

# Wireless 9-1-1 Deployment and Management Effective Practices Guide

**APCO ANS 3.103.2---2013**



### APCO ANS 3.103.2-2013

Standard written by The APCO International Standards Development Committee – Wireless Effective Practices Workgroup and approved by the APCO Standards Development Committee on September 13, 2013. Final approval received from the American National Standards Institute on September 27, 2013.

**Abstract:** These revised Effective Practices (EPs) are designed to increase the Public Safety Answering Point (PSAP) Managers’ understanding of the technology application and the ability to better manage wireless calls, as well as public and responder expectations.

**Keywords:** 9-1-1, E9-1-1, accuracy testing, automatic location information (ALI), cache, calltaker, confidence value, deployment, dispatch, emergency communications, emergency management, gateway mobile location center (GMLC), mobile positioning center (MPC), location data, performance testing, public safety, public safety answering point (PSAP) public safety communications, rebit, telecommunicator, tower, training, uncertainty value, wireless 9-1-1, wireless call and wireless service provider.

*\*Informative material and not a part of this American National Standard (ANS)*

## Table of Content

Foreword*	4
Introduction*	7
The Revision of Effective Practices Process	9
General Statement on References and Definitions	11
Acknowledgements*	
1) APCO Wireless 9-1-1 Deployment Work Group	12
2) Standards Development Committee	13
Acronyms and Abbreviations*	14
Definitions of terms used in this Effective Practices	15
Effective Practices, Categories and Numbering	15
Candidate APCO ANS 3.103.2-2013 Wireless 9-1-1 Deployment and Management Effective Practices Guide	
Topic Area 1: Policy Issues	16
Topic Area 2: Managing Public Expectations	24
Topic Area 3: Managing PSAP and Responder Expectations	29
Topic Area 4: Rebid / Re Query	38
Topic Area 5: Confidence and Uncertainty	42
Topic Area 6: Towers	45
Topic Area 7: Cache	53
Topic Area 8: PSAP Performance Testing	54
Topic Area 9: Wireless Service Provider – PSAP Area Testing	60
Appendix A: SG C Recommendation to ESIF - Contribution G-37	69
Appendix B: FCC Wireless Accuracy Modifications	71

## Foreword\*

APCO International is the world's largest organization of public safety communications professionals. It serves the needs of public safety communications practitioners worldwide - and the welfare of the general public as a whole - by providing complete expertise, professional development, technical assistance, advocacy and outreach.

### **The 2013-2014 APCO International Board of Directors:**

**Georggina Smith**, President

**John Wright**, First Vice President

**Brent Lee**, Second Vice President

**Terry Hall**, Immediate Past President

**Derek Poarch**, Ex-Officio

APCO International standards are developed by APCO committees, projects, task forces, work-groups and collaborative efforts with other organizations coordinated through the APCO International Standards Development Committee (SDC). Members of the committees are not necessarily members of APCO. Members of the SDC are not required to be APCO members. All members of APCO's committees, projects, and task forces are subject matter experts who volunteer and are not compensated by APCO. APCO standards activities are supported by the Comm. Center & 9-1-1 Services Department of APCO International.

### **For more information regarding**

**APCO International and APCO standards please visit:**

**[www.apcointl.org](http://www.apcointl.org)**

**[www.apcostandards.org](http://www.apcostandards.org)**

*\*Informative material and not a part of this American National Standard (ANS)*

APCO American National Standards (ANS) are voluntary consensus standards. Use of any APCO standard is voluntary. This standard does not imply that there are no other minimum qualifications related to public safety communications training officers. All standards are subject to change. APCO ANS are required to be reviewed no later than every five years. The designation of an APCO standard should be reviewed to ensure you have the latest edition of an APCO standard, for example:

APCO ANS 3.101.1-2007 = 1- Operations, 2- Technical, 3-Training

APCO ANS 3.101.1-2007 = Unique number identifying the standard

APCO ANS 3.101.1-2007 = The edition of the standard, which will increase after each revision

APCO ANS 3.101.1-2007 = The year the standard was approved and published, which may change after each revision.

The latest edition of an APCO standard cancels and replaces older versions of the APCO standard. Comments regarding APCO standards are accepted any time and can be submitted to [apcostandards@apcointl.org](mailto:apcostandards@apcointl.org), if the comment includes a recommended change, it is requested to accompany the change with supporting material. If you have a question regarding any portion of the standard, including interpretation, APCO will respond to your request following its policies and procedures. ANSI does not interpret APCO standards; they will forward the request to APCO.

APCO International adheres to ANSI's Patent Policy. Neither APCO nor ANSI is responsible for identifying patents for which a license may be required by an American National Standard or for conducting inquiries into the legal validity or scope of any patents brought to their attention.

*\*Informative material and not a part of this American National Standard (ANS)*

No position is taken with respect to the existence or validity of any patent rights within this standard. APCO is the sole entity that may authorize the use of trademarks, certification marks, or other designations to indicate compliance with this standard.

Permission must be obtained to reproduce any portion of this standard and can be obtained by contacting APCO International's Comm Center & 9-1-1 Services Department. Requests for information, interpretations, and/or comments on any APCO standards should be submitted in writing addressed to:

**APCO SDC Secretary, Communications Center & 9-1-1 Services**

APCO International

351 N. Williamson Blvd

Daytona Beach, FL 32114 USA

[standards@apcointl.org](mailto:standards@apcointl.org)

*\*Informative material and not a part of this American National Standard (ANS)*

### Letter from the Wireless 9-1-1 Effective Practices Workgroup Chairs

The original publication of the Wireless 9-1-1 Deployment and Management Effective Practices Guide, cited as APCO ANS 1.103.1.- 2008 was the result of the efforts completed during the long standing, APCO Project LOCATE (Locate Our Citizens At Times of Emergency) Committee (2000-2008). The level of cooperation and collaboration that led to that version remains valuable today as this revised edition is prepared for release through the APCO Standards Development Committee, per American National Standards (ANS) principles and practices.

Since wireless Enhanced 9-1-1 service is still not fully ubiquitous across the country, the 2011 edition seeks to reinforce and as necessary, redefine basic elemental deployment efforts. In addition, the same concerns surrounding the delivery to the PSAP of the best location data possible remains critical to a prompt, effective dispatch of all classes of emergency services. The original standards were prepared during a time period when wireless 9-1-1 calls were reportedly between 35 and 50 % of the total 9-1-1 call volume and hard wired telephone connectivity had not yet begun to erode as the primary mechanism for access to emergency services via 9-1-1. In 2011, the CTIA reported that wireless 9-1-1 calls had reached 70% of the total call volume to PSAPs and an estimated 300,000 wireless 9-1-1 calls were made daily in the U.S. In addition, it was also reported that the reliance on wireless devices as the primary means for communications for all purposes, within all environments had exceeded the 25% level within all households. The actual consumer use pattern and impact on total 9-1-1 call volume is however not uniform across the nation with local variances reported regarding both of these important topics.

The goal of these Effective Practices continues to be primarily informational. It remains important to maintain a balanced recognition of the roles of the multiple partners that contribute to the successful transfer and delivery of both voice and location data to the PSAP. This revision is intended to support every reasonable effort by current PSAP Managers to proactively manage public and responder expectations at the local level; support a positive working relationship with the wireless service providers founded on a fundamental understanding of the operational parameters of all wireless E9-1-1 service; as well as influence public policy including regulatory and legislative action. The PSAP Manager should also define, develop and promulgate performance focused PSAP training, maintain active quality assurance efforts as well as understand the relationship between these actions and field responder efficiency and safety. The evolution of wireless devices as a primary means to reach emergency services in many locations, in both active and

passive modes; requires the PSAP staff to understand the wireless network, operation, technical assets and liabilities as well as the direct impact such dynamics may have on a particular call within any PSAP service area.

These Effective Practices are not produced in a vacuum; the acknowledgement that not every deployed subset operates exactly the same way must be understood by the PSAP and the agencies/citizens it services. Despite thousands of wireless E9-1-1 calls successfully processed and managed daily, anomalies do occur within every system. The PSAP staff should generally know how wireless 9-1-1 within their service area works; what infrastructure supports normal calls for service loads and what variables can influence the performance of the system.

The revised APCO ANS 1.103.2-201x does not seek to define the still evolving accuracy requirements that are being considered by the FCC across the Nation. Amendments and modifications to such requirements are in discussion; however, an over reliance upon such language is not as valuable to individual PSAPs as actual local performance testing of the deployed system within a specific service area.

The expansion of wireless devices in place of hard-wired telephony instruments does raise legitimate issues regarding location data from calls made within various structures that will actually be presented to the PSAP, for dispatch purposes. The reduction of hard wired phones and the increase on the percentage of 9-1-1 calls that arise from wireless devices supports consideration of industry wide accuracy testing efforts that can be relied upon to support a reasonable, predictable expectation of service related to compliance with the evolving revised accuracy parameters. The public safety communications stakeholders and their wireless industry partners continue to seek resolution of the issues involved in this area.

The PSAP Manager should understand that effective, wireless E9-1-1 deployment is of itself a process and has a measureable, defined outcome. Deployment is however only the initial threshold of accomplishment; continuous participative management is required to fully understand all the current practical and still evolving potential of such services. The revision of this standard seeks to support this ongoing and expanding area of service delivery within every PSAP.

William Cade  
Co-Chair

Susan Sherwood  
Co-Chair

## **The Revision of Effective Practices Process**

The APCO Standard 1.103.2-201x Work Group designated by APCO to review, revise and present a 2012 version of these Effective Practices brought decades of public safety experience of all classes, wireless industry expertise, PSAP management and leadership modeling to the discussion. The Study Group maintained a goal to provide PSAP Managers, Wireless 9-1-1 Coordinators, PSAP staff, field responders and the public consumer with the current best guidance related to deploying and managing wireless 9-1-1 services at every PSAP.

Project LOCATE, conducted an extensive assessment of the value of location data delivered by wireless E9-1-1 Systems at seven public safety answering point (PSAP) service areas across the country, the study was able to determine that the possible consumer experience when using a wireless device to seek emergency assistance, as demonstrated by the actual usefulness of the location data for dispatch, has significant benefit for all public safety stakeholders. Selected service areas in the original study provided an independent opportunity to evaluate a variety of elements related to the wireless E9-1-1 location data delivered to the PSAP. In addition to providing experience with both national and regional wireless service providers, the diversity across the sites of demographics, topography, local exchange carriers, automatic location and automatic number identification equipment, computer aided dispatch interfaces and mapping products offered Project LOCATE a unique snapshot of how the elements mesh to provide location information on each wireless call for help.

The rapidly expanding nature of wireless technology and equally dynamic preferences of consumer use have created changes which have an impact on what the PSAP can receive as well as how best to manage the call overall. The fundamental principles identified in the initial Effective Practices Guide do however provide a solid foundation for PSAP action in response to these modifications.

In the original study, Project LOCATE found a clear public expectation that the PSAP, as well as first responders, will have accurate location data consistently delivered with all wireless 9-1-1 calls, not unlike that of wireline calls. This expectation, often shared by field responders within the service area, can cause frustration between callers and PSAP staff in many areas. This expectation was appropriately modified based on the use cases evaluated as influenced by the choice of location determination equipment. In nearly all cases, wireless E9-1-1 calls were anticipated as being made out of doors. The expanded use of wireless devices indoors, considering the wide array of building construction and configuration presents new challenges

that remain under review and discussion at the time of this revision. The action of other standard development organizations (SDOs) is ongoing and may have impact on future testing, compliance reporting and per structure typology which will have value to the PSAP. The revised Effective Practices again cite public education programs focused on how to most effectively utilize a wireless telephone in an emergency should be incorporated into the public information strategy of every PSAP. While education efforts should encourage consumers to report requests for public safety services and emergencies, it is important to also seek to improve the consumer's understanding of the functionality, limitations and performance variables related to useful location data. The consumer always has the final choice of products and services; candid, fairly presented and balanced information should be available in a consistent format to assist those that may inquire.

It should be noted, that PSAP staff are also frequently frustrated with the gap between needed location data accuracy and the actual data delivered; causing the location of the emergency and dispatch decision to be based solely upon the anecdotal information, provided by the wireless caller in many cases.

This revision of the Effective Practices acknowledges that wireless E9-1-1 call management processes that have general applicability rather than those that must rely upon wireless service provider specific interpretations, are more desirable. However, it is understood that such general guidelines offered for nationwide use, are vulnerable to local constraints which may offer additional challenges to effective wireless 9-1-1 call management.

The Work group strongly recommends that the public safety community seek to develop a positive, working partnership with the wireless service providers within their service area. This effort to achieve a solid understanding of the technology and options available, as well as maintain open and candid communications regarding anticipated performance and service remain the responsibility of the PSAP. The impact of this technology requires every effort to enhance the local PSAPs' ability to best manage the delivery of wireless E9-1-1 calls. The final determination of what location accuracy parameters will be required to achieve compliance (indoor and outdoor) with any federal regulatory action remains unresolved at the time of this revision.

On behalf of every caller in crisis, it is incumbent upon all public safety and wireless community stakeholders, supported by appropriate regulatory and legislative action, to continue the collaborative effort to maximize the usefulness and consistency of wireless location data provided to the PSAP.

The Study Group offers the revised version of the Wireless 9-1-1.

Deployment and Management Effective Practices Guide v. 2012 as an updated, supporting document aimed at enhancing the wireless call management experience at every PSAP.

### **General Statement on References and Definitions**

Throughout the revised Effective Practices Guide, frequent reference to existing documents, activity of other groups and separate supporting documents are cited. The generally used references include the following which may be supplemented by additional documents, per specific practice, in which case such additional reference materials will be identified:

The primary reference source for deployment specific activity remains;  
APCO Project LOCATE Deployment Handbook at  
[www.locatemodelcities.org/documents/Handbook0806.pdf](http://www.locatemodelcities.org/documents/Handbook0806.pdf)

The primary reference to the Project LOCATE Final Report which preceded the Effective Practices Guide is:  
APCO Project LOCATE Final Report at <http://apcointl.org/resources/apco-wireless-resources/project-38-locate.html>

The Wireless Industry (SDO) is ATIS or Alliance for Telecommunications Industry Solutions ([www.atis.org](http://www.atis.org)) also supports the work of ESIF or the Emergency Services Interconnection Forum ([www.atis.org/esif/index.asp](http://www.atis.org/esif/index.asp))

The Communications Security, Reliability and Interoperability Council's (CSRIC) mission is to provide recommendations to the FCC to ensure, among other things, optimal security and reliability of communications systems, including telecommunications, media, and public safety.

( <http://transition.fcc.gov/pshs/advisory/csric/>)

The Work Group Reports are available for review.

## Acknowledgements\*

The following individuals are recognized for their contribution in the development of this standard. At the time this standard was revised, the APCO Wireless 9-1-1 Deployment Work Group had the following membership:

**William A. Cade Jr., Workgroup Co-Chair**  
GeoComm Inc., Missouri

**Susan Sherwood, Workgroup Co-Chair**  
Verizon Wireless, Georgia

**Michael Pedigo, ENP**  
GeoComm, Inc., Texas

**Eddie Taylor, ENP**  
Bexar Metro 9-1-1 Network, Texas

**Jacquelyn Yeager**  
St. Petersburg Police Department, Florida

**Nancy Pollock, ENP**  
GeoComm, Inc., Minnesota

**Martin Moody**  
Metropolitan Emergency Service Board, Minnesota

**Saralyn Hayes, ENP**  
Mid-America Regional Council (MARC), Missouri

**Jeanna Green**  
Sprint of Kansas, Kansas

**Crystal McDuffie, ENP, RPL**  
APCO International

## APCO Standards Development Committee (SDC)

**Frank Kiernan Chair**

Meriden Emergency Communications, Connecticut

**Carol Adams, RPL**

Stafford County Sheriff's Office, Virginia

**Dr. Daniel Devasirvatham**

Science Applications International Corp (SAIC), California

**Chris Fischer**

NORCOM, Washington

**Debbie Gailbreath, RPL**

Sarasota County Sheriff's Office, Florida

**James Leyerle**

OnStar, Michigan

**Nathan McClure**

AECOM, Virginia

**Daniel Morelos**

Tucson Airport Authority, Arizona

**Lex Rutter**

Geo-Comm Inc, Idaho

**Jerry Schlesinger**

Public Safety Systems Revitalization Program, Washington

**Bradford S. Smith**

American Medical Response, Massachusetts

**Sherry Taylor**

Indianapolis Fire Department Communications Division, Indiana

**Crystal McDuffie, ENP, RPL, Secretary**

APCO International

## Acronyms and Abbreviations\*

For the purposes of this ANS, the following definitions of acronyms apply:

<b>AHJ</b>	Authority Having Jurisdiction (referred to as AGENCY)	<b>MOU</b>	Memorandum of Understanding
<b>ALI</b>	Automatic Location Identification or Automatic Location Information	<b>MPC</b>	Mobile Positioning Center
<b>ANS</b>	American National Standard	<b>MSAG</b>	Master Street Address Guide
<b>ANSI</b>	American National Standard Institute	<b>NENA</b>	National Emergency Number Association
<b>APCO</b>	Association of Public-Safety Communications Officials	<b>NRIC</b>	Network Reliability and Interoperability Council
<b>ATA</b>	American Trucking Association	<b>OET</b>	Office of Engineering and Technology
<b>ATIS</b>	Alliance for Telecommunications Industry Solutions	<b>pANI</b>	pseudo-Automatic Number Identification
<b>CAD</b>	Computer Aided Dispatch	<b>PCS</b>	Personal Communications Service
<b>CPE</b>	Customer Equipment	<b>PSAP</b>	Public Safety Answering Point
<b>COS</b>	Class of Service	<b>PSFA</b>	Public Safety Foundation of America
<b>CSRIC</b>	Communications Security, Reliability and Interoperability Council's	<b>TTY-PASS</b>	Teletypewriter—Performance Assessment and Scoring System
<b>DCU</b>	Data Collection Unit	<b>PST</b>	V Public Safety Telecommunicator Voice Carry-Over
<b>DHS</b>	Department of Homeland Security	<b>SDC</b>	Standards Development Committee
<b>E9-1-1</b>	Enhanced 9-1-1	<b>SMR</b>	Specialized Mobile Radio
<b>ESIF</b>	Emergency Services Interconnection Forum	<b>TCO</b>	Public Safety Telecommunications Officer
<b>FCC</b>	Federal Communications Commission	<b>WPH1</b>	COS for Wireless Phase I
<b>GMLC</b>	Gateway Mobile Location Center	<b>WPH2</b>	COS for Wireless Phase II
<b>LOCATE</b>	Locate Our Citizens at Times of Emergency	<b>WRLS</b>	COS for Phase 0, usually provides no location coordinates
		<b>WSP</b>	Wireless Service Provider

*\*The Acronyms and Abbreviations are informative material and not a part of this American National Standard (ANS)*

## Definitions of terms used in this Effective Practice

**Confidence:** Information identifying the confidence by which it is known that the calling party lies within the associated shape description; expressed as percentage.

**Uncertainty:** Information that indicates the level of Uncertainty inherent to the associated longitude/latitude information; expressed in meters.

**Cache:** Refers to the retention of specific location data associated with a wireless E9-1-1 call within certain elements of the system

## Effective Practices, Categories and Numbering

Project LOCATE, using the lessons learned and related experience from the testing, analysis, supplemental testing and wireless service provider meetings created Effective Practices (EP) under nine separate topic areas. In the specific EP, the following acronyms are commonly found:

The numbering of the EPs allows for expansion within each topic area.

As used herein:

The 38 refers to APCO Project 38 or Project LOCATE.

The 07 designates the year the effective practice was created or updated.

The digit 1-9 references the topic area.

The last digit(s) represent the specific effective practice within that topic area.

Example: **380711** represents APCO Project 38,  
Created in 2007, Topic Area 1  
(Policy) and the first or number one  
Effective Practice

**381211** represents APCO Project 38,  
Revised in 2012, Topic area  
1(Policy) and the first Effective  
Practice

## Topic Area 1: Policy Issues

### **381211      The Agency should designate a wireless 9-1-1 coordinator per PSAP service area.**

This Effective Practice seeks to encourage the formal designation of a wireless coordinator per Agency or PSAP.

The Agency Wireless Coordinator would be expected to have the requisite level of specific knowledge and skill set to work in a cooperative manner with the stakeholders including the wireless service providers or their third party contractor(s), the local 9-1-1 service provider, the PSAP customer premise equipment provider, the PSAP Computer Aided Dispatch (CAD) service provider, and the provider(s) of base map development and services (including the addressing responsibility within the service area).

The Agency Wireless Coordinator also would serve as the single point of contact within the PSAP Service Area for resolution of issues related to standard ALI display formats, tower site/sector call routing, default call routing decisions, the liaison for local testing, maintenance and call management issues as well as providing documentation of all interactions and any local performance testing conducted by the PSAP/Agency.

In addition, the Agency Wireless Coordinator would be responsible for assuring wireless call processing training materials include relevant information regarding the actual performance of the WSPs within the service area in relation to the usefulness of location data delivered to the PSAP. The monitoring of such services should be evaluated based on the most recent Federal Communications Commission (FCC) Order and Actions; the current status of which should always be included in local training and informational programs.

#### Specific Reference Materials:

- Action by the Commission, July 12, 2011, by *Third Report and Order, Second Further Notice of Proposed Rulemaking and Notice of Proposed Rulemaking* (FCC 11-107). Separate Statements issued by Chairman Genachowski and Commissioners Copps, McDowell, and Clyburn.

**381212      The Agency should conduct an ongoing, comprehensive effort to fully inform PSAP service area decision makers of the nature and dynamics of Wireless 9-1-1 call management practices of the WSPs and the impact upon delivery of consistent and usable dispatch information to the PSAP.**

This Effective Practice supports the PSAP or Agency in its efforts to inform all agency managers and executives of the actual performance of wireless systems within the service area.

The failure to invest in a better understanding of the nature and dynamics of wireless

E9-1-1 calls exposes the PSAPs and their leadership to an expanding source of risk associated with the possibility that staff would not be able to provide adequate service to wireless 9-1-1 callers. It is important to properly and fully inform such managers and executives of the challenges that are common to wireless E9-1-1 deployment along with the recommended means for resolution, relevant costs, and the impact upon PSAP operations.

Furthermore, there is a need to regularly assess the continuing issues related to location data delivered to the PSAP, including what the PSAP can do to assist wireless service provider efforts toward improvements, appropriate regulatory changes as well as consumer and responder experiences.

The expansion of per call data received at the PSAP has importance to the continued development of wireless testing as well as changing consumer use and expectations. Specifically, locally attained information concerning percentages of wireless 9-1-1 calls made from indoors versus outdoors locations and the reported location data associated with the call may lead to improvements in testing efforts and identification of further enhancements for in building services.

Specific Reference Materials:

- See Also CSRIC Report Two

**381213      The WSPs and the Agency within each PSAP service area should develop and maintain a documentation process which defines the roles and responsibilities of each (i.e., a simple checklist). As appropriate, the timeline of all testing activity including end-to-end assessments and processes to resolve issues related to deployment, implementation and call management should be included.**

Becoming an active partner in the deployment preparations, testing and post deployment implementation and initial call management is only the first level of the essential partnership between PSAPs and WSPs. Every PSAP should understand that wireless call management is an ongoing activity which requires regular efforts to review system and staff performance so as to maintain adequate awareness of the regulatory, technological and operational environment.

For the PSAPs that remain without wireless E9-1-1 service today, it is recognized that restraints exist, such as the lack of time, understanding and perceived authority, or that the Agency may not have taken a sufficiently active and responsible role in either the initial or follow-up deployment efforts by the wireless service provider(s). When first becoming aware of any request by wireless carriers or their contractors, or other service providers (9-1-1 system, CPE, CAD, Mapping) who are instrumental in delivering the wireless location data to the PSAP, the Agency should eagerly seek out the opportunity as a chance to better understand and have influence on the final product as delivered to the PSAP. It is recommended that the Agency recognize the role of the PSAP as the end user of the location data per wireless E9-1-1 call and seek to maximize its value to the multiple roles of the Public Safety Telecommunications Officer (TCO).

Being part of the wireless call management effort involves understanding where responsibility lies, accepting the tasks that are best performed by the Agency, coordinating the timely and effective participation by others as well as properly documenting and reporting both the activity and the results. It is particularly important, when testing is planned, to replicate, as much as possible, actual end-to-end performance testing through to the PSAP. Use this early opportunity to provide feedback on the actual performance of the deployed system, focusing on the usefulness of the location data for dispatch purposes at present.

Once wireless implementation is completed, the emphasis of PSAP activity should be directed at managing the actual call processes and identifying issues which may need to be resolved to improve service locally. Appropriate regard should be given to the general limitations and requirements of the regulatory, technological and operational environment.

**380714      Each WSP and the Agency responsible for the PSAP(s) operations within any service area should define and develop, in writing, the process to resolve issues related to wireless call management and related testing efforts.**

As the primary user of location data, when needed to effectively dispatch appropriate resources to a reported emergency, the Agency should promptly establish in writing, the process by which issues can be resolved among the participants. The process should include directions on dealing with identifying and reporting trouble or anomalies by the TCO. PSAP procedures for documenting how the problem was discovered, management responsibilities, directions on contacting the WSP, follow up requirements and ultimate resolution and closure of the issue.

Any testing of systems is of particular interest to the Agency and a well understood set of expectations and responsibilities is the most effective means to monitor activity and results within current technical and regulatory parameters.

Since all wireless implementations generally involve a number of participant entities, it is easy to let the confusion about which entity has responsibility for what elements impede the effort to seek resolution. In nearly every case, the wireless service provider is the legitimate first point of contact for questions and issues regarding wireless E9-1-1 location data, tower or sector routing and overall system services.

**380715      The Agency and the WSPs, in order to sustain a professional partnership to achieve the optimum level of wireless E9-1-1 service, should maintain effective communications. The effort should include developing and maintaining current contact information for the primary contact personnel within operations and management.**

The Agency regularly maintains contact with a variety of entities involved in the effort to deliver service to 9-1-1 callers. As with so many other daily PSAP activities, staff must know who to contact when needed to maintain the highest level of service on every call. The common and accepted practice of maintaining current contact information for the representatives of all the wireless service providers within the service area is anticipated.

Both the wireless service provider and the PSAP are involved in the effort to deliver the best level of service to wireless callers in an emergency. At that moment, the wireless subscriber is a shared customer in need of prompt, effective and competent service. The fact that the call was completed via wireless E9-1-1 should not negatively influence the delivery or the outcome of that service.

**381216      The Agency should consider regular and consistent processing of required information post implementation to include appropriate maintenance and as necessary, amendments to the Memorandum(s) of Understanding (MOUs) between all WSPs in the jurisdiction of the Agency.**

A written memorandum of understanding regarding the roles, responsibilities and the processes for interaction between the Agency and the WSP is an appropriate means of recording the nature of this important relationship. The advantage of such written documents includes the opportunity to discuss, in advance, the underlying issues and expectations of the parties.

A sample of such a memorandum is provided within the Appendices of the Project LOCATE Final.

Report, An Assessment of the Value of Location Data Delivered to PSAPs with Enhanced Wireless 9-1-1 Calls.

**381217      The Agency should remain aware of all current cost recovery parameters, restrictions, and requirements in their state, regarding wireless services which are likely to impact the PSAP.**

The wireless service providers and their contractors are working in many states and are aware of multiple cost recovery, regulatory restrictions and requirements. The Agency should be well aware of the local and state funding definitions, restrictions and allowances. The Agency should actively monitor the use of all funds and when necessary, be ready to support changes which are consistent with the needs and goals of public safety. The cost recovery issues should not erode the working relationship between the Agency and the WSPs within the PSAP service area since the maintenance of a positive partnership affords the best opportunity to make improvements in service to the wireless E9-1-1 caller.

Questions may arise that can best be answered by the official point of contact for the agency that actually controls the dispersal of any cost recovery funds. However, the Agency will be better served if its Wireless 9-1-1 Coordinator actively maintains awareness and understanding of the current local, state and federal regulations.

## Topic Area 2: Managing Public Expectations:

**381221      The Agency should document and provide (such as on the Agency website or informational brochures) the assessment of wireless E9-1-1 service performance within the Agency service area, which might include service description by topologies. Actual performance, post implementation, may change over time. The assessment effort should therefore be continually reviewed and updated to identify relevant modifications in system performance.**

The Agency is urged to invest in helping wireless E9-1-1 callers better understand the nature of wireless calls in general, and specifically, the differences in terms of location data reporting capability throughout every PSAP service area. Public awareness and education is critical to the PSAP and the caller as the percentage of total 9-1-1 calls continues to shift toward wireless as the primary choice of accessing emergency services. The consumer is however ultimately responsible for their choice of equipment and service provider. The PSAP can only objectively report the actual observed performance across a variety of conditions such as location, indoor, outdoor, weather and service provider.

The expectations of the public consumer may be based on the record of achievement that has been found with outdoor testing as well as reported actual calls; however the reliability of such data is subject to change. In addition, the Agency may find assistance and support for such public information from the wireless service providers within their service areas.

Generally, the consumer is not in a position to adequately assess the differences in the value of location data provided to the PSAP in times of emergency. The Agency, therefore, has a valuable opportunity to aggressively engage in candid, well developed yet professionally managed public education efforts for the sole purpose of alerting consumers to their role in assisting in the effective response of appropriate emergency services.

Specific Reference Materials:

- For more Consumer Wireless E9-1-1 information, visit:  
<http://transition.fcc.gov/pshs/services/911-services/consumer.html>
- The Wireless Association, CTIA-The Wireless Association® is an

international nonprofit membership organization that has represented the wireless communications industry since 1984. Membership in the association includes wireless carriers and their suppliers, as well as providers and manufacturers of wireless data services and products. The association advocates on behalf of its members at all levels of government. CTIA also coordinates the industry's voluntary efforts to provide consumers with a variety of choices and information regarding their wireless products and services. This includes the voluntary industry guidelines; programs that promote mobile device recycling and reusing; and wireless accessibility for individuals with disabilities.

[www.ctia.org/aboutCTIA](http://www.ctia.org/aboutCTIA)

**381222      The Agency and the WSPs should work in a collaborative manner to develop and distribute informational materials to assist consumers in understanding there may be differences between wireless E9-1-1 expectations and the actual wireless 9-1-1 service performance within the PSAP service area.**

The Agency, in a continuing partnership with the wireless service providers within any PSAP service area, should seek information and support for public education efforts. The WSPs are equally interested in having their subscribers be intelligent users of the system in times of emergency. It is fair to report that every current location determination technology has some limitations as can the call receipt and display technology used in the PSAP. For example, the ability to transmit voice does not always assure the transmission of location information that can be used to effectively dispatch emergency resources.

Public awareness and education should document, as appropriate, that actual performance of systems, as implemented in many locations, simply does not provide the calltaker with adequate location information. The variance in location data accuracy also applies to wireless calls made within structures, an increasingly expanding subset of wireless E9-1-1 calls presented to the public safety agency. The wireless E9-1-1 caller continues to need an understanding that some circumstances may produce less than optimal location information which can lead to delayed responses, or notification of resources that due to service area boundaries, are not able to respond or even no response in some infrequent cases.

**381223      The Agency and the WSPs should jointly identify any environments which may reduce the value and delivery of useful location data to the PSAP and include this data on the Agency's and WSPs' websites.**

The Study Group recommends using agency websites, informational brochures, Public Service Announcements and other methods/forums to alert consumers of the performance variances by location typology within the service area. The value of location information can be influenced by an array of factors, with differences observed between indoor and outdoor calls, calls made from both moving and stationary vehicles as well as the influence of local topography and typology. In any environment which may provide impediments to clear signal transmission, receipt and associated location determination calculations some risk occurs which could have a negative impact upon the ability of the PSAP and/or Responders to find the caller, in the absence of any additional points of reference.

The Agency, through well developed and documented performance testing from such diverse sites and circumstances, can begin to develop valuable information. It is important that performance testing be conducted regularly and updated and that the information is shared with the public in a timely manner.

The Agency, as part of the positive partnership with area wireless service providers, may be able to provide additional documentation of differences of location data value for dispatch purposes by location solution type, that reach the PSAP service area. In some service areas, specific geographic locations may be identified which are more vulnerable to poor service in general and thus, diminish the value of location data delivered to the PSAP, based on a lack of consistency and predictability.

**381224**      **The WSPs should collaborate with PSAPs, especially in similar service areas to develop and regularly update information for public outreach (i.e., a message related to non-initialized wireless telephones or donation of pre-owned wireless telephones and the variables which can reduce the value of location data due to location and use). Jointly developed information should be posted on APCO, NENA and other websites as designated, as well as the WSPs' websites for access by public policy-makers and public safety professionals.**

The original efforts of APCO Project LOCATE, on behalf of the Agency and consumers of wireless E9-1-1 services, have been transitioned to the standard responsibilities of APCO, NENA and other groups, in collaboration with the wireless service providers, to encourage better management of public expectations. Effective and broad reaching public awareness and education efforts about the expansion of wireless technology, and its everyday use, requires regular review and refreshment of any public statements.

The same commitment to work together and regularly revise public information, based upon performance testing, is recommended to all Agency entities.

### Topic Area 3: Managing PSAP and Responder Expectations:

#### **381231 The Agency should participate in the definition of a wireless ALI format.**

The Agency should embrace its role in the partnership with stakeholders to improve wireless location data as delivered to the PSAP. To provide public safety telecommunicators with a consistent presentation of the location data provided with wireless E9-1-1 calls, the Agency should fully participate in the definition of what format that data will appear in the automatic location information (ALI) display. The expansion of potential location related information based on alternate data sources as described within the Next Generation 9-1-1 marketing materials should also be anticipated and as necessary become part of a like process.

The Agency should be in regular contact with the 9-1-1 System Service Provider, local exchange carrier, third party representatives of the wireless service providers, as well as the local CPE and CAD providers to assure close coordination and clear expectation concerning this important implementation element.

**381232      The WSP in a jurisdiction should comply with the selected ALI format.**

The consumer of wireless E9-1-1 service is best served when the Agency and wireless service providers have cooperated in reaching agreement with the 9-1-1 System Service Provider and local exchange carrier to deliver the location data in the agreed manner.

The Agency may find it helpful to discuss with other Agency representatives who have similar CPE, CAD and service providers to learn more about the benefits of this management process. In addition, Project LOCATE has in each state a designated Agency that has served as a resource point of contact and information throughout their wireless E9-1-1 deployment and management experience. The list of these participating agencies is also available on the Project LOCATE webpage.

**Specific Resources:**

- APCO Project 38 (LOCATE) <http://www.apco911.org/resources/apco-wireless-resources/project-38-locate.html>

**381233      The Agency should educate Public Safety Telecommunicators and responders that there are many variables that affect routing, class of service(COS) and specific wireless E9-1-1 call location data presented to the PSAP.**

Utilizing relevant, accurate and timely training and information, the Agency can provide staff and responder agencies an adequate level of understanding of how wireless location data differs from wireline location information. These differences and the multiple variables which create such potential differences in the value of such data will remain important to them for all call processing practices and response efforts.

Particular attention should be given to the interpretation of wireless location data as delivered to the PSAP by wireless service provider and specific areas within the PSAP service area. Such variables may, by carrier, include topography, inside and outside building issues, current status of carrier infrastructure, system capability within service area as well as foliage, weather and other conditions. This level of understanding will allow calltakers to better manage the impact of the information on dispatch decision-making. Responders must also better understand the variances of wireless location data in order to maximize their effective response.

In addition, the Agency should monitor, define and provide appropriate explanation of the COS differences often displayed with wireless calls within the PSAP Service Area as well as the specific information obtained in collaboration with the WSP from call testing under such conditions.

**381234      The Agency should educate Pubic Safety Telecommunicators and responders regarding the current Federal Communication Commission (FCC) rulings and requirements for PSAP Service Area measurement and reporting of accuracy compliance.**

**This reinforces the need to better understand the current system performance in terms of usefulness and consistency of location data delivered to the PSAP as necessary for effective dispatch of emergency services and locating the wireless caller.**

The Agency should continue to emphasize the value of understanding and adjusting for variances in the value of wireless location data by PSAP staff as well as responders. Training should include a summary of the most recent action by the FCC regarding reporting of compliance within the current accuracy parameters requirements.

PSAP TCO trainers should provide access to the most recent FCC Orders and related summary information for use by the Agency. The consistency and correctness of such information within any training or education effort is critical. The Agency is encouraged to assure that the responsibility to monitor the activity and decision making in this area is clearly assigned to a designated individual.

Specific Reference Materials:

- As of the date of this publication, the duty to provide FCC defined compliance level of accuracy at the PSAP level remains a future action with a target date of 2018.
- Full Details in FCC Report and Order, FCC 07-166, Released 11.20.07, <http://www.fcc.gov/tools/headlines-archive/2007>

**381235      The Agency should establish baseline performance and conduct regular assessments and comparisons to the baseline.**

It is recommended that every Agency develop a baseline assessment of current wireless location accuracy as delivered to the PSAP. The purpose of this evaluation is to determine actual performance of each WSP providing services within the political boundary of the Agency. The comparison of delivered location data versus the actual known ground truth of a fixed location reference point provides empirical data regarding the value of the delivered location data from such areas under like-conditions, for dispatch and responder purposes.

This documentation, based upon consistent performance testing processes, can provide the Agency with sufficient reference data to quickly detect any degradation of current system capability and performance. The results of such performance testing should be regularly reviewed, revised and updated prior to publication for PSAP staff and responders. The same data and results will also be beneficial as informational reference to the average wireless E9-1-1 consumer, reinforcing the need to know the location of the emergency being reported.

As appropriate, post final determination of PSAP Service/County level accuracy requirements; the actual per PSAP/County service area performance baseline data may also be assessed by the same baseline activity, when conducted in an approved fashion.

Specific Reference Materials:

- See also, EP 380781-785 for more information on PSAP Level Performance Testing

**381236      The Agency should educate Public Safety Telecommunicators and responders to use all available resources to validate location data presented by the WSP.**

The location of the emergency is a critical informational element of any E9-1-1 call. The Public Safety Telecommunicators should continue to use as many tools as available to verify the actual location of the emergency, including but not limited to, local mapping resources, multiple local databases, known reference points and their own experience within the Agency and associated service area boundaries.

The benefits derived from understanding the variables that may influence the value of wireless E9-1-1 location data, as well as documenting the current actual performance of deployed services within the Agency, are critical elements of the effective dispatch decisions made daily. In addition, the Agency should reinforce and encourage through adequate training, the additional resources available to Public Safety Telecommunicators to assist in determining the actual location of a reported emergency.

**380737      The Agency should incorporate the results of its local testing program into its PSAP training program. The training program should provide the 9-1-1 calltakers with an enhanced understanding of the strengths and weaknesses of the Phase II wireless E9-1-1 systems throughout the PSAP service areas and the operational impact on responders.**

Informational materials to include the results of local baseline performance assessments should be provided to both first responders, the public and be included in the basic training of all Public Safety Telecommunicator staff in all PSAPs. The inclusion of this information supports the effective use of the location data delivered to the PSAP on all wireless calls as well as facilitates a shared understanding of expectations and understanding by responders.

The percentage of wireless E9-1-1 calls arriving at PSAPs across the country may vary per location, however some anecdotal reports suggest the volume may be as great as 70% with the estimated CTIA numbers indicating a minimum of 50% nationwide.. The need for improved training is especially relevant to performance within the Agency and is essential to successful call processing and effective dispatching of emergency services.

**380738      The Agency should have a formal internal process in place for timely reporting, tracking and resolution of any wireless performance anomalies.**

Conducting the assessment of actual performance can identify degradation of wireless E9-1-1 capability within the PSAP service area as well as document anomalies that create concern by the public safety entities. The Agency should use its documented, performance testing processes to provide the basis of inquiry to the wireless service provider regarding how the systems work under the defined set of static and dynamic variables.

It is recommended that in addition to assuring that change in system performance, resulting in a more significant deviation in location data value for dispatch purposes, be routinely shared with PSAP staff and all response agencies. The same information should be provided to and discussed with the identified wireless service provider who may not be aware of the problem and has an interest in resolving performance issues as well.

The Agency is strongly encouraged to work in a cooperative manner with the wireless service providers on a regular basis to improve the level of understanding regarding the current service provided with regards to the defined requirements and to develop reasonable expectations.

**380739      The Agency should be aware of ATIS 05000010 (Maintenance Testing) troubleshooting parameters and make them part of the Agency formal internal process.**

The Emergency Services Interconnection Forum (ESIF) is a committee of the Alliance for Telecommunication Industry Solutions (ATIS). ATIS is a United States based body that is committed to rapidly developing and promoting technical and operations standards for the communications and related information technologies industry worldwide using a pragmatic, flexible and open approach. ESIF is comprised of wireless and wireline network service providers, manufacturers and providers of support services that facilitate the identification and resolution of technical issues related to the interconnection of telephony and emergency services networks.

ESIF members are predominately wireless and wireline industry individuals. However, public safety is represented by a number of Agency or PSAP practitioners, as well as APCO and NENA staff. The Maintenance Testing document cited above in its ATIS standard format was created by a subcommittee of ESIF. The document provides information regarding potential system problems which can affect service in general as well as location data delivery to the PSAP.

Recommended Reference Materials:

- ATIS 05-000010 Maintenance Testing at [www.atis.org/esif/docs.asp](http://www.atis.org/esif/docs.asp) (fees apply)

#### Topic Area 4: Rebid / Re-Query:

**381241      The Agency should not rebid (automatically or manually) less than 30 seconds after the call is first presented to the calltaker. Any subsequent rebids should be at 30-second intervals. If automatic rebid is used, only the first rebid should be automatic.**

Across the nation, the term to describe the action by a calltaker to seek an updated location data estimate may vary. Rebid, Re-Query, Re-Inquiry, and other are terms are used to describe the CPE's ability to solicit updated location data for the call.

PSAPs have not withdrawn from the position that there is a critical need for prompt delivery of the best location data available on every wireless E9-1-1 call. All the parties recognize that often the wireless E9-1-1 caller may be able to describe the location or use a locally known reference point to assist the public safety telecommunicator to determine the approximate location of the emergency.

The frequency of actual response decisions being made based on the location data provided may be low. However the criticality of the event in which the caller cannot describe their location during an emergency is extremely high.

For a variety of reasons, such as separate timing parameters for voice and location data delivery, the best location data may not arrive with the initial wireless E9-1-1 call. Therefore, the revised common practice for calltakers should include a Mid-Call Location Update through the Rebid or Re-query function, after an appropriate interval. The optimum interval between the arrival of the first location data and a rebid for updated location data, regardless of the COS or Class of Service reported, should not be less than 30 seconds.

In most situations, additional Rebids have not been shown to add significant value; especially for events at a fixed location. The event which involves a moving source of risk (hazardous driver, unsafe load, fleeing suspect, etc.) being followed by a caller may be legitimate exception.

The original Effective Practices Guide urged the Agency to not utilize automatic rebids, since in some instances; such action could result in the temporary loss of voice path between the Telecommunicator and the wireless E9-1-1 caller. The industry has, through due diligence, sought to significantly reduce such occurrences. However the Effective Practice is not revised at present, to assure that Public Safety

Telecommunicators are aware that such an event could still occur.

Specific Reference Materials:

- See also, Appendix A of this Report, Mid-Call Location Update aka ReBid

**380743      The Agency should rebid all wireless calls when the wireless caller is not able to provide a location, even if the call is initially presented to the calltaker as a WPH2 COS.**

The Agency should establish, as a standard operating procedure, a requirement that for every Wireless E9-1-1 call received, during which the caller cannot provide adequate location data, a rebid shall be made even if the original class of service reported indicates it is a WPH2 call.

Regardless of the reported class of service on the initial call, the simple rebid effort, at the appropriate time interval, may provide access to updated location data by the Public Safety Telecommunicator.

**380745**      **The Agency should be aware that the exact same latitude and longitude presented after multiple rebids indicates improved location is not available for a reported stationary emergency scene at which the caller has stopped. The caller that does not stop at the scene and continues may again call at which point it is reasonable to expect a change of location data. The calltaker when rebidding, would normally expect a change in latitude/longitude. The calltaker should check the COS, if it is WPH2 and it continues to be the same latitude/longitude, a note should be made of the information and then referred to the WSP, if necessary to clarify the actual dynamics of the system as implemented.**

Every Agency should include in the basic training of all public safety telecommunicators information and appropriate guidance through an agency SOP to effectively manage with wireless E9-1-1 calls for which no improved location data is available despite the rebid effort. The manner in which various wireless service providers configure their internal systems can impact the outcome at the PSAP.

The Agency should ensure that all public safety telecommunicators have the most updated and complete information regarding wireless E9-1-1 call delivery from each wireless carrier providing services within the service area boundaries of the Agency.

## Topic Area 5: Confidence and Uncertainty:

**380751**      **The WSP should fix the confidence value in the location determining algorithm at a value greater than or equal to 90 percent and vary the Uncertainty value. This value may change over time as more research and understanding of networks are conducted and analyzed.**

The impact of the assigned Uncertainty Value per PSAP Service Area should be verified by performance testing on a regular basis. The Agency Wireless E9-1-1 Coordinator should also recognize that the ANI/ALI data fields are controlled by the local E9-1-1 service provider; who should also be consulted on desired changes of the data array.

### Specific Reference Materials:

- Review also, ATIS-0500004 (Recommendation for the Use of Confidence and Uncertainty for Wireless Phase 2) at [www.atis.org/esif/index.asp](http://www.atis.org/esif/index.asp) ([fees apply](#))

The action of the FCC in May, 2011 regarding the *Second Report and Order* amended Section 20.18(h) of the Commission’s rules to require wireless licensees subject to Section 20.18(h) to satisfy the Commission’s location accuracy standards at either a county-based or PSAP-based geographic level. Additionally, the *Second Report and Order* adopted interim benchmarks and timelines, for carriers to meet these new requirements. Finally, the *Second Report and Order* required wireless carriers to provide confidence and uncertainty data on a per call basis upon PSAP request, regardless of whether a carrier employs handset-based or network-based location technology.

A document subsequently submitted as a contribution to the discussion about “Uncertainty”, contained this warning to public safety: “Because Uncertainty is often expressed as a circle radius, when the algorithms that are used to produce the location do not generate circles; there are some inherent errors in the calculation of Uncertainty, overall”.

APCO and NENA as members of ESIF were polled and responded that confidence should be set at 90% and need not be displayed. It was recommended that Uncertainty be displayed. The Agency should continue to work with each WSP to determine how best to utilize the Uncertainty value as delivered to the PSAP.

**380753      The WSP should deliver an Uncertainty value to the PSAP along with the location information on all WPH2 calls.**

The Agency is encouraged to work with the appropriate WSPs to have Uncertainty included in the data associated with each Phase 2 call delivered to the PSAP. The variance of location data value associated with particular wireless service providers should also be cited in the development and distribution of public information, PSAP training and responder awareness materials.

The value of the Uncertainty rating assigned per call is however determinable only by assessing the reported data versus the actual, known location data. The PSAP does not always have a known ground truth point available for every reported location within the service area. The performance testing completed by the PSAP does offer an opportunity to assist in determining the range of uncertainty values that appear to have a predictable level of reliability.

**380754      APCO and the WSPs should seek to define Uncertainty value thresholds / trends in order to provide PSAPs with guidelines for additional (two or more) rebids.**

The Agency should continue to review and evaluate the usefulness of the Uncertainty data associated with wireless E9-1-1 calls. Some WSPs have maintained it is the Uncertainty value that offers the calltaker the best tool available to assess the validity of the location estimate per wireless call.

The Agency in a cooperative manner should engage the appropriate WSPs in identifying as many tools as possible to enhance the value of all location data delivered to the PSAP. All such tools, should offer consistency and predictability that is observable and measureable.

## Topic Area 6: Towers:

**380761**      **The WSP should secure and provide to the Agency a MSAG valid address for all towers within and adjacent to the service area of the Agency for wireless E9-1-1 systems. The Agency should verify the tower address and any specific, assigned tower identifier provided by the WSP is MSAG valid and reply to the WSP in a timely manner.**

An effective partnership between the WSP and the Agency, on behalf of the consumer of wireless E9-1-1 services, is continues to be recommended. This partnership allows both public safety and industry representatives to work together on the multiple aspects of the wireless implementation, system modifications and wireless call management effort. All WSPs should ensure that every tower location has a MSAG valid address. The use of WSP assigned unique identifiers for specific towers should also be known to the PSAP and reviewed for currency and accuracy at least annually. The assigned latitude/longitude of the tower location may also be used as an additional source of identification and should be agreed upon among the parties. Upon request, the Agency should act promptly to verify the address and reply to the WSP or their representative.

PSAPs should include information regarding the assignment of MSAG valid addresses to tower locations and antennae faces; in the event that a wireless 9-1-1 call does not produce a Class of Service (COS) of WPH2 or Wireless Phase Two.

The Agency Wireless E9-1-1 Coordinator should also share this information with neighboring PSAPs, in the event that calls handled by these tower locations are delivered to another PSAP. The task of managing the relationship between PSAPs that may be sharing towers or have a designated rile as the default/alternate point of delivery for calls from these towers remains an active and ongoing responsibility of the Coordinator.

**380762 The WSP should provide the Agency with sector identification on the towers (such as east, west, north, south, southeast, etc). Omni-directional towers should be so identified.**

The Agency should work with the WSP to assure that sector identification values are assigned to each sector, enhancing the value to the Agency during location data value assessment on Phase 1 wireless calls. This sector designation may also be used with 9-1-1 systems and/or Computer Aided Dispatch (CAD) digital mapping to present an image of the estimated area, in which the caller is likely to be at the time of the transmission of the data, to the telecommunicator.

All omni-directional antenna tower sites should also be identified and reported to the Agency for the similar reporting value to the calltaker. The Agency that has accurate tower site location data from the WSP is able to more effectively utilize these reference points within the system to assist callers during times of emergency.

The Wireless E9-1-1 Coordinator will find it advantageous to seek an annual “audit” from the WSPs reference any tower modifications, which may include antenna direction and configuration, range, new antennae, new towers, decommissioned tower sites, temporary tower deployments, etc.

**380763      The appropriate Agency(s) shall define and provide routing instructions to the WSP for all tower sites and default PSAP(s) within an agreed time frame.**

It is understood and accepted that wireless tower service coverage does not normally follow the political subdivisions of an Agency, County or even state. The Agency should utilize their working relationship with all the WSPs to provide the most accurate and public safety agency accepted set of routing information per tower site and/or sector face.

The Agency should actively accept their partnership responsibilities, including the need to promptly and fully, report to the WSP the accepted default routing plan for each tower face and/or site which impacts the delivery of service within the Agency territory. The Agency should obtain confirmation that the preferred routing information has been received and accepted by the WSP.

Any delay by the Agency to effectively share the necessary information with the WSP or their third party contractor for new tower and interim routing while additional upgrades are in progress, could lead to wireless E9-1-1 calls being routed in a manner inconsistent with the needs of the callers or current requirements of the effected Agency(s).

Specific Reference Materials:

- Visit the ATIS/ESIF website, review specifically, Issue 35  
Post Deployment Cell Site Additions
- Visit the ATIS/ESIF website, review specifically, Issue 36  
Deployment Cell Site Additions – Provisional Routing

**380764      The WSP should provide contact information to the Agency prior to any new tower being placed into service for testing. The Agency should compile contact information and provide it to the appropriate operations staff. The Agency must keep contact and system configuration information provided by the WSPs current.**

This Effective Practice continues to encourage the meaningful partnerships between the Agency and WSP for effective wireless E9-1-1 service. The WSP, should through their contractors, make direct contact with the Agency and provide appropriate contact information to facilitate the effective practices cited in this Guide. The Agency should likewise seek to provide the WSP such contact information and maintain a positive working relationship during site development, construction and modification of any tower site. It will also be important to determine actual ownership of the tower and any other potential WSP users, if not totally dedicated to a particular wireless service provider.

**380765      The Agency should establish a productive working relationship with WSP representatives responsible for implementation and maintenance. The WSP should provide the current appropriate representatives' contact information to the Agency.**

The Agency should take responsibility for developing an effective relationship with all WSPs, their contractors and agents that have impact on the operational and technical capability of deployed systems within the overall service area. The discussions must be broad enough to cover not only the coordination of implementation or redesign requests, but also tower development, system maintenance, baseline performance and access to contact information to resolve issues related to services in general and emergency events. The Agency must recognize that unlike the legacy PSTN connectivity, a wireless tower, tower face or other service element can be discontinued or interrupted-without notice to the Agency/PSAPs that may be affected by the usually temporary changes in service performance.

It is recognized that the commitment of staff resources to such aggressive coordination and cooperative efforts may appear demanding. However, the evolution of wireless use and its impact on the Agency cannot be ignored. The expectations of PSAP staff, the public consumer and first responders require a revised approach to managing Agency – Service Provider relationships, in which the quality of service is so critical to the wireless E9-1-1 caller in crisis.

**380766      The WSP and the Agency should maintain regular communication and collaborative efforts with associated, neighboring PSAPs on a data and routing maintenance process and commit to continual review with associated follow-up.**

The most effective means of avoiding urgent wireless calls from arriving at unintended destinations is to actively participate in the continuing management discussions and decision making of call routing plans. In addition, post-deployment adjustments and processes to define and cause valid changes should be developed prior to the first instance of a problem that may have caused a delay in response to a wireless E9-1-1 caller.

The responsibility to provide the most effective service is shared between the Agency and the WSP and their contractors. This obligation continues long after the initial deployment and becomes part of the expected quality of service management function of the Agency, on behalf of the consumers and responder groups.

Specific Reference Materials:

- Review also ATIS 05000010 (Maintenance Testing) at [www.atis.org/esif/index.asp](http://www.atis.org/esif/index.asp)

**380767      The Agency and the WSP should collaborate on a process for the reconciliation of system performance anomalies, including wireless 9-1-1 calls that are received at unintended locations.**

Early in the relationship with the WSPs, the Agency should clearly define the process for the resolution of routing issues. The process should include well-defined responsibility for notice of problems with specific action items as well as reasonable timelines for remedy. Post-deployment adjustments and processes should be expected as the experience of wireless call volume, consistency and value of location data are continually assessed by the Agency.

The expanding role of wireless technology use throughout many service areas reinforces the need to designate a local wireless E9-1-1 coordinator on behalf of the PSAP/Agency.

**380768      The Agency should request cell and routing data contained in the Mobile Positioning Center (MPC) or Gateway Mobile Location Center (GMLC) for their service area and perform annual reviews. Upon completion, results should be furnished to the WSP for their review and response if appropriate.**

It is recommended that the Agency seek to review the cell and routing data maintained at the Mobile Positioning Center (MPC) or the Gateway Mobile Location Center (GMLC) or current equivalent within the deployed system of each WSP on a regularly scheduled basis. The review should be viewed by all parties as a legitimate/responsible inquiry and effective practice by the Agency to maintain service quality. The review seeks to prevent service issues by identifying pre-event data and existing rules that may be subject to change within these systems.

The Agency and WSP should also have a well-defined process developed for resolving any issues that arise from such reviews. These actions are an integral part of any meaningful direct service partnership which should exist between the Agency and WSPs.

## Topic Area 7: Cache

- 380771**      **The Agency Wireless E9-1-1 Coordinator should be aware that the dynamics of location determination equipment per Wireless Service Provider cache may have an operational impact on the accuracy of the wireless location data delivered with calls.**
- 380772**      **The WSP should provide to the Agency an engineering description of cache sufficient to allow the Agency to determine the operational impact within the service area.**

There are some variances between WSPs as to the length of time such initial call location data is associated with the call and upon what activity that data is updated by the caller and/or the calltaker.

The Agency should first understand the potential impact this system element can have on wireless E9-1-1 call processing and dispatch of appropriate resources. In the worst case scenario, the location data from the last call may be presented as the ALI with a later, and perhaps unassociated, call. The influence of cache timing parameters within the deployed system should be recognized and understood as part of the total wireless call management responsibility of the Agency. The Rebid action reportedly forces a new data retrieval process.

The potential influence on call processing (specifically the interpretation of location data delivered to the PSAP) should be included in all wireless calltaker/dispatcher training materials. In addition, the Agency should seek to identify a means to detect instances in which potential cache issues have created a problem during call processing. This data may subsequently be used by the Agency in discussion with the WSP to seek further clarification, better understanding and potential corrective actions related to Cache within the system as implemented.

The extent to which the PSAP may experience cache related location data issues with calls may be minimal; however, as part of effective call management, understanding the nature of the issue from the WSP perspective will provide opportunities to assist call takers identify and deal with the peculiar circumstances of this issue.

## Topic Area 8: PSAP Performance Testing:

**380781**      **The Agency should implement a program to test the performance of the WPH2 systems to include call routing, usable data presented at the PSAP, and location performance in the various topologies in the PSAP Service area in an effort to better understand any potential disparity caused by multiple factors throughout its service area.**

The Agency should develop, and engage in, a regular and consistent testing process to evaluate the performance of wireless systems as deployed within their service area. The establishment of baseline performance of the implemented systems, across the topologies of the service area, can provide the Agency with useful information. Evaluating the consistency and accuracy of location data delivered to the calltaker with wireless E9-1-1 calls, enhances the dispatch decision making value of such location data. The cost of conducting performance testing is the responsibility of the Agency.

It is unnecessary for all baseline performance testing to meet the rigorous practices, as defined within OET 71 or ATIS 0500001. The requirement to determine actual compliance with current FCC location accuracy and frequency parameters is the responsibility of the WSP, not the Agency. The Agency should expect that such compliance level testing per PSAP area, as a result of existing and evolving regulatory decisions, is a usual and customary cost of the WSP associated with offering such services.

More appropriately, the Agency should focus on conducting well defined and consistent empiric testing processes that use known ground truth reference points or their base mapping reference point equivalent to assess the value of the WPH2 location data delivered to the calltaker. This level of practical field performance assessment, when conducted in a regular and consistent manner, can provide information that has operational implications for training, dispatching and overall system status at the time of the testing. Complete and thorough documentation of conditions and processes used during such testing can also assist the Agency in discussions with the WSP(s) concerning performance and potential system improvements.

Specific Reference Materials:

APCO Project LOCATE Performance Testing Guidebook at  
<http://www.apcointl.org/resources/apco-wireless-resources.html>

APPENDIX B – FCC Wireless Accuracy Modifications , May 2011

**380782      The Agency should communicate and inform the WSP of testing to be conducted, the methodology to be utilized, and the agency’s understanding of the specifics of the deployed system in the agency’s service area.**

The Agency should continue to foster an effective partnership with each WSP during all performance testing efforts and clearly distinguish them from any FCC compliance testing efforts. It is reasonable to share with each WSP, the performance testing methodology being used throughout the Agency service area. This recommended approach reinforces the level of commitment and desire to understand the systems as deployed by the Agency and also provides characteristic results for consideration of outdoor and indoor performance, generally. The observed data results may be used in training, operational functionality, response decisions and for managing consumer awareness.

It should be understood that empiric data arising from performance testing alone, may not be adequate to fully assess the overall performance of the system as implemented. The regularity and consistency of the performance achieved can provide, however, an adequate basis for further discussion and anticipated action by the parties toward improvement of service capability.

**380783      The Agency and the WSP should discuss specific testing methods and expectations for each location technology (i.e., testing in moving vehicles, indoor testing, rural versus urban, etc.).**

It is recommended that the Agency alert first and then discuss with each WSP, the performance testing effort to be conducted within the jurisdiction. Since these efforts are not conducted to assess accuracy compliance issues, the number and location of test call origination can in fact better represent actual use patterns of wireless E9-1-1 callers in the service area. It is also appropriate to test within areas that have high frequency of use, as determined by Agency records, as well as those areas from which wireless E9-1-1 calls are commonly the dominant source of emergency event information.

**380784 Both the Agency and the WSP should work together to interpret the testing results and agree on a plan to address identified anomalies and deficiencies to ensure that the system is performing as optimally as possible in the service area. Correction plans should include retesting to allow assessment of improvements in system optimization.**

The Agency is representing all the public safety disciplines and the general public. It is best served by a cooperative effort with the WSP(s) to recognize, interpret and respond to the performance as demonstrated by indoor and outdoor testing results. The goal of such efforts, supported by complete and competent documentation of conditions and processes used during such testing, is intended to improve understanding of the deployed systems. This level of understanding by public safety, in turn supports shared efforts to improve the operational response capability of emergency services. In some cases, re-testing may be necessary to fully assess more completely defined data elements, system specific variables and to reach a common platform and continued discussions with the WSPs.

It is recommended that the Agency indicate its acceptance of the responsibility to best manage wireless call processing by first supporting staff in developing a reasonable understanding of how wireless systems work to support access to E9-1-1. As with the traditional landline telephone service providers, recognizing the role of wireless service providers, third party contractors, wireless industry representative groups and standard development organizations is helpful. The Agency should seek to develop an on-going and positive relationship that fosters discussion of any identified issues which appear to have an adverse impact on the operational capability of the Agency to provide service to persons amidst crisis.

Performance testing is intended to develop awareness of and foster confidence in the estimated location data associated with each wireless E9-1-1 call. The testing program within the service area, when properly understood and managed, offers the best opportunity to define the predictability and consistency of wireless service performance across the shared service area. Such efforts facilitate the efforts of the Agency in reaching the highest level of performance from the implemented system.

This level of practical field performance assessment, when conducted in a regular and consistent manner, will provide the Agency with information that has

implications for training, operational functionality, dispatching and overall system status at the time of the testing. Further, it is through such testing that initial assessments of the Uncertainty value can also be accomplished for a variety of potential call scenarios. The potential influence of the derived and presented Uncertainty to the calltaker for decision making regarding call processing is an important benefit of such testing.

Performance Testing should always be regarded as an opportunity to learn how the system operates amidst a wide range of static and dynamic variables. It is clearly not intended to supplant wireless accuracy compliance testing, which is a function and responsibility of the WSP, per FCC regulatory processes.

Indoor performance testing does present some challenges that should be understood by the Agency Public Safety Telecommunicators.

Based on such post performance testing discussions with the WSPs; the Agency may determine that re-testing is appropriate. At that time it will be essential to document any modified actions which are different from the original testing effort to assist in defining the variables for which controls were provided as well as the opportunity to review comparative results of such actions.

**380785      The Agency should incorporate the results of its local testing program into its PSAP training program.**

The effort, cost and commitment to conduct a well-defined performance testing process, to share the results with each WSP, and to candidly discuss both, has value only if the outcomes are well understood by the all the parties. The Agency should seek to develop from such efforts, the best level of understanding possible for the systems in use at the time of the testing within the service area. The testing results may influence public policy, call management, staff training, public and field responder training as well as identify the call locations and situations which offer the greatest challenges to existing technology. It should also be recognized that limitations do exist that may influence the test results as well as common consumer use.

This level of knowledge then must transfer to those PSAP staff persons directly providing the service. Documentable experience and functional examples of wireless call handling should be incorporated into the Agency training program for both initial and on-going training of experienced staff. The Agency should seek to develop training methods that duplicate or mirror actual service experienced in the service area. Performance observations and evaluations should include wireless call handling as a regular part of the supervisory process. Using a percentage of wireless calls actually experienced in the Agency as part of the training and performance evaluation may be appropriate.

The implications of wireless testing must be translated into performance measures that can be assessed at the calltaker and dispatcher level, supporting further trustworthiness of the estimated location data. The impact upon wireless E9-1-1 call processing as well as the dispatch of emergency services must be evaluated fairly and uniformly to best determine the value of these efforts. This level of improved direct service delivery requires relevant, complete and effective training materials/sessions for all staff engaged in the Agency commitment to better service.

## Topic Area 9: Wireless Service Provider – PSAP Area Testing:

**380791**      **If call through performance testing to the PSAP will be conducted, the WSP should provide a mutually agreed upon notification to the Agency prior to any testing in its jurisdiction.**

The WSP and the Agency, as partners in the delivery of effective wireless E9-1-1 service and response, should coordinate any testing being planned by the WSP that seeks to deliver calls directly to the PSAPs within the Agency.

The Agency should understand the range of testing options the WSP may use, some of which do not include actual delivery of voice and location data through to the Agency calltaker. The WSP often seeks not to impact the PSAP with its testing efforts. However, whenever possible and with coordination, the actual inclusion of the PSAP can have additional benefits to both parties.

This standard supports call through testing that includes the PSAP whenever possible with adequate notice and coordination. The benefits of such a cooperative effort provide improved understanding of how each deployed system actually works, under routine and special circumstances, how call information will be presented at the PSAP as well as the opportunity to capture the per call data for subsequent review and analysis. Whenever possible, the PSAP should seek to support call through testing by assigning adequate staff for the identified testing period necessary to complete the designated test calls.

### Specific Reference Materials

- ATIS End to End Testing (ATIS-0500009)
- ATIS Maintenance Testing (ATIS-0500010)
- ATIS Define Topologies & Data Collection Methodology (ATIS-0500011)
- ATIS 0500013 Wireless Indoor Testing

**380792 Compliance accuracy testing methodology used by the Agency or the WSP should fall within the guidelines set forth in OET-71 or ATIS 0500001 (Accuracy Testing).**

Agencies are encouraged to use both guidelines for best results. It is recommended that the Agency take responsibility for reviewing and developing an understanding of and sharing with PSAP staff, responders and the public the current Memorandum and Orders of the Federal Communications Commission (FCC) regarding accuracy parameters, timeline and responsibilities upon both the Agency and the WSP. The Agency should include an explanation of such Orders in public safety telecommunicator training materials to better manage expectations of staff as well as responders.

Specific Reference Materials:

- ATIS End to End Testing (ATIS-0500009) (fees apply)
- ATIS Maintenance Testing (ATIS-05000010) (fees apply)
- ATIS Define Topologies & Data Collection Methodology (ATIS-0500011) (fees apply)
- ATIS 0500013 Wireless Indoor Testing (fees apply)
- OET-71 (FCC website)

**380793**      **During the call through performance testing to the PSAP testing process, the Agency should monitor the process to ensure there is consistency between the pANI sent by the WSP and the information displayed at the PSAP.**

The Agency also has a responsibility to monitor any end-to-end testing or its functional equivalent to assess the consistency between the pANI sent and the information displayed at the PSAP. This effort provides the opportunity to assess the impact of several processes, including cache and re-bid value as well as the coordination of system elements in support of overall system performance.

**380794 Call through performance testing to the PSAP should be designed in such a way to validate routing and delivery of format and content of ALI display at the PSAP as defined by the Agency.**

The Agency should continue the coordination effort with the WSP conducting testing to assess both routing and location data format presentation to the PSAP. It should be noted that wireless network coverage areas and position determining systems as deployed, may not align clearly with PSAP jurisdictional areas. The “Routing PSAP”, as it referred to in the ATIS Standard is the PSAP to which a call from a given location is routed based on wireless system coverage factors and position determination capabilities used by the WSP, and may or may not be the same coverage area as the political jurisdiction of the PSAP.

The resolution of ALI display format issues may also involve the Agency 9-1-1 system service provider (911SSP), which should be part of the coordination effort during the testing process. This standard again reinforces its recommendation that the ALI display for every WSP be consistent to minimize any need for a variable interpretation, per WSP.

Specific Reference Material:

- ESIF TECHNICAL REPORT ATIS-0500009 High Level Requirements for End-to-End Functional Testing

**380795      The WSP and the Agency should mutually agree to an end-to-end field-testing schedule to minimize the impact of and disruption to the PSAP operations.**

The Agency should understand the importance of all WSP testing and accept that some impact upon the PSAP staff is likely to occur. Every reasonable accommodation should be made to facilitate the opportunity for the WSP to conduct testing, including that, which delivers calls through to the calltaker. The Agency, based upon actual call data, should be able to provide optimum times of the day for such testing processes. It is, however, appropriate for all parties to understand that even with effective coordination, the dynamic nature of actual emergency events may cause the participation of the PSAP staff to be postponed, interrupted or terminated by the PSAP.

**380796**      **The WSP and the PSAP should ensure that all individuals involved in the testing process have appropriate contact information prior to the beginning of the testing process (i.e., WSP Team Leader and the PSAP 24/7 supervisor number).**

The Agency, as a partner in the delivery of effective wireless E9-1-1 service and response, should establish and maintain accurate contact information for each WSP and their contractors. The level of cooperation and coordination is greatly enhanced by the ability of both parties to make direct contact with the appropriate individuals to discuss the issues, answer questions and prepare for testing of any type. The ability to reach appropriate persons on a 24/7 basis also provides the Agency or the WSP the opportunity to alert each other of potential testing schedule changes. The Agency should also ensure that the WSP has the appropriate contact information for the Agency and any changes or modifications to personnel or contact information should be communicated to the WSP in the serving area.

**380797      The WSP and the Agency should mutually agree to a field-testing process that tests tower locations, sectors, and commonly available handset models in the PSAP service area.**

The effectiveness and overall importance of testing within the Agency may be defined by the value it has to the specific Agency and potential consumers within the service area. It is recommended that the Agency specifically request that all towers and all sectors be tested. The Agency should also seek to determine what wireless devices are being used to make the test calls, if not being computer generated. In cases where a particular handset has been found to be common within the Agency service area and concerns have been noted with the WSP previously, testing by the WSP or the Agency should include calls from that specific handset device.

**380798**      **The WSP and the Agency should independently document and record the results of testing. Subsequent to the completion of the testing, the WSP and the Agency should meet to review and discuss testing results and agree to the methodology for any possible retests.**

Based upon the post implementation testing evaluation of its wireless E9-1-1 call testing data, as well as discussions with the WSP(s), there is an opportunity to review the results and discuss their implication for effective wireless E9-1-1 call processing at the PSAP level.

The power of knowledge based upon an understanding of how the systems actually operate and perform across the particular service area is critical to successful wireless call management and agency operational effectiveness. The sharing of test data and a candid discussion of the test results and process should be a fundamental element in any testing plan.

**380799      The WSP and the Agency should mutually agree upon notification to the PSAP prior to any network changes which may have impact on PSAP operations.**

It is recommended that the partnership between the Agency and the WSP(s) include a well-defined process which allows the Agency to be alerted to any network dynamics or equipment modifications which are taking place, or have occurred, that may have significant impact on the system for a period of time. Examples of such activity may include but are not limited to adding sites, rehomeing, major antennae reconfiguration (call routing impact) as well as discontinued use of tower sites and antenna locations. The relationship developed over time through on going cooperative, collaborative efforts has positive benefit for the wireless consumer, Agency, and Wireless Service Providers..

All the parties benefit from such notice in order to understand the impact on the delivery of service to the wireless E9-1-1 caller and the first responders.

Specific Reference Recommendations:

- ATIS-0500009 High Level Requirements for End-to-End Functional Testing
- ATIS-05000010, Maintenance Testing: 3.4 Accuracy Maintenance Test Trigger Mechanisms

**APPENDIX A:**

**SG C Recommendation to ESIF - Contribution G-37 (6/16/06) Re: Mid-Call Location Update, ESIF Issue 19 April 3, 2003.**

Mid-Call Location Update (MCLU) is the capability for a PSAP to query (rebid) for updated WPH2

Position Information of a mobile caller. Although MCLU is not required by the FCC Phase II mandate (but is implied in OET-071), there are a couple of legitimate reasons why the PSAP may have to re- query for Position Information. First, the caller's location may not have been determined by the location technology by the time the emergency call was delivered to the PSAP and the PSAP makes its initial bid for location. In this case the PSAP will receive Phase I information and may be prompted to rebid for Phase II information. If the time between the initial bid and rebid is sufficient, the location technology should have been able to locate the caller's position and it can be returned to the PSAP. Second, the PSAP calltaker may determine that the caller is moving and because of the situation may have a need to obtain the current location. In this case the network will re-locate the caller and return their position to the PSAP. If a new location cannot be obtained by the network, the "last known" position may be returned.

While further experience is needed to determine the optimum interval for the rebid, the ESIF recommendation is to wait 30 seconds after the initial bid if it is determined that a position update is required. There are two of reasons for this. First, an additional 30 seconds should be sufficient time for the location technology to determine a Phase II compliant location fix. Second, some network elements will actually throttle PSAP requests and if they occur too frequently will return the last known address rather than requesting a new location fix.

There have been some requests that CPE vendors develop into their systems repetitive automatic re- bids. That is, without calltaker intervention, the CPE would repetitively request an updated location. ESIF strongly recommends against this implementation. Not all calls require an accurate location of the caller. For example, callers reporting the same traffic accident need to be handled quickly so that the calltaker can be ready for the next call. Not only is an initial location not needed, but clearly a rebid is not required. If every wireless call resulted in a rebid, the number of ALI bids would be twice that of a wireline call. And, if for an example, wireless calls rebid every thirty seconds for two minutes, the number of ALI bids would

quadruple over wireline calls. This data traffic represents a real concern relating to the sizing of network elements and data networks that would have to be upgraded to accept this increased load.

Finally, early on in the discussions regarding WPH2, there were concerns expressed that location updates of a caller may lead to privacy concerns. It is ESIF's position that when a caller makes a 9-1-1 call they give up their right to privacy and the location of the caller may be delivered to the PSAP without any regards for screening.

## APPENDIX B: FCC Wireless Accuracy Modifications

DA 11-920

Wireless E911 Location Accuracy Requirements

Report and Order

FCC 10-176

PS Docket No. 07-114

This Guide is prepared in accordance with the requirements of Section 212 of the Small Business Regulatory Enforcement Fairness Act of 1996. It is intended to help small entities—small businesses, small organizations (non-profits), and small governmental jurisdictions—comply with the new rules adopted in the above-referenced FCC rulemaking docket(s). This Guide is not intended to replace the rules and, therefore, final authority rests solely with the rules. Although we have attempted to cover all parts of the rules that might be especially important to small entities, the coverage may not be exhaustive. This Guide may, perhaps, not apply in a particular situation based upon the circumstances, and the FCC retains the discretion to adopt approaches on a case-by-case basis that may differ from this Guide, where appropriate. Any decisions regarding a particular small entity will be based on the statute and regulations.

In any civil or administrative action against a small entity for a violation of rules, the content of the Small Entity Compliance Guide may be considered as evidence of the reasonableness or appropriateness of proposed fines, penalties or damages.

Interested parties are free to file comments regarding this Guide and the appropriateness of its application to a particular situation; the FCC will consider whether the recommendations or interpretations in the Guide are appropriate in that situation. The FCC may decide to revise this Guide without public notice to reflect changes in the FCC's approach to implementing a rule, or to clarify or update the text of the Guide. Direct your comments and recommendations, or calls for further assistance, to the FCC's Consumer Center:

1-888-CALL-FCC (1-888-225-5322)

TTY: 1-888-TELL-FCC (1-888-835-5322)

Fax: 202-418-0232 [fccinfo@fcc.gov](mailto:fccinfo@fcc.gov)

### Objectives of the Proceeding

The Federal Communications Commission (FCC) has developed wireless Enhanced 911 (E911) rules to improve the accuracy and reliability of wireless 911 calls and to provide public safety and emergency response personnel with location information so they can locate and provide assistance to wireless callers more effectively.

It was the objective of the *Second Report and Order* to improve the ability of public safety personnel to have accurate information regarding the location of a wireless caller. Without precise location information, public safety's ability to provide critical services in a timely fashion becomes far more difficult, if not impossible. Accordingly, the *Second Report and Order* requires wireless carriers to take steps to provide more precise automatic location information in connection with 911 emergency calls to Public Safety Answering Points (PSAPs) in areas where they have not done so in the past. As a result of this order, emergency responders will be able to reach the site of an emergency more quickly and efficiently.

The *Second Report and Order* amended Section 20.18(h) of the Commission's rules to require wireless licensees subject to Section 20.18(h) to satisfy the Commission's location accuracy standards at either a county-based or PSAP-based geographic level. Additionally, the *Second Report and Order* adopted interim benchmarks and timelines, set forth in paragraphs 4-5 below, for carriers to meet these new requirements. Finally, the *Second Report and Order* required wireless carriers to provide confidence and uncertainty data on a per call basis upon PSAP request, regardless of whether a carrier employs handset-based or network-based location technology.

### Rules that the Commission Amended

The *Second Report and Order* amended Section 20.18(h) of the Commission's rules to require wireless licensees subject to Section 20.18(h) (CMRS providers, excluding mobile satellite service operators) to satisfy these standards at either a county-based or PSAP-based geographic level.

The *Second Report and Order* also amended Section 20.18(h) to establish new compliance benchmarks. Carriers using network-based technologies must comply with a location accuracy standard of 100 meters for 67 percent of calls in 60 percent of counties or PSAP service areas one year from the effective date of the *Second Report and Order*; in 70 percent of counties or PSAP service areas three years from

the *Second Report and Order*; and in 100 percent of counties or PSAP service areas within five years of the effective date of the *Second Report and Order*. Additionally, network-based technologies must meet a 300 meter/90 percent accuracy standard in 60 percent of counties or PSAP service areas within three years of the effective date of the *Second Report and Order*; in 70 percent of counties or PSAP service areas within five years of the *Second Report and Order*; and in 85 percent of counties or PSAP service areas within eight years of the *Second Report and Order*. Accuracy data from both network-based solutions and handset-based technologies may be blended with one another to measure compliance.

The *Second Report and Order* also adopted rules requiring handset-based technologies to meet the 50 meters/67 percent standard and 150 meters/80 percent standard two years from the effective date of the *Second Report and Order*, allowing carriers to exclude up to 15 percent of counties or PSAP service areas from the 150 meter requirement based upon heavy forestation. Handset-based technologies must meet the 50 meters/67 percent standard and 150 meters/90 percent standard within eight years of the *Second Report and Order*, allowing for 15 percent exclusions in heavily forested areas.

To improve the ability of public safety personnel to assess the accuracy of the location information they receive, the *Second Report and Order* required wireless carriers to provide confidence and uncertainty data on a per call basis upon PSAP request. If a SSP (an entity responsible for transporting confidence and uncertainty data between wireless carriers and PSAPS, including LECs, CLECs, owners of E911 networks, and emergency service providers, any of which is termed “System Service Provider,” or “SSP”) does not pass confidence and uncertainty data to PSAPs, the SSP has the burden of proving to the Commission that it is technically infeasible for it to provide such data.

The rule became effective January 18, 2011, except for §§ 20.18(h)(1)(vi), 20.18(h)(2)(iii), and 20.18(h)(3), which contained information collection requirements subject to OMB approval. OMB approved the information collection on March 30, 2011. The amendments to 47 CFR 20.18(h)(1)(vi), (h)(2)(iii), and (h)(3) published at 75 FR 70604, November 18, 2010, became effective on April 28, 2011.

### Recordkeeping Requirements

Carriers must provide confidence and uncertainty data on a per call basis upon PSAP

request beginning two years after the effective date of the order. Confidence and uncertainty data must be submitted to the requesting PSAP.

Carriers must submit a list of specific counties or portions of counties where they utilize exclusions within 90 days following approval from the Office of Management and Budget for the related information collection. The *Order* requires carriers to submit their lists electronically into the docket of this proceeding, PS Docket No. 07-114, and the *Order* also requires carriers to send copies to NENA, APCO, and NASNA in paper or electronic form.

#### Weblink and Citations

Wireless E911 Location Accuracy Requirements, PS Docket 07-114, *Second Report and Order*, FCC 10-176, 25 FCC Rcd 18909 (2010).

[http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/FCC-10-176A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-10-176A1.pdf)

**NOTES\*:**

*\*The "Notes" page is informative material and not a part of this American National Standard (ANS)*

**Wireless 9-1-1 Deployment and Management  
Effective Practices Guide**



**351 N. Williamson Blvd.  
Daytona Beach, FL 32114  
USA**