 25 2.3.15 Operations Room. The room in the Public Safety Answering Point where emergency calls are
26 received and processed and communications with emergency response personnel are conducted.
- 27 2.3.16 Public Safety Agency. An organization that provides law enforcement, emergency medical, fire,
28 rescue, communications, or related support services.
- 29 2.3.17 Security Vestibule. A compartment provided with two or more doors where the intended purpose
30 is to prevent continuous and unobstructed passage by allowing the release of only one door at a time.
- 31 2.3.18 Standard Operating Procedures (SOPs). Written organizational directives that establish or
32 prescribe specific operational or administrative methods that are to be followed routinely for the
33 performance of designated operations or actions.
- 34 2.3.19 Stored Emergency Power Supply System (SEPSS). A system consisting of a UPS, or a motor
35 generator, powered by a stored electrical energy source, together with a transfer switch designed to

1 monitor preferred and alternate load power source and provide desired switching of the load, and all
2 necessary control equipment to make the system functional.

3 2.3.20 TDD/TTY. A device that is used in conjunction with a telephone to communicate with persons
4 who are deaf, who are hard of hearing, or who have speech impairments, by typing and reading text.

5 2.3.21 Telecommunicator. A Telecommunicator shall mean any person engaged in or employed as a full
6 time or part time 911 communications center call taker (emergency communications specialist,
7 emergency dispatcher, etc.) and is engaged in the act of processing a 911 call for emergency assistance by
8 a Primary PUBLIC SAFETY ANSWERING POINT, including the use of 911 system equipment, call
9 classification, location of a caller, determination of the appropriate response level for emergency
10 responders, and dispatching 911 call information to the appropriate responder and 911 System.

11 2.3.22 Uninterruptible Power Supply (UPS). A system designed to provide power, without delay or
12 transients, during any period when the primary power source is incapable of performing.

13 2.3.23 Voice Communication Channel. A single path for communication by spoken word that is distinct
14 from other parallel paths.

15 **Section 3 Public Safety Answering Point (PSAP)**

16 **3.1 General.**

17 3.1.1 Any Primary Public Safety Answering Point, Backup Public Safety Answering Point, or
18 Secondary Public Safety Answering Point that receives funding from the NC 911 Board is required to
19 comply with all NC 911 Board Standards.

20 3.1.2 All equipment, software, and services used in the daily operation of the Public Safety Answering
21 Point shall be kept in working order at all times.

22 3.1.3 The Public Safety Answering Point shall be provided with an alternate means of communication
23 that is compatible with the alternate means of communication provided at the Emergency Response
24 Facilities (ERFs).

25 3.1.3.1 The alternate means shall be readily available to the Telecommunicators in the event of failure of
26 the primary communications system.

27 3.1.3.2 The Telecommunicators shall be trained and capable of using the alternate means in the event of
28 failure of the primary communications system.

29 3.1.4 Each Public Safety Answering Point shall maintain a Backup Public Safety Answering Point or
30 have an arrangement for backup provided by another Public Safety Answering Point. Agencies are
31 encouraged to pool resources and create regional backup centers.

32 3.1.4.1 The Backup Public Safety Answering Point shall be capable, when staffed, of performing the
33 emergency functions performed at the primary Public Safety Answering Point.

34 3.1.4.2 The Backup Public Safety Answering Point shall be separated geographically from the primary
35 Public Safety Answering Point at a distance that ensures the survivability of the alternate center.

- 1 3.1.4.3 Each Public Safety Answering Point shall develop a formal plan to maintain and operate the
2 Backup Public Safety Answering Point or if backup is provided by another Public Safety Answering
3 Point a formal plan that defines the duties and responsibilities of the alternate Public Safety Answering
4 Point.
- 5 3.1.4.3.1 The plan shall include the ability to reroute incoming emergency call traffic to the backup center
6 and to process and dispatch emergency calls at that backup center.
- 7 3.1.4.3.2 The plan shall be included in the Comprehensive Emergency Management Plan (CEMP).
- 8 3.1.5 The Public Safety Answering Point shall be capable of continuous operation long enough to
9 enable the transfer of operations to the Backup Public Safety Answering Point in the event of an
10 emergency in the Public Safety Answering Point or in the building that houses the Public Safety
11 Answering Point.
- 12 3.1.6 Systems that are essential to the operation of the Public Safety Answering Point shall be designed
13 to accommodate peak workloads.
- 14 3.1.7 Public Safety Answering Points shall be designed to accommodate the staffing level necessary to
15 operate the center as required by the Standards set herein.
- 16 3.1.8 The design of the Public Safety Answering Point shall be based on the number of personnel
17 needed to handle peak workloads as required by the Standards set herein.
- 18 3.1.9 Each Public Safety Answering Point shall have a written Comprehensive Emergency
19 Management Plan (CEMP).
- 20 3.1.9.1 Emergency Fire Plan. There shall be a local management approved, written, dated, and annually
21 tested emergency fire plan that is part of the CEMP.
- 22 3.1.9.2 Damage Control Plan. There shall be a local management approved, written, dated, and annually
23 tested damage control plan that is part of the CEMP.
- 24 3.1.9.3 Backup Plan. There shall be a local management approved, written, dated, and annually tested
25 backup Public Safety Answering Point plan that is part of the CEMP and approved by the NC 911 Board.
- 26 3.1.10 Penetrations into the Public Safety Answering Point shall be limited to those necessary for the
27 operation of the center.

28 **Section 4 Power**

- 29 4.5.1 At least two independent and reliable power sources shall be provided, one primary and one
30 secondary, each of which shall be of adequate capacity for operation of the Public Safety Answering
31 Point.
- 32 4.5.2. Power sources shall be monitored for integrity, with annunciation provided in the operations
33 room.
- 34 4.5.3 Primary Power Source. One of the following shall supply primary power:

- 1 4.5.3.1 A feed from a commercial utility distribution system
- 2 4.5.3.2 An engine-driven generator installation or equivalent designed for continuous operation, where a
3 person specifically trained in its operation is on duty at all times
- 4 4.5.3.3 An engine-driven generator installation or equivalent arranged for cogeneration with commercial
5 light and power, where a person specifically trained in its operation is on duty or available at all times.
- 6 4.5.4 Secondary Power Source.
- 7 4.5.4.1 The secondary power source shall consist of one or more standby engine-driven generators.
- 8 4.5.4.2 Upon failure of primary power, transfer to the standby source shall be automatic.
- 9 4.5.5 Stored Emergency Power Supply System (SEPSS) shall be provided for telecommunications
10 equipment, two-way radio systems, computer systems, and other electronic equipment determined to be
11 essential to the operation of the Public Safety Answering Point.
- 12 4.5.5.1 The SEPSS shall be of a class that is able to maintain essential operations long enough to
13 implement the formal Comprehensive Emergency Management Plan.
- 14 4.5.5.2 The instrumentation required to monitor power shall be remotely annunciated in the operations
15 room.
- 16 4.5.6 Power circuits shall include their associated motors, generators, rectifiers, transformers, fuses,
17 and controlling devices.
- 18 4.5.6.1 The power circuit disconnecting means shall be installed so that it is accessible only to authorized
19 personnel.
- 20 4.5.6.2 Surge Arresters otherwise known as Transient Voltage Surge Suppression (TVSS) shall be
21 provided for protection of telecommunications equipment, two-way radio systems, computers, and other
22 electronic equipment determined to be essential to the operation of the Public Safety Answering Point.
- 23 4.5.7 Isolated Grounding System. Telecommunications equipment, two-way radio systems, computers,
24 and other electronic equipment determined to be essential to the operation of the Public Safety Answering
25 Point shall be connected to an isolated grounding system.
- 26 4.5.8 Engine-driven generators shall be sized to supply power for the operation of all functions of the
27 Public Safety Answering Point.
- 28 4.5.8.1 When installed indoors, engine-driven generators shall be located in a ventilated and secured area
29 that is separated from the Public Safety Answering Point by fire barriers having a fire resistance rating of
30 2 hours or better.
- 31 4.5.8.2 When installed outdoors, engine-driven generators shall be located in a secure enclosure.
- 32 4.5.8.3 The area that houses an engine-driven generator shall not be used for storage other than spare parts
33 or equipment related to the generator system.

1 4.5.8.4 Fuel to operate the engine-driven generator for a minimum of 24 hours at full load shall be
2 available on site.

3 4.5.8.5 Equipment essential to the operation of the generator shall be supplied with standby power from
4 the generator.

5 4.5.8.6 Generators shall not use the public water supply for engine cooling.

6 4.5.9 Uninterruptible Power Supply (UPS) and Battery Systems. A UPS and battery system shall be
7 installed and be sufficient to prevent power surges from damaging equipment in the 911 Emergency
8 Center as well as provide power for all essential 911 Emergency Center operations until the backup power
9 source can be fully activated.

10 4.5.9.1 Each UPS shall be provided with a bypass switch that maintains the power connection during
11 switch over and that is capable of isolating all UPS components while allowing power to flow from the
12 source to the load.

13 4.5.9.2 The following UPS conditions shall be annunciated in the operations room:

14 (1) Source power failure, overvoltage, and under-voltage

15 (2) High and low battery voltage

16 (3) UPS in bypass mode.
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18 **Section 5 Construction**

19 **5.1 General**

20 As a condition for receipt of a grant from the North Carolina 9-1-1 Board for any type of new
21 construction or for a renovation of an existing structure and/or facility incorporated into the construction
22 agreement(s) shall be the following requirements.

23 5.1.1 The requirements in Section 4 Construction, shall apply only to new construction and
24 construction renovations funded by the North Carolina 911 Board. Existing Public Safety Answering
25 Point facilities are encouraged to meet these standards, but are not required to meet these standards.

26 **5.2 HVAC.**

27 5.2.1. HVAC systems shall be designed to maintain temperature and relative humidity within limits
28 specified by the manufacturer of the equipment critical to the operation of the Public Safety Answering
29 Point.

30 5.2.2 HVAC systems shall be independent systems that serve only the Public Safety Answering Point.

31 5.2.3 HVAC system intakes for fresh air shall be arranged to minimize smoke intake from a fire inside
32 or outside the building and to resist intentional introduction of irritating, noxious, toxic, or poisonous
33 substances into the HVAC system.

1 5.2.4 HVAC emergency controls shall be provided in the operations room to permit closing of outside
2 air intakes.

3 5.2.5 Backup HVAC systems shall be provided for the operations room and other spaces housing
4 electronic equipment essential to the operation of the Public Safety Answering Point.

5 5.2.6 HVAC systems shall be designed so that the Public Safety Answering Point is capable of
6 uninterrupted operation with the largest single HVAC unit or component out of service.

7 **5.3 Fire Protection.**

8 5.3.1 The Public Safety Answering Point and spaces adjoining the Public Safety Answering Point shall
9 be provided with an automatic fire detection, alarm, and notification system.

10 5.3.2 The alarm system shall be monitored in the operations room.

11 5.3.3 Operation of notification appliances shall not interfere with communications operations.

12 5.3.4 Electronic computer and data processing equipment shall be protected in accordance with the
13 manufacturer's recommended specifications, and common business practices.

14 **5.4 Security.**

15 5.4.1 The Public Safety Answering Point and other buildings that house essential operating equipment
16 shall be protected against damage from vandalism, terrorism, and civil disturbances.

17 5.4.2 Entry to the Public Safety Answering Point shall be restricted to authorized persons.

18 5.4.3 Entryways to the Public Safety Answering Point that lead directly from the exterior shall be
19 protected by a security vestibule.

20 5.4.4 Door openings shall be protected by listed, self-closing fire doors that have a fire resistance rating
21 of not less than 1 hour.

22 5.4.5 Where a Public Safety Answering Point has windows, the following requirements shall apply:

23 5.4.5.1 Windows shall be a minimum of 4 ft (1.2 m) above floor level.

24 5.4.5.2 Windows shall be rated for bullet resistance to Level 4 as defined in UL 752, Standard for Safety
25 Bullet-Resistant Equipment.

26 5.4.5.3 Windows that are not bullet resistant shall be permitted provided that they face an area that
27 cannot be accessed or viewed by the general public.

28 5.4.5.4 Windows that are required to be bullet resistant shall be configured so that they cannot be opened.

29 5.4.5.5 Walls with bullet-resistant windows shall be required to provide the same level of protection as
30 the window.

1 5.4.6 Means shall be provided to prevent unauthorized vehicles from approaching the building housing
2 the Public Safety Answering Point to a distance of no less than 82 ft (25 m).

3 5.4.7 As an alternative to prevent unauthorized vehicles, unauthorized vehicles shall be permitted to
4 approach closer than 82 ft (25 m) if the building has been designed to be blast resistant.

5 **5.6 Lighting.**

6 5.6.1 Artificial lighting shall be provided to enable personnel to perform their assigned duties.

7 5.6.2 Emergency Lighting. The Public Safety Answering Point shall be equipped with emergency
8 lighting that shall illuminate automatically immediately upon failure of normal lighting power.

9 5.6.3 Illumination levels shall be sufficient to allow all essential operations.

10 **5.7 Circuit Construction and Arrangement.**

11 5.7.1 As built drawings shall be provided.

12 5.7.2 Circuits shall not pass over, pass under, pass through, or be attached to buildings or property that
13 is not owned by, or under the control of, the PSAP or the entity that is responsible for maintaining the
14 system.

15 5.7.3 Emergency call instruments installed in buildings not under control of the PSAP shall be on
16 separate dedicated circuits.

17 5.7.4 The combination of public emergency services communication and signaling (C&S) circuits in
18 the same cable with other circuits shall comply with the following:

19 5.7.4.1 Other municipally controlled C&S circuits shall be permitted.

20 5.7.4.2 Circuits of private signaling organizations shall be permitted only by permission of the PSAP.

21 **5.8 Underground Cables.**

22 5.8.1 Underground communication and signal cables shall be brought above ground only at points
23 where the PSAP has determined there is no potential for mechanical damage or damage from fires in
24 adjacent buildings.

25 5.8.2 All cables that are installed in manholes, vaults, and other enclosures intended for personnel entry
26 shall be racked and marked for identification.

27 5.8.3 Cable splices, taps, and terminal connections shall be located only where accessible for
28 maintenance and inspection and where no potential for damage to the cable due to falling structures or
29 building operations exists.

30 5.8.4 Cable splices, taps, and terminal connections shall be made to provide and maintain levels of
31 conductivity, insulation, and protection that are at least equivalent to those afforded by the cables that are
32 joined.

1 **5.9 Aerial Cables and Wires.**

2 5.9.1 Protection shall be provided where cables and wires pass through trees, under bridges, and over
3 railroads, and at other locations where damage or deterioration is possible.

4 **5.10 Wiring Inside Buildings.**

5 5.10.1 Conductors at the Public Safety Answering Point shall extend to the operations room in conduits,
6 ducts, shafts, raceways, or overhead racks and troughs of a construction type that protects against fire and
7 mechanical damage.

8 5.10.2 Cables or wiring exposed to fire hazards shall be protected from the hazard.

9 5.10.3 At the Public Safety Answering Point, cable terminals and cross connecting facilities shall be
10 located either in or adjacent to the operations room.

11 5.10.4 All wired dispatch circuit devices and instruments whose failure can adversely affect the
12 operation of the system shall be mounted in accordance with the following:

13 (1) On noncombustible bases, pedestals, switchboards, panels, or cabinets

14 (2) With mounting designed and constructed so that all components are readily accessible

15 **5.11 Circuit Protection.**

16 5.11.1 All surge arresters shall be connected to earth ground.

17 5.11.2 All protective devices shall be accessible for maintenance and inspection.

18 5.11.3 Surge arresters shall be designed and listed for the specific application.

19 5.11.4 Each conductor that enters a Public Safety Answering Point from a partially or entirely aerial line
20 shall be protected by a surge arrester.

21 **5.12 Grounding.**

22 5.12.1 Sensitive electronic equipment determined by the PSAP to be essential to the operation of
23 telecommunications and dispatching systems shall be grounded.

24 5.12.2 Listed isolated ground receptacles shall be provided for all cord-and-plug-connected essential and
25 sensitive electronic equipment.

26 5.12.3 Unused wire or cable pairs shall be grounded.

27 5.12.4 Ground connection for surge suppressors shall be made to the isolated grounding system.

28 **5.13 Access.**

29 5.13.1 All equipment shall be accessible for the purpose of maintenance.

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Section 6 Operations

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6.1 Management.

6.1.1 All systems shall be under the control of a responsible employee or employees of the PSAP served by the systems.

6.1.2 The Public Safety Answering Point Emergency services dispatching entities shall have trained and qualified technical assistance available for trouble analysis and repair by in-house personnel or by authorized outside contract maintenance services.

6.1.3 Where maintenance is provided by an organization or person other than an employee of the PSAP complete written records of all installation, maintenance, test, and extension of the system shall be forwarded to the responsible employee of the PSAP.

6.1.3.1 Maintenance performed by an organization or person other than an employee of the Public Safety Answering Point shall be by written contract that contains a guarantee of performance.

6.1.5 The Public Safety Answering Point shall have a written local management approved access control plan.

6.1.4.1 Maintenance personnel other than an employee of the Public Safety Answering Point shall be approved by the Public Safety Answering Point pursuant to the approved access control plan as offering no threat to the security of the facility or the employees and equipment within it.

6.1.5 All equipment shall be accessible to the PSAP for the purpose of maintenance.

6.1.6 At least one supervisor or lead with Telecommunicator certification shall be available to respond immediately at all times 24 hours per day, 7 days per week, 52 weeks per year.

6.2 Telecommunicator and Supervisor Qualifications and Training.

6.2.1 Telecommunicators and Supervisors shall be certified in the knowledge, skills, and abilities related to their job function.

6.2.2 Telecommunicators and Supervisors shall have knowledge of the function of all communications equipment and systems in the Public Safety Answering Point.

6.2.3 Telecommunicators and Supervisors shall know the rules and regulations that relate to equipment use, including those of the Federal Communications Commission that pertain to emergency service radio use.

6.2.4 Telecommunicators and Supervisors shall be capable of operating and testing the communications equipment they are assigned to operate.

6.2.5 Telecommunicators and Supervisors shall receive training to maintain the skill level appropriate to their position.

1 6.2.6 Telecommunicators and Supervisors shall be trained in TDD/TTY procedures, with training
2 provided at a minimum of once per year as part of the Annual Training.

3 **6.3 Staffing.**

4 6.3.1 There shall be sufficient Telecommunicators available to affect the prompt receipt and processing
5 of emergency calls needed to meet the requirements as specified herein.

6 6.3.2 After January 1, 2013 a minimum of two (2) Telecommunicators must be available at all times 24
7 hours per day, 7 days per week, 52 weeks per year to immediately receive and process emergency calls.

8 6.3.3 Where communications systems, computer systems, staff, or facilities are used for both
9 emergency and non-emergency functions, the non-emergency use shall not degrade or delay emergency
10 use of those resources.

11 6.3.3.1 A Public Safety Answering Point shall handle emergency calls for service and dispatching in
12 preference to nonemergency activities.

13 6.3.4 The PSAP and emergency response agencies shall develop standard operating procedures that
14 identify when a dedicated Telecommunicator is required to be assigned to an emergency incident.

15 6.3.5 Telecommunicators shall not be assigned any duties prohibiting them from immediately receiving
16 and processing emergency calls for service in accordance with the time frame specified in the Operating
17 Procedures.

18 **6.4 Operating Procedures.**

19 6.4.1 Ninety (90) percent of emergency calls received on emergency lines shall be answered within ten
20 (10) seconds, and ninety-five (95) percent of emergency calls received on emergency lines shall be
21 answered within twenty (20) seconds.

22 6.4.1.1 Compliance with 5.4.1 shall be evaluated monthly using data from the previous month.

23 6.4.2 The Public Safety Answering Point is required to provide pre-arrival medical protocols as set
24 forth by the North Carolina Office of Emergency Services, Health and Human Services in the initial call
25 reception or by the responsible EMS provider on behalf of the primary answering point.

26 6.4.3 For law enforcement purposes, the Public Safety Answering Point shall determine time frames
27 allowed for completion of dispatch.

28 6.4.4 When emergency calls need to be transferred to another PSAP, the Telecommunicator will
29 transfer the call without delay. The Telecommunicator will advise the caller: "Please do not hang up; I am
30 connecting you with (name of the agency)." The Telecommunicator should stay on the line until the
31 connection is complete and verified.

32 6.4.4.1 The Public Safety Answering Point shall transfer calls for services as follows:

33 (1) The call for service shall be transferred directly to the Telecommunicator.

1 (2) The answering transferring agency shall remain on the line until it is certain that the transfer is
2 affected.

3 (3) The transfer procedure shall be used on emergency 9-1-1 calls.

4 6.4.5 All calls for service, including requests for additional resources, shall be transmitted to the
5 identified emergency response units over the required dispatch systems.

6 6.4.6 An indication of the status of all emergency response units shall be available to appropriate
7 Telecommunicators at all times.

8 6.4.7 Records of the dispatch of emergency response units to call for services shall be maintained and
9 shall identify the following:

10 (1) Unit designation for each emergency response unit dispatched

11 (2) Time of dispatch acknowledgment by each emergency response unit responding

12 (3) Enroute time of each emergency response unit

13 (4) Time of arrival of each emergency response unit at the scene

14 (5) Time of patient contact, if applicable

15 (6) Time each emergency response unit is returned to service

16 6.4.8 All emergency response agencies shall use common terminology and integrated incident
17 communications.

18 6.4.9 When the device monitoring the system for integrity indicates that trouble has occurred, the
19 Telecommunicator shall act as follows:

20 (1) Take appropriate steps to repair the fault.

21 (2) Isolate the fault and notify the official responsible for maintenance if repair is not possible.

22 6.4.10 Standard operating procedures shall include but not be limited to the following:

23 (1) All standardized procedures that the Telecommunicator is expected to perform without direct
24 supervision

25 (2) Implementation plan that meets the requirements of a formal plan to maintain and operate the Backup
26 Public Safety Answering Point.

27 (3) Procedures related to the CEMP.

28 (4) Emergency response personnel emergencies.

29 (5) Activation of an emergency distress function.

30 (6) Assignment of incident radio communications plan.

1 (7) Time limit for acknowledgment by units that have been dispatched.

2 6.4.11 Every Public Safety Answering Point shall have a comprehensive regional emergency
3 communications plan as part of the CEMP.

4 6.4.11.1 The emergency communications plan shall provide for real-time communications between
5 organizations responding to the same emergency incident.

6 6.4.11.2 This emergency communications plan shall be exercised at least once a year.

7 6.4.12 In the event that an emergency response unit(s) has not acknowledged its dispatch/response
8 within the time limits established by the Public Safety Answering Point, the Telecommunicator shall
9 perform one or more of the following:

10 (1) Attempt to contact the emergency response unit (s) by radio.

11 (2) Re-dispatch the emergency response unit(s) using the primary dispatch system.

12 (3) Dispatch the emergency response unit(s) using the secondary dispatch system.

13 (4) Initiate two-way communication with the emergency response unit's supervisor.

14 6.4.13 The Public Safety Answering point shall develop and implement standard operating procedures
15 for responding to and processing TDD /TTY calls.

16 6.4.14 Calls received as an open-line or "silent call" shall be queried as a TDD/TTY call if no
17 acknowledgment is received by voice.

18 6.4.15. A Public Safety Answering Point must have a written procedure for handling 911 hang-up calls.

19 **6.5 Time.**

20 6.5.1 The clock for the main recordkeeping device in the Public Safety Answering Point shall be
21 synchronized to Coordinated Universal Time.

22 6.5.2 All timekeeping devices in the Public Safety Answering Point shall be maintained within ± 5
23 seconds of the main recordkeeping device clock.

24 **6.6 Recording.**

25 6.6.1 Public Safety Answering Points shall have a logging voice recorder with one channel for each of
26 the following:

27 (1) Each transmitted or received emergency radio channel or talk group.

28 (2) Each voice dispatch call for service circuit.

29 (3) Each Telecommunicator telephone that receives emergency calls for service.

1 6.6.2 Each Telecommunicator position shall have the ability to instantly recall telephone and radio
2 recordings from that position as applicable.

3 6.6.3 Emergency calls that are transmitted over the required dispatch circuit(s) shall be automatically
4 recorded, including the dates and times of transmission.

5 **6.7 Quality Assurance**

6 6.7.1 Public Safety Answering Points shall establish a quality assurance/improvement program to
7 ensure the consistency and effectiveness of emergency call processing.

8 6.7.2 Statistical analysis of emergency call and dispatch performance measurements shall be completed
9 monthly and compiled over a one (1) year period.

10

11

Section 7 Telephones

12 **7.1 Telephone Receiving Equipment.**

13 The provisions of this Section shall apply to facilities and equipment that receive emergency calls
14 transmitted by public use of commercial telephone systems, cellular or personal communications services
15 systems, and voice over Internet protocol (VoIP).

16 **7.2 Equipment and Operations.**

17 7.2.1 Telephone lines shall be provided as follows:

18 (1) A minimum of two 911 emergency telephone lines and 911 emergency telephone devices shall be
19 assigned exclusively for receipt of emergency calls. These lines shall appear on at least two telephone
20 devices within the Public Safety Answering Point.

21 (2) Additional 911 emergency telephone lines and 911 emergency telephone devices shall be provided as
22 required for the volume of calls handled.

23 (3) Additional telephone lines and telephone devices shall be provided for the normal business (non-
24 emergency) use as needed.

25 (4) At least one outgoing-only telephone line and telephone device shall be provided.

26 7.2.2 911 emergency lines and emergency telephone devices will be answered prior to non-emergency
27 telephone lines and non-emergency telephone devices.

28 7.2.3 When all 911 emergency telephone lines and emergency telephone devices are in use, emergency
29 calls shall hunt to other predetermined telephone lines and telephone devices that are approved by the
30 Public Safety Answering Point.

31 7.2.4 Calls to the business number shall not hunt to the designated emergency lines.

1 7.2.5 When a Public Safety Answering Point receives an emergency call for a location or an agency
2 that is not in its jurisdiction, the Public Safety Answering Point shall transfer the call directly to the
3 responsible Public Safety Answering Point. When possible the call data will be transferred with the
4 emergency call. If the call transfer method is not possible, call information shall be relayed by the
5 Telecommunicator.

6 7.2.5.1 The Telecommunicator shall remain on the line until it is certain that the transfer has been made
7 and the originating Telecommunicator verifies the transfer has been successfully completed by hearing
8 both parties speaking to each other.

9 7.2.6 All 911 emergency calls shall be recorded.

10 **7.3 Circuits/Trunks.**

11 7.3.1 At least two 911 call delivery paths with diverse routes arranged so that no single incident
12 interrupts both routes shall be provided to each Public Safety Answering Point.

13 7.3.2 Where multiple Public Safety Answering Points that serve a jurisdiction are not located in a
14 common facility, at least two circuits with diverse routes, arranged so that no singular incident interrupts
15 both routes, shall be provided between Public Safety Answering Points.

16 7.3.3 The Public Safety Answering Point shall have sufficient 911 emergency trunk capacity to receive
17 99.9% of all calls during the busiest hour of the average week of the busiest month of the year.

18 **7.4 911 Emergency Number Alternative Routing.**

19 7.4.1 Public Safety Answering Points shall maintain a written plan as part of the Comprehensive
20 Emergency Management Plan (CEMP) for rerouting incoming calls on 911 emergency lines when the
21 center is unable to accept such calls.

22 7.4.1.1 The Public Safety Answering Point shall practice this plan at least once annually.

23 7.4.2 Where overflow calls to 911 emergency telephone lines and emergency telephone devices are
24 routed to alternative telephone lines and alternative telephone devices within the Public Safety Answering
25 Point, the alternative telephone lines and alternative telephone devices shall be monitored for integrity
26 and recorded as required by these standards.

27

28

Section 8 Dispatching Systems

29 8.1 Fundamental Requirements of Emergency Call Dispatching Systems.

30 8.1.1 An emergency call dispatching system shall be designed, installed, operated, and maintained to
31 provide for the receipt and retransmission of calls.

32 8.2 Telecommunicators that receive emergency calls shall have redundant means within the PSAP
33 premises to dispatch calls.

1 (1) The failure of any component of one dispatching means shall not affect the operation of the
2 alternative dispatching means and vice versa.

3 8.3 Primary dispatch paths and devices upon which transmission and receipt of emergency calls
4 depend shall be monitored constantly for integrity to provide prompt warning of trouble that impacts
5 operation.

6 8.3.1 Trouble signals shall actuate an audible device and a visual signal located at a constantly attended
7 location.

8 8.3.2 The audible alert trouble signals from the fault and failure monitoring mechanism shall be
9 distinct from the audible alert emergency alarm signals.

10 8.3.3 The audible trouble signal shall be permitted to be common to several monitored circuits and
11 devices.

12 8.3.4 A switch for silencing the audible trouble signal shall be permitted if the visual signal continues
13 to operate until the silencing switch is restored to the designated normal position.

14 8.3.5 Where dispatch systems use computer diagnostic software, monitoring of the primary dispatch
15 circuit components shall be routed to a dedicated terminal(s) that meets the following requirements:

16 (2) It shall be located within the communications center.

17 (3) It shall not be used for routine dispatch activities.

18 8.4 The radio communications system shall be monitored in the following ways:

19 (1) Monitoring for integrity shall detect faults and failures in the radio communications system.

20 (2) Detected faults and failures in the radio communications system shall cause audible or visual
21 indications to be provided within the Public Safety Answering Point.

22

23 **Section 9 Computer-Aided Dispatching (CAD) Systems**

24 **9.1 General.**

25 9.1.1 PSAPs shall use Computer-Aided Dispatch (CAD) systems. These systems shall conform to the
26 items outlined in this Section.

27 9.1.2 The CAD system shall contain all hardware and software components necessary for interface
28 with the 9-1-1 system.

29 **9.2 Secondary Method.**

30 9.2.1 A secondary method shall be provided and shall be available for use in the event of a failure of
31 the CAD system.

1 **9.3 Security.**

2 9.3.1 CAD systems shall utilize different levels of security to restrict unauthorized access to sensitive
3 and critical information, programs, and operating system functions.

4 9.3.2 The PSAP shall have the ability to control user and supervisor access to the various security
5 levels.

6 9.3.3 Physical access to the CAD system hardware shall be limited to authorized personnel as
7 determined by the PSAP.

8 9.3.4 Operation of the CAD system software shall be limited to authorized personnel by log-
9 on/password control, workstation limitations, or other means as required by the PSAP.

10 9.3.5 The CAD system shall provide network isolation necessary to preserve bandwidth for the
11 efficient operation of the system and processing of emergency calls.

12 9.3.5.1 The CAD system shall provide measures to prevent denial-of-service attacks and any other
13 undesired access to the CAD portion of the network.

14 9.3.5.2 The CAD system shall employ antivirus software where necessary to protect the system from
15 infection.

16 **9.4 Emergency Call Data Exchange.**

17 9.4.1 The CAD system should have the capability to allow emergency call data exchange between the
18 CAD system and other CAD systems.

19 9.4.2 The CAD system should have the capability to allow data exchange between the CAD system and
20 other systems.

21 **9.5 CAD Capabilities.**

22 9.5.1 The installation of a CAD system in emergency service dispatching shall not negate the
23 requirements for a secondary dispatch circuit.

24 9.5.2 Software that is a part of the CAD system shall provide data entry; provide resource
25 recommendations, notification, and tracking; store records relating to all emergency calls and all other
26 calls for service and status changes; and track those resources before, during, and after emergency calls,
27 preserving records of those emergency calls and status changes for later analysis.

28 9.5.2.1 The Public Safety Answering Point shall put in place safeguards to preserve the operation,
29 sustainability, and maintainability of all elements of the CAD system in the event of the demise or default
30 of the CAD supplier.

31 9.5.2.2 The system applications shall function under the overall control of a standard operating system
32 that includes support functions and features as required by the Public Safety Answering Point

33 **9.6 Computer Aided Dispatch (CAD) Performance.**

- 1 9.6.2 The Computer Aided Dispatch system shall recommend units for assignment to calls.
- 2 9.6.2.1 The Computer Aided Dispatch system shall ensure that the optimum response units are selected.
- 3 9.6.2.2 The Computer Aided Dispatch system shall allow the Telecommunicator to override the CAD
- 4 recommendation for unit assignment.
- 5 9.6.2.3 The Computer Aided Dispatch system shall have the ability to prioritize all system processes so
- 6 that emergency operations take precedence.
- 7 9.6.3 The Computer Aided Dispatch system shall detect errors and/or faults and failures.
- 8 9.6.3.1 The Computer Aided Dispatch system shall automatically perform all required reconfiguration as
- 9 a result of the faults or failures.
- 10 9.6.3.2 The Computer Aided Dispatch system should queue a notification message to the supervisor and
- 11 any designated Telecommunicator positions.
- 12 9.6.4 Under all conditions, the Computer Aided Dispatch system response time should not exceed 2
- 13 seconds, measured from the time a Telecommunicator completes a keyboard entry to the time of full
- 14 display of the system response at any position where a response is required.
- 15 9.6.5 The Computer Aided Dispatch system shall be available and fully functional 99.95 percent of the
- 16 time, excluding planned maintenance.
- 17 9.6.6 The Computer Aided Dispatch system shall include automatic power-fail recovery capability.

18 **9.7 Backup.**

- 19 9.7.1 The Computer Aided Dispatch system shall include a data backup system, utilizing either
- 20 removable media or independent disk storage arrays dedicated to the backup task.

21 **9.8 Redundancy.**

- 22 9.8.1 The failure of any single component shall not disable the entire system.
- 23 9.8.1.1 The Computer Aided Dispatch system shall provide switchover in case of failure of the required
- 24 system component(s).
- 25 9.8.1.2 Manual intervention by Telecommunicators or others shall not be required.
- 26 9.8.1.3 Notwithstanding automatic switchover, the Computer Aided Dispatch system shall provide the
- 27 capability to manually initiate switchover.
- 28 9.8.1.4 Computer Aided Dispatch Systems that utilize server and workstation configuration shall
- 29 accomplish automatic switch over by having a duplicate server available with access to all the data
- 30 necessary and required to restart at the point where the primary server stopped.
- 31 9.8.1.5 Computer Aided Dispatch Systems that utilize distributed processing, with workstations in the
- 32 operations room also providing the call processing functions, shall be considered to meet the requirements

1 of automatic switchover, as long as all such workstations are continually sharing data and all data
2 necessary to pick up at the point where the failed workstation stopped are available to all other designated
3 dispatch workstations.

4 9.8.2 Monitoring for Integrity.

5 9.8.2.1 The system shall continuously monitor the Computer Aided Dispatch interfaces for equipment
6 failures, device exceptions, and time-outs.

7 9.8.2.2 The system shall, upon detection of faults or failures, send an appropriate message consisting of
8 visual and audible indications.

9 9.8.3 The system shall provide a log of system messages and transactions.

10 9.8.4 At least one spare display screen, pointing device, and keyboard shall be available in the Public
11 Safety Answering Point for immediate change-out.

12 **Section 10 Testing**

13 **10.1 General.**

14 10.1.1 Tests and inspections of all systems shall be made at the regular intervals.

15 10.1.2 All equipment shall be restored to operating condition after each test or emergency call for which
16 the equipment functioned.

17 10.1.3 Where tests indicate that trouble has occurred anywhere on the system, one of the following shall
18 be required:

19 (1) The Telecommunicator shall take appropriate steps within their scope of training to repair the fault.

20 (2) If repair is not possible, action shall be taken to isolate the fault and to notify the official responsible
21 for maintenance.

22 10.1.4 Procedures that are required by other parties and that exceed the requirements of these standards
23 shall be permitted.

24 10.1.5 The requirements of this Section shall apply to both new and existing systems.

25 **10.2 Acceptance Testing.**

26 10.2.1 New equipment shall be provided with operation manuals that cover all operations and testing
27 procedures.

28 10.2.2 All functions of new equipment shall be tested in accordance with the manufacturers'
29 specifications and accepted Public Safety Answering Point practices before being placed in service.

30 **10.3 Power.**

1 10.3.1 Emergency and standby power systems shall be tested in accordance with the manufacturer's
2 specifications and accepted business practices.

3

4

Section 11 Records

11.1 General.

6 11.1.1 Complete records to ensure operational capability of all 911 system functions shall be maintained
7 for a minimum of three years.

8 11.1.2 Compliance with the requirements in this section shall begin with the purchase or lease of all
9 equipment and services after June 30, 2011.

11.2 Acceptance Test Records and As-Built Drawings.

11 After completion of acceptance tests, the following shall be provided:

12 (1) A set of reproducible, as-built installation drawings.

13 (2) Operation and maintenance manuals.

14 (3) Written sequence of operation.

15 (4) Results of all operational tests and values at the time of installation.

11.3 Electronic Records

17 11.3.1 For software-based systems, access to site-specific software shall be provided to the PSAP.

18 11.3.2 The PSAP shall be responsible for maintaining the records for the life of the system.

19 11.3.3 Paper or electronic media shall be permitted.

11.4 Training Records.

21 11.4.1 Training records shall be maintained for each employee as required by the PSAP.

11.5 Operational Records.

23 11.5.1 Call and dispatch performance statistics shall be compiled and maintained.

24 11.5.2 Statistical analysis of emergency call and dispatch performance measurements shall be done
25 monthly and compiled over a one (1) year period.

26 11.5.2.1 A management information system (MIS) program shall track incoming emergency calls and
27 dispatched emergency calls and provide real-time information and strategic management reports.

28 11.5.3 Records of the following, including the corresponding dates and times, shall be kept:

- 1 (1) Test, emergency call, and dispatch signals
- 2 (2) Circuit interruptions and observations or reports of equipment failures
- 3 (3) Abnormal or defective circuit conditions indicated by test or inspection

4 **11.6 Maintenance Records.**

5 11.6.1 Records of maintenance, both routine and emergency, shall be kept for all emergency call
6 receiving equipment and emergency call dispatching equipment.

7 11.6.2 All maintenance records shall include the date, time, nature of maintenance, and repairer's name
8 and affiliation.