Key Performance Indicators for Public Safety Communications Personnel

APCO ANS 1.118.1-2020
# TABLE OF CONTENTS

FOREWORD ..................................................................................................................................................................... 3  
EXECUTIVE SUMMARY ..................................................................................................................................................... 5  
INTRODUCTION ............................................................................................................................................................... 6  
AGENCY RESPONSIBILITIES ............................................................................................................................................... 7  
   2.1 General Agency Responsibilities relative to all PST job functions ................................................................. 7  
GENERAL KNOWLEDGE & SKILLS ...................................................................................................................................... 8  
   3.1 Knowledge .................................................................................................................................................................. 8  
   3.2 Communication ......................................................................................................................................................... 10  
   3.3 Customer Service ...................................................................................................................................................... 11  
PUBLIC SAFETY CALL TAKER FUNCTION .................................................................................................................. 13  
   4.1 Public Safety Call Taking Function .......................................................................................................................... 13  
LAW ENFORCEMENT SERVICE DISPATCH FUNCTION .......................................................................................... 14  
   5.1 Law Enforcement Service Dispatch Function ........................................................................................................ 14  
FIRE SERVICE DISPATCH FUNCTION ....................................................................................................................... 16  
   6.1 Fire Service Dispatch Function .............................................................................................................................. 16  
EMS DISPATCH FUNCTION ............................................................................................................................................. 18  
   7.1 EMS Dispatch Function ............................................................................................................................................. 18  
ACRONYMS ................................................................................................................................................................... 20  
GLOSSARY ..................................................................................................................................................................... 21  
ACKNOWLEDGMENTS .................................................................................................................................................... 23  
APPENDIX ...................................................................................................................................................................... 25  
   APPENDIX A ............................................................................................................................................................................. 25  
   APPENDIX B - KPI DEVELOPMENT ................................................................................................................................................. 26  
   APPENDIX C - KPI DEVELOPMENT TEMPLATE .......................................................................................................................... 29  
   APPENDIX D - DATA SOURCES, COLLECTION AND PREPARATION ......................................................................................................... 30  
   APPENDIX E - EXAMPLE INSTRUMENTS AND TOOLS ..................................................................................................................... 35  
NOTES ........................................................................................................................................................................... 38

Copyright ©2020 APCO International | All Rights Reserved
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 2020 - 2021 APCO International Board of Directors:

Margie Moulin, RPL, CPE, President
Jason Kern, CPE, First Vice President
Angela R. Bowen, RPL, CPE, Second Vice President
Tracey Hilburn, RPL ENP, Immediate Past President
Derek K. 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 Communications Center & 9-1-1 Services Department of APCO International.

For more information regarding APCO International and APCO standards please visit: www.apcointl.org


Copywrite ©2020
APCO American National Standards (ANS) are voluntary consensus standards. Use of any APCO standard is voluntary. 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, 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. The American National Standards Institute (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.

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 Communications 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 Standards Program Manager, Communications Center & 9-1-1 Services
APCO International
351 N. Williamson Blvd
Daytona Beach, FL 32114 USA
apcostandards@apcointl.org
EXECUTIVE SUMMARY

As part of the integrated effort of coupling Key Performance Indicators (KPI) and Total Quality Management (TQM), as referenced in the associated Executive Summary for Key Performance Indicators of Emergency Communications Centers, which may be evaluated less frequently, it is the intention of this document to address the KPI evaluations for the Emergency Communication Center (ECC) Personnel on a more frequent and on-going basis. In development of any TQM Program, and assessing KPI in the center, all facets – technical, systems, and personnel must be considered as a whole. In this standard, those elements of the actions and functions of ECC personnel are addressed.

Whereas leadership of personnel and management of the center in its business and technical aspects should be understood in a separate context, the TQM must consider both in assessments of performance. The questions should be asked, “Is this a system-driven or business model improvement that is needed, or a coaching, training or leadership issue?” This standard, coupled with the KPI for the physical center will help guide managers and supervisors in making those distinctions and improvements.

Once implemented, each agency can better provide essential and accurate information to assist in strategic planning, governance decisions and operational improvements in both the private and public sectors. While a number of organizations regularly collect 9-1-1 data at the state and sub-state level, challenges exist in comparing non-standardized data across states. The 9-1-1 community has provided extensive input on a framework for data standardization, collection and use. The use of KPI within all ECCs can improve the instruments used in data collected, and reported. The data related to improvements made through the use of KPI can also help at the national level, when collected and disseminated to ECC’s nationwide.

As stated in the scope and need of this standard, the full intent is to provide ECC Management with Key Performance Indicators (KPI) as they relate to personnel performance measurements, accuracy and quality of information logged or provided by ECC personnel, and help identify specific areas of personnel performance, which should be measured according to standards and best practices in order to benchmark individual effectiveness.

As KPI are an essential part of quality assurance and improvement for the technical, operational, maintenance, business, and liability functions of the center as a physical plant, so are the KPI for the personnel responsible for the use and deployment of those aspects, for which training can occur.
Chapter One

INTRODUCTION

This document sets forth the KPI for Public Safety Telecommunicators (PST), based on standards and best practices for all functions and disciplines found within the ECC, according to the most recent aggregate study for the following PST functions: Public Safety Call-Taker, Law Enforcement Dispatcher, Fire Service Dispatcher and Emergency Medical Service Dispatcher. The need for such a document is profound in its implications for quality assurance and improvement as applied to ECC personnel performance as well as initial and remedial training, coaching and mentoring.

The Association of Public-Safety Communications Officials International, Inc. (APCO), in an effort to standardize those KPI for ECC personnel, which align with the many, and more specific sets of industry standards developed with and through the American National Standards Institute, an aggregate list of performance areas for public safety call-takers and law enforcement, fire and emergency medical services dispatchers were used as basis for this document. Those lists have been organized into an easily adaptable set of KPI that can address the myriad of ECC sizes, functions and capabilities.
Chapter Two

Agency Responsibilities

SCOPE
This chapter outlines the Agency’s responsibilities for providing the PST the tools needed to successfully perform the duties and responsibilities in accordance with this standard.

2.1 General Agency Responsibilities relative to all PST job functions

2.1.1 The agency shall have readily available and accessible to the PST all the necessary policies, guidelines, protocols or other written directives to successfully perform all functions of the job.

2.1.2 The Agency shall regularly create, review, and update, as appropriate, the guidelines, protocols, or written directives that provide direction to PST to successfully perform all job functions.

2.1.3 The agency shall provide training and set performance expectations for the PST in the application of guidelines, protocols, and written directives related to all necessary job functions.

2.1.4 The Agency shall provide an environment where the PST is encouraged to participate regularly in performance reviews.

2.1.5 The Agency shall have an established mechanism by which the job performance of the PST is regularly reviewed and evaluated based upon acceptable incident management practices or standards.

2.1.6 The Agency shall provide the PST with a regular review of performance, documenting and addressing unacceptable performance through remediation or other appropriate means in a timely manner.

2.1.7 The Agency shall ensure a fair and consistent application of its disciplinary process associated with performance.

2.1.8 The Agency shall provide a mechanism during the performance review wherein the PST can identify goals and objectives.

2.1.9 The Agency shall provide the PST applicable training and continuing educational opportunities.

2.1.10 The agency shall have a defined Organizational Structure that provides the PST with a clear Chain of Command.
Chapter Three

General Knowledge & Skills

SCOPE
This chapter provides an overview of the general knowledge and skills that are common among high-performing incumbent PST. The knowledge and skills identified apply to call taking, law enforcement, fire, and EMS dispatch functions outlined in this document.

3.1 Knowledge

3.1.1 General

3.1.1.1 The PST shall successfully integrate current, new and updated information into their daily workload.

3.1.1.2 The PST shall demonstrate understanding of appropriate terminology.

3.1.1.3 The PST shall demonstrate comprehension of mapping jurisdictional boundaries and geography.

3.1.1.4 The PST shall actively participate in call after-action reviews and other quality control actions/methods.

3.1.1.5 The PST shall understand when and how to utilize applicable local, state, tribal or federal statutes or codes as appropriate.

3.1.1.6 The PST shall comprehend their role in Incident Command Systems (ICS), National Incident Management Systems (NIMS), including Tactical Interoperable Communication Plan (TICP), and Federal, state or local emergency operations plans.

3.1.2 Equipment

3.1.2.1 The PST shall demonstrate an understanding of how to use agency equipment assigned to their role/position.
3.1.2.2 The PST shall demonstrate the ability to utilize, maintain and troubleshoot existing communication tools, and/or available technologies to meet operational needs in both normal and back-up modes (i.e., radio intra/interoperability, telephone, and/or electronic relay system patches, Computer Aided Dispatch [CAD] and Records Management Systems [RMS], local and state resources/networks, mapping and wireless communications, etc.) in accordance with agency policy and procedures, local, state, tribal, or federal laws.

3.1.2.3 The PST shall comply with regulations and requirements for the use of any systems accessible through local, state, regional, federal, tribal, or international networks; (e.g. FCC, RMS, DOL/DMV, any criminal justice information systems, NCIC, Interpol, and CPIC).

3.1.2.4 The PST shall have knowledge of agency applicable protocol reference systems.

3.1.2.5 The PST shall verify that location information received is a valid dispatchable location.

3.1.2.6 The PST demonstrates comprehension of electronic mapping, jurisdictional boundaries, and geography.

3.1.3 References and Resources

3.1.3.1 The PST shall be aware of all available resources including Standard Operating Policies (SOP), Standard Operating Guidelines (SOG), other manuals, local response capabilities, co-workers, and the internet; and makes proper use of them.

3.1.3.2 The PST shall display the ability to synthesize information from multiple sources, previous knowledge, Standard Operating Policies/Standard Operating Guidelines (SOP/SOG) to determine the necessary course of action for each call for service (CFS).

3.1.3.3 The PST shall utilize information received by phone, local, state and federal databases, or other means in order to record and coordinate that information for field units.

3.1.3.4 The PST shall understand when and how to utilize specialized resources to assist vulnerable callers such as children, elderly, foreign speaking, communications impaired, and callers in crisis (mental health or suicidal).

3.1.4 Stress Management

3.1.4.1 The PST shall have knowledge of the available resources for peer support. These may include Critical Incident Stress Management (CISM), chaplains, and employee assistance programs (EAP).
3.1.5 Training and Continuing Education

3.1.5.1 The PST shall successfully complete all agency required training and maintain all required certifications.

3.1.5.2 The PST shall comply with all continuing dispatch education (CDE) requirements necessary to maintain local, state or international certifications.

3.2 Communication

3.2.1 General

3.2.1.1 The PST shall possess communications skills which demonstrate the ability to understand and be understood.

3.2.1.2 The PST shall communicate in a manner that is clear, concise, and effective.

3.2.1.3 The PST should be prepared to interpret and describe information received via emerging technology.

3.2.2 Verbal Skills

3.2.2.1 The PST shall ensure that they are projecting their voice in a calm, steady manner, speaking at a rate that is easily understandable to listeners in all situations.

3.2.3 Timely and Accurate Written Communication

3.2.3.1 The PST shall ensure that all relevant information is documented accurately and in a timely manner.

3.2.3.2 The PST shall address conflicting information within the CFS.

3.2.3.3 The PST shall utilize appropriate grammar, spelling, and approved abbreviations to ensure written communication is understood.

3.2.3.4 The PST shall ensure that their written communications are conveyed in an organized manner.

3.2.3.5 The PST shall, in keeping with agency policies and procedures, make and document all requested or required notifications in a timely and efficient manner.
3.2.4 Active Listening and Situational Awareness

3.2.4.1 The PST shall utilize all information made available through any medium or transmission in order to create the most accurate account of what is occurring to ensure public and responder safety.

3.2.5 Interpersonal Skills

3.2.5.1 The PST shall exhibit professional verbal and nonverbal communications skills that facilitate teamwork, promotes understanding, cooperation, and respect with all internal and external customers.

3.2.6 Inter-departmental information/intelligence

3.2.6.1 The PST shall be familiar with intra-agency information/intelligence pertinent to job function.

3.2.6.2 The PST shall keep all intra-agency information/intelligence in the strictest of confidence, only discussing or sharing it with those who are authorized.

3.2.7 Shift Briefing

3.2.7.1 The PST shall provide an accurate and thorough shift briefing to the PST assuming the position/console/work assignment as per agency policies and procedures.

3.3 Customer Service

3.3.1 The PST shall remain cognizant of caller and responder safety, in accordance with agency SOG/SOP.

3.3.1.1 Agency policies for pre-arrival instruction shall be followed for caller safety.

3.3.1.2 All pertinent information ascertained from the caller shall be relayed to responders to help ensure their safety.

3.3.2 The PST shall provide customer service to internal and external customers in order to meet or exceed their service expectations.

3.3.3 The PST shall strive to create rapport and cooperation with internal and external customers.

3.3.4 The PST shall provide equal and professional treatment to all persons regardless of previous interactions, prior knowledge, their racial or ethnic characteristics, religion, gender, physical or mental status, sexual orientation, and socio-economic status.
3.3.5 The PST shall ensure efforts are made to protect patient confidentiality.

3.3.6 The PST shall demonstrate an understanding that the service provided to the public will influence how that individual perceives the organization, how the citizen will respond to field units, and that citizen’s future contact with emergency services.

3.3.7 The PST shall communicate with empathy and compassion through use of tone, cadence and phrasing thereby influencing the ability to establish rapport and cooperation with questioning.

3.3.8 The PST shall continue to provide customer service by updating the caller on the steps being taken to respond to the call, or steps they need to take to resolve their concerns.

3.3.9 The PST shall be responsive to all requests from field personnel and citizens within appropriate time frames.
Chapter Four

Public Safety Call Taker Function

SCOPE
This chapter identifies the minimum general knowledge and skill requirements for the PST who performs as a Call Taker. The function of Call Taker is to process incoming calls through the analyzing, prioritizing, and disseminating of information to aid in the safety of the public and responders. The requirements identified in this section are not stand alone skills; the PST must incorporate the general knowledge, and specific discipline requirements for successful performance.

4.1 Public Safety Call Taking Function

4.1.1 The PST shall answer calls and accurately create a CFS in a timely manner according to agency policies and protocols.

4.1.2 The PST shall accurately classify and prioritize each CFS using the gathered information according to agency policies and protocols.

4.1.3 The PST shall accurately document all pertinent information necessary to complete a CFS according to agency policies and protocols.

4.1.4 The PST should maintain situational awareness in the ECC and be able to recognize how previous and current CFS are related.

4.1.5 The PST shall document additional information obtained after the initial call entry into the CFS.

4.1.6 The PST shall provide the appropriate pre- and post-arrival instructions based on the CFS type.

4.1.7 The PST shall provide the appropriate referrals as per agency policy/protocols.

4.1.8 The PST shall transfer calls to the appropriate agency/jurisdiction needed to provide the necessary service.

4.1.9 The PST shall provide informational updates via chain of command for example; a piece of apparatus out of service, or update to common name information in CAD, or a hazard flag on a location.
Chapter Five

Law Enforcement Service Dispatch Function

SCOPE
This chapter identifies the minimum general knowledge and skill requirements for a PST who performs the Law Enforcement Dispatch function. The function of a law enforcement dispatcher is to provide dispatch services by analyzing, prioritizing, and processing calls, while maintaining radio contact with responders to ensure safe, efficient, and effective responses to requests for law enforcement services, in accordance with local, state, tribal, or national standards. A law enforcement dispatcher may receive calls for service by incoming telephone calls, Computer-Aided Dispatch (CAD) incidents, radio traffic, and other methods or emerging technologies. The requirements identified in this section are not stand alone skills; the PST must incorporate the general knowledge, and specific discipline requirements for successful performance.

5.1 Law Enforcement Service Dispatch Function

5.1.1 The PST shall meet agency established dispatch times.

5.1.2 The PST shall process each CFS and prioritize radio traffic based on identified time sensitive details, to include public and responder safety.

5.1.3 The PST shall quickly and accurately relay CFS information, to include information from all available resources in order to identify, analyze and evaluate any potential response hazard or escalation of situation that may affect public and responder safety.

5.1.4 The PST shall stay alert and prepared to process the information from all radio transmissions.

5.1.4.1 The PST shall respond to and notate abnormal transmissions, or unusual actions taken by responders, and clarify the situation.

5.1.5 The PST shall demonstrate the ability to direct and/or assign channels when necessary in order to have clear understanding of all field unit comments and requests.

5.1.6 The PST shall simultaneously manage multiple CFS, radio-initiated traffic, coordinate radio channels and talk groups as per agency policy.

5.1.7 The PST shall quickly and accurately create, or provide the information to another PST/agency/organization to create, a responder initiated CFS.
5.1.8 The PST shall demonstrate situational awareness and the ability to anticipate and take the proper course of action dictated by the CFS.

5.1.9 The PST shall be familiar with all resources available from local, state, federal or tribal organizations.

5.1.10 The PST shall facilitate responder requests for additional resources.

5.1.11 The PST shall demonstrate knowledge of properly receiving, recording, and broadcasting Be On the Look Out (BOLO) / Attempt to Locate (ATL) calls for service.

5.1.12 The PST shall perform timely status checks on responders per agency policy and protocols.

5.1.13 The PST shall demonstrate a thorough knowledge of the proper policy and procedure should a responder field unit not respond to a unit status check, or not respond as is prescribed by agency assigned policies and procedures.

5.1.14 The PST shall demonstrate knowledge of all methods and resources such as radio, telephone, MDT messages, to disseminate information to responders.

5.1.15 The PST shall provide informational updates via chain of command for example; a piece of apparatus out of service, or update to common name information in CAD, or a hazard flag on a location.
Chapter Six

Fire Service Dispatch Function

SCOPE
This chapter identifies the minimum general knowledge and skill requirements for a PST who performs the Fire Service Dispatch function. The function of a Fire Service Dispatcher is to provide dispatch services by analyzing, prioritizing, and processing calls while maintaining radio contact with responders to ensure safe, efficient, and effective responses to requests for fire services, in accordance with local, state, tribal, or national standards. A fire service dispatcher may receive calls for service by incoming telephone calls, CAD incidents, radio traffic, and other methods or emerging technologies. The requirements identified in this section are not stand alone skills; the PST must incorporate the general knowledge, and specific discipline requirements for successful performance.

6.1 Fire Service Dispatch Function

6.1.1 The PST shall meet agency established dispatch times.

6.1.2 The PST shall process each CFS and prioritize radio traffic based on identified time sensitive details, to include responder and citizen safety.

6.1.3 The PST shall utilize agency station alerting systems to notify the appropriate responders, based on predetermined response configurations.

6.1.4 The PST shall quickly and accurately relay CFS information, to include information from all available resources in order to identify, analyze and evaluate any potential response hazard or escalation of situation that may affect responders and citizen safety.

6.1.5 The PST shall stay alert and prepared to process the information from all radio transmissions.

6.1.5.1 The PST shall respond to and notate abnormal transmissions, or unusual actions taken by responders, and clarify the situation.

6.1.6 The PST shall demonstrate the ability to direct and/or assign channels when necessary in order to have clear understanding of all field unit comments and requests.

6.1.7 The PST shall simultaneously manage multiple CFS, radio-initiated traffic, coordinate radio channels and talk groups as per agency policy.

6.1.8 The PST shall quickly and accurately create, or provide the information to another PST/agency/organization to create, a responder initiated CFS.
6.1.9 The PST shall demonstrate situational awareness and the ability to anticipate and take
the proper course of action dictated by the CFS.

6.1.10 The PST shall be familiar with all resources available from local, state, federal or tribal
organizations.

6.1.11 The PST shall facilitate responder requests for additional resources.

6.1.12 The PST shall perform timely status checks on responders per agency policy and
procedures.

6.1.13 The PST shall demonstrate a thorough knowledge of the proper policy and procedure
should a responder not respond to a unit status check, or not respond as is prescribed
by agency assigned policies and procedures.

6.1.14 The PST shall demonstrate knowledge of all methods and resources to disseminate
information to responders.

6.1.15 The PST shall provide informational updates via chain of command for example; a piece
of apparatus out of service, or update to common name information in CAD, or a hazard
flag on a location.
Chapter Seven

EMS Dispatch Function

SCOPE
This chapter identifies the minimum general knowledge and skill requirements for a PST who performs in the Emergency Medical Services (EMS) Dispatch function. The function of an Emergency Medical Services Dispatcher is to provide dispatch services by analyzing, prioritizing, and processing calls while maintaining radio contact with responders to ensure safe, efficient, and effective responses to calls for emergency medical services, in accordance with local, state, tribal, or national standards. An EMS Dispatcher may receive calls for service by incoming telephone calls, CAD incidents, radio traffic, and other methods or emerging technologies. The requirements identified in this section are not standalone skills; the PST must incorporate the general knowledge, and specific discipline requirements for successful performance.

7.1 EMS Dispatch Function

7.1.1 The PST shall meet agency established dispatch times.

7.1.2 The PST shall process each CFS and prioritize radio traffic based on identified time sensitive details, to include responder and citizen safety.

7.1.3 The PST shall utilize agency station alerting systems to notify the appropriate responders, based on predetermined response configurations.

7.1.4 The PST shall provide Emergency Medical Dispatch Pre-Arrival Instructions (PAI) per agency policies and procedures.

7.1.5 The PST shall follow agency policies and procedures for providing Telecommunicator Cardiopulmonary Resuscitation (T-CPR).

7.1.6 The PST shall quickly and accurately relay CFS information, to include information from all available resources in order to identify, analyze and evaluate any potential response hazard or escalation of situation that may affect responders and citizen safety.

7.1.7 The PST shall stay alert and prepared to process the information from all radio transmissions.

7.1.7.1 The PST shall demonstrate the ability to take note of abnormal transmissions or actions taken by responders and clarify the situation.

7.1.8 The PST shall demonstrate ability to direct and/or assign channels when necessary in order to have clear understanding of all field unit comments and requests.
7.1.9 The PST shall manage multiple CFS, radio-initiated traffic simultaneously, coordinate radio channels and talk groups as per agency policy.

7.1.10 The PST shall quickly and accurately create, or provide the information to another PST/agency/organization to create, a responder initiated CFS.

7.1.11 The PST shall demonstrate situational awareness and the ability to anticipate and take the proper course of action dictated by the CFS.

7.1.12 The PST shall be familiar with all resources available from local, state, federal or tribal organizations.

7.1.13 The PST shall facilitate responder requests for additional resources.

7.1.14 The PST shall perform timely status checks on responders per agency policy and procedures.

7.1.15 The PST shall demonstrate a thorough knowledge of the proper policy and procedures should a responder not respond to a unit status check, or not respond as is prescribed by assigned agency policies and procedures.

7.1.16 The PST shall demonstrate knowledge of all methods and resources to disseminate information to responders.

7.1.17 The PST shall provide informational updates via chain of command for example; a piece of apparatus out of service, or update to common name information in CAD, or a hazard flag on a location.
# ACRONYMS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANS</td>
<td>American National Standard</td>
</tr>
<tr>
<td>ANSI</td>
<td>American National Standards Institute</td>
</tr>
<tr>
<td>APCO</td>
<td>Association of Public Safety Communications Officials International, Inc.</td>
</tr>
<tr>
<td>ATL</td>
<td>Attempt To Locate</td>
</tr>
<tr>
<td>BOLO</td>
<td>Be On the Look Out</td>
</tr>
<tr>
<td>CAD</td>
<td>Computer Aided Dispatch</td>
</tr>
<tr>
<td>CDE</td>
<td>Continuing Dispatch Education</td>
</tr>
<tr>
<td>CFS</td>
<td>Call for Service</td>
</tr>
<tr>
<td>CISM</td>
<td>Critical Incident Stress Management</td>
</tr>
<tr>
<td>CPIC</td>
<td>Canadian Police Information Center</td>
</tr>
<tr>
<td>DOL/DMV</td>
<td>Division of Drivers Licensing/Department of Motor Vehicles</td>
</tr>
<tr>
<td>E9-1-1</td>
<td>Enhanced 9-1-1</td>
</tr>
<tr>
<td>EAP</td>
<td>Employee Assistance Program</td>
</tr>
<tr>
<td>ECC</td>
<td>Emergency Communications Center</td>
</tr>
<tr>
<td>EMD</td>
<td>Emergency Medical Dispatch</td>
</tr>
<tr>
<td>EMS</td>
<td>Emergency Medical Services</td>
</tr>
<tr>
<td>FCC</td>
<td>Federal Communications Commission</td>
</tr>
<tr>
<td>ICS</td>
<td>Incident Command System</td>
</tr>
<tr>
<td>NCIC</td>
<td>National Crime Information Center</td>
</tr>
<tr>
<td>NIMS</td>
<td>National Incident Management System</td>
</tr>
<tr>
<td>PAI</td>
<td>Emergency Medical Dispatch Pre-Arrival Instructions</td>
</tr>
<tr>
<td>PST</td>
<td>Public Safety Telecommunicator</td>
</tr>
<tr>
<td>RMS</td>
<td>Records Management System</td>
</tr>
<tr>
<td>SOP/SOG</td>
<td>Standard Operating Procedure / Standard Operating Guidelines</td>
</tr>
<tr>
<td>TICP</td>
<td>Tactical Interoperable Communication Plan</td>
</tr>
<tr>
<td>TTY/TDD</td>
<td>Teletypewriter / Telecommunications Device for the Deaf</td>
</tr>
</tbody>
</table>
GLOSSARY

ANS: American National Standard. A standard that has been sponsored by an ANSI-accredited SDO and met ANSI’s Essential Requirements.

ANSI: American National Standards Institute. A private, not-for-profit organization that oversees the creation, promulgation, and use of thousands of norms and guidelines that directly impact businesses in nearly every sector. ANSI facilitates the development of American National Standards by accrediting the procedures of SDOs. These groups work cooperatively to develop voluntary national consensus standards. APCO Association of Public-Safety Communications Officials International.

APCO: Association of Public Safety Communications Officials International, Inc. is the world’s oldest and 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.

CAD: Computer Aided Dispatch. A computer-based system that assists PSTs with activities such as call input, dispatching, call status maintenance, event notes, field unit status and tracking, and call resolution and disposition.

CISM: Critical Incident Stress Management. An adaptive, short-term psychological aid process that can include pre-incident preparedness, acute crisis management, and post-crisis follow-up.

E9-1-1: Enhanced 9-1-1. A system that enables the delivery of a caller’s phone number and location information to the PSAP receiving the call.

ECC: Emergency Communications Center. A facility with capabilities that include intelligence collection and monitoring, 9-1-1 multimedia traffic processing, full scale dispatch, and incident command capabilities.

EMD: Emergency Medical Dispatch. A systematic program of handling medical calls. Trained PSTs, using locally approved guide cards, quickly and properly determine the nature and priority of the call, dispatch the appropriate response, then give the caller instructions to help treat the patient until the responding EMS unit arrives.

EMS: Emergency Medical Services. A type of emergency service dedicated to providing out-of-hospital acute medical care, transport to definitive care, and other medical transport to patients with illnesses and injuries which prevent the patient from transporting themselves.

FCC: Federal Communications Commission. Regulates interstate and international communications by radio, television, wire, satellite, and cable in all 50 states, the District of Columbia, and U.S. territories. An independent U.S. government agency overseen by Congress, the Commission is the federal agency responsible for implementing and enforcing America’s communications laws and regulations.
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICS</td>
<td>Incident Command System. A standardized on-scene incident management concept designed specifically to allow responders to adopt an integrated organizational structure equal to the complexity and demands of any single incident or multiple incidents without being hindered by jurisdictional boundaries.</td>
</tr>
<tr>
<td>NIMS</td>
<td>National Incident Management System. A systematic, proactive approach to guide departments and agencies at all levels of government and the private sector to work together seamlessly and manage incidents involving all threats and hazards - regardless of cause, size, location, or complexity - in order to reduce loss of life, property, and harm to the environment.</td>
</tr>
<tr>
<td>PST</td>
<td>Public Safety Telecommunicator. An individual employed by a public safety agency as the first of the first responders whose primary responsibility is to receive, process, transmit, and/or dispatch emergency and non-emergency calls for service for law enforcement, fire, emergency medical, and other public safety services via telephone, radio, and other communication devices.</td>
</tr>
<tr>
<td>RMS</td>
<td>Records Management System. A system that provides for the storage, retrieval, retention, manipulation, archiving, and viewing of information, records, documents, or files.</td>
</tr>
<tr>
<td>SOP/SOG</td>
<td>SOP - Standard Operating Procedure, SOG – Standard Operating Guidelines. Written procedure prescribed for repetitive use as a practice, in accordance with agreed upon specifications aimed at obtaining a desired outcome.</td>
</tr>
<tr>
<td>TTY/TDD</td>
<td>Teletypewriter / Telecommunications Device for the Deaf. A machine that uses typed input and output, usually with a visual text display, to enable individuals with hearing or speech impairments to communicate over a telecommunications network.</td>
</tr>
</tbody>
</table>
ACKNOWLEDGMENTS

Special recognition goes to the KPI for Public Safety Communications Personnel Working Group members that provided their expertise in successfully creating the standard. The KPI for Public Safety Communications Personnel Working Group included the following membership, whose work was overseen by the Standards Development Committee:

- **Lori Van Gilder Preuss, CPE**  
  Winter Springs FL Police Department  
  Winter Springs, FL

- **Christina Kelly**  
  Paulding County E9-1-1 Communications  
  Dallas, GA

- **Michael Bates**  
  Metro Cities Fire Authority (Metro Net)  
  Anaheim, CA

- **Debbie Gailbreath, RPL**  
  Sarasota County FL Sheriff’s Office (retired)  
  Sarasota, FL

- **Shinar Haynes, MBA, CPE, RPL**  
  Tarrant County 9-1-1 District (TC 9-1-1)  
  Fort Worth, TX

- **Robbie McCormick, BAS, MSE, CPE**  
  Tarrant County 9-1-1 District (TC 9-1-1)  
  Fort Worth, Texas

- **Michelle Long, CTO, Public Education Coordinator**  
  Walla Walla Emergency Services Communications (WESCOM)  
  Walla Walla, WA

- **Dominick Nutter, ENP, RPL, CPE**  
  Raleigh/Wake Emergency Communications Center  
  Raleigh, NC

- **Russ Palmer, CPE, RPL**  
  Chatham 9-1-1 Communications Services  
  Savannah, GA
Special recognition goes to the Standards Development Committee members that provided their expertise developing the scope and need for this standard and for the support and guidance they provided during the development of this candidate standard.

<table>
<thead>
<tr>
<th>Name</th>
<th>Position/Company</th>
<th>Location/Office</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karen Allen</td>
<td>SRP Security Services</td>
<td>Phoenix, Arizona</td>
</tr>
<tr>
<td>Stephen Ashurkoff, ENP</td>
<td>Comtec Safety and Security Technology</td>
<td></td>
</tr>
<tr>
<td>Gary Bates</td>
<td>Pyramid Consulting</td>
<td></td>
</tr>
<tr>
<td>Stephen Devine</td>
<td>FirstNet</td>
<td></td>
</tr>
<tr>
<td>Bud Hicks, ENP</td>
<td>Grundy County 911</td>
<td>Morris, Illinois</td>
</tr>
<tr>
<td>James Leyerle, ENP</td>
<td>OnStar, Retired</td>
<td></td>
</tr>
<tr>
<td>Nathan McClure, ENP</td>
<td>Past APCO International President</td>
<td>AECOM, Retired</td>
</tr>
<tr>
<td>Daniel Morelos</td>
<td>Tucson Airport Authority (retired)</td>
<td>Tucson, Arizona</td>
</tr>
<tr>
<td>Kim Ostin</td>
<td>Sterling Heights Police Dept. (Ret)</td>
<td>Sterling Heights, MI</td>
</tr>
<tr>
<td>Jackie Pace</td>
<td>Redwood City, California</td>
<td></td>
</tr>
<tr>
<td>Sherry Taylor</td>
<td>Cayman Islands Department of Public Safety Communications, George Town, Grand Cayman</td>
<td></td>
</tr>
<tr>
<td>Judith Weshinskey-Price</td>
<td>Pinellas County Regional 9-1-1</td>
<td>Largo, Florida</td>
</tr>
<tr>
<td>Megan Bixler</td>
<td>Standards / ACS Program Manager</td>
<td>APCO International</td>
</tr>
<tr>
<td>Casey Martins</td>
<td>Resource Coordinator</td>
<td>APCO International</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix A

Emergency communications centers are typically a collection of various functions and responsibilities that require multiple technical systems, access paths, output paths, applications, policies and procedures. The complexity of the environment has resulted in multiple associations and organizations – local, regional, and national— which establish and publish performance standards related to emergency communications centers. This standard expects agency leadership to establish the KPI goals and objectives. It provides direction on KPI and how to collect the data required to measure them but does not establish numeric thresholds. Due to the absence of numeric goals, this document recommends following the 9-1-1 Data Information Sharing Strategic Plan. ECC managers are encouraged to research the site for performance standards and thresholds when establishing their agency KPI.

According to 911.gov, “The National 9-1-1 Program's mission is to provide federal leadership and coordination in supporting and promoting optimal 9-1-1 services.” Among other projects, the Program continually monitors and compiles a collection of documents, website links, and other tools vetted by industry experts. This resource offers a single point of access to many national standard-setting agencies that define the public safety industry and ECC performance ([https://www.911.gov/national911coordination.html](https://www.911.gov/national911coordination.html)).

Source: [https://www.911.gov/pdf/911_Data_Information_Sharing_Strategic_Plan_Final.pdf](https://www.911.gov/pdf/911_Data_Information_Sharing_Strategic_Plan_Final.pdf)
Appendix B - KPI Development

SCOPE

This chapter provides a working model of KPI development. It identifies the steps agencies must take to identify, define, track, review, and analyze the KPI; then provides one example. This process does not follow a set formula, nor is it the only way to develop KPI and gather data.

Background

Due to the role that KPI play in the trajectory of an organization, the ECC must carefully develop and execute the KPI process. The drive to utilize KPI measures in making organizational improvements reflects the ECC’s priority to serve internal and external stakeholders, most importantly the public.

Identifying and developing tools, processes, and reports can be a daunting task. It is important to look at the KPI process cyclically, with a focus on planning and review. The KPI process is fluid, intended to meet varying needs and be continually improved. ECCs should engage in creating KPI that reflect the ECC’s own distinct goals and resources. What may be considered successful for a well-staffed and well-funded ECC may be unrealistic for a smaller agency with fewer resources.

Examples and Uses

If an ECC has an accreditation goal (i.e. ISO Ratings, CALEA, CAAS) the ability to measure 9-1-1 answer times may be important to achieving this requirement or goal. Other uses for answer time metrics include meeting contract standards, governmental oversight, budgeting, or staffing purposes. Downstream impacts to not reviewing this measurement may result in a department not achieving accreditation or budgeting too many or too few resources for staffing.

Within ECC operations, 9-1-1 answer time metrics allow for a comparison of staffing levels between shifts, days, weeks, or months, and may be used to review PST workload or overtime needs. Downstream impacts to not reviewing this measurement operationally may be overworked PSTs, poor employee morale, poor customer service, or a negative media story.

Phases of Development

This standard recommends that ECCs include the following phases and steps in their KPI development process.

Planning Phase

i. Establish the objective for analysis,
   *Example: Ensure proper staffing levels, improve customer service, achieve accreditation;*

ii. Operationalize the objective by selecting observable, measurable criteria to represent the goal, then create an actionable, measurable statement,
   *Example: Customer service is identified in the number of internal and external complaints over x period;*

iii. Establish a baseline measure of the current status,
   *Example: Current customer satisfaction measures (average complaints per month) identify poor customer service and do not fit the agency’s mission;*

iv. Identify the measurement goal(s) of the KPI;
v. Identify the measurement that ensures the goal is being met,
   *Example: Improve customer service scores by 10% over the next 12 months; or maintain a
   customer service satisfaction level of less than four complaints per month;*
   
   vi. Establish logistics—the who, what and how of gathering, compiling and analyzing KPI,
   *Example: What data is required? Where do we get the data? Who is responsible for collecting,
   analyzing, reporting? Duration of measurement? Time interval? What must be removed to
   ensure a clean dataset?*

**Execution Phase**

i. Measure data to identify the current conditions;
ii. Continue to collect data at specified time intervals;
iii. Compare results of periodic data to KPI goals;
iv. Develop strategies to improve performance.

**Analysis/Reporting Phase**

i. Validate the accuracy of the data;
ii. Report inaccurate data results in negative consequences as well as lack of confidence and trust
   in the process;
iii. Prepare data in reports or other useful forms to inform initial objective;
iv. Use the data for decision making or improvements.

**Review Phase**

i. Review process;
ii. Identify the need to improve either the KPI or the operational goal and make necessary changes.

**Use case**

The following is a completed template to assist in the creation of a KPI, intended for reference only. A
blank copy of this form may be used by Agencies to develop their own KPI (Appendix C).
**Process for Development of a Measure**

**Name of Measure:** 9-1-1 Answer Time

**Form Completed by:** NAME

**Objective of Measure:** Accurately measure the time it takes for the Public Safety Telecommunicator to answer all 9-1-1 calls that arrive in our center.

**Operational Definition of Measure:** The ECC will utilize the operational definition provided by NENA (National Emergency Numbers Association). As defined by NENA, the call answer standard for 9-1-1 Calls arriving at the ECC reflect that 90% of all 9-1-1 calls shall be answered within ten (10) seconds during the busy hour (the hour each day with the greatest call volume). Ninety-five percent (95%) of all 9-1-1 calls should be answered within twenty (20) seconds.

**Sampling and Measurement:** Method of Measurement will be utilization of the MIS data to reflect the number of calls answered within 10 seconds divided by the total number of 9-1-1 calls received AND the number of calls answered within 20 seconds divided by the total number of 9-1-1 calls received.

**Strategy for Sampling or Grouping Data:** MIS Report

**Frequency of Measurement:** Monthly

**Administration:**

<table>
<thead>
<tr>
<th>Task</th>
<th>Responsibility/Alternate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making Measurements:</td>
<td>Name/Alternate</td>
</tr>
<tr>
<td>Collecting Data:</td>
<td>Name/Alternate</td>
</tr>
<tr>
<td>Developing Charts:</td>
<td>Name/Alternate</td>
</tr>
<tr>
<td>Getting Data and Chart in Vector Report:</td>
<td>Name/Alternate</td>
</tr>
</tbody>
</table>
Appendix C - KPI Development Template

1. **Name of Measure:** ____________________________

   Form Completed by: ____________________________

2. **Objective of Measure:**

   _______________________________________________________________________________________
   _______________________________________________________________________________________

3. **Operational Definition of Measure:**

   _______________________________________________________________________________________
   _______________________________________________________________________________________

4. **Sampling and Measurement:**

   _______________________________________________________________________________________

   Strategy for Sampling or Grouping Data: ____________________________

   Frequency of Measurement: ____________________________

5. **Administration:**

<table>
<thead>
<tr>
<th>Task</th>
<th>Responsibility/Alternate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making Measurements:</td>
<td>_________________________</td>
</tr>
<tr>
<td>Collecting Data:</td>
<td>_________________________</td>
</tr>
<tr>
<td>Developing Charts:</td>
<td>_________________________</td>
</tr>
<tr>
<td>Getting Data and Chart in Vector Report:</td>
<td>_________________________</td>
</tr>
</tbody>
</table>
Appendix D - Data Sources, Collection and Preparation

SCOPE
This chapter provides some key concepts for collecting data and offers operational definitions of statistical measures used in data analysis.

Determining a Data Set
Develop business rules for selecting the data set upon which a KPI will be measured -- business rules, in this sense, are the requirements that define the operations, definitions, and constraints applicable to the dataset. They include determination of the system(s) in which data reside, contain detailed specifications to ensure consistency in data collection, and provide clarity in processes for collectors and analysts.

ECC management should conduct a regular review of business rules, validating them against current operational procedures. When systems are replaced, or new systems added, agencies should revisit business rules and data specifications. Most data sources in the ECC environment are designed around operations, not reporting. The business rules will need to account for extraneous types of information that might exist in the system (i.e. test events). The following information is provided for consideration when working to identify business rules and data sets relevant to KPI for the agency. It is meant as a starting point and is not all encompassing.

Developing KPI requires a good data set that contains all the elements necessary to create the measures. Here are some things to think about when developing the data set using call answer time as an example:

a. Carefully think about how to operationalize the performance measures. How do you measure call answering time? One element of this measure is when a call comes into the call center. What is the indicator of when a call comes into the call center? Is it the first ring on the caller’s end or the first ring on the call center’s end? What calls should be included? All calls (since emergent calls could come in on the admin line) or just 9-1-1 calls?

b. Is the data set “clean”? What do you do with calls that have missing or bad data (e.g., due to some system glitch or downtime or whatever can cause bad data)? What do you do with outliers (e.g., long calls in which the PST forgot to close the case, or a lengthy call such as a homicide)?

c. Make sure the data is in a useful format; translate time stamps into hour of day; determine how to calculate durations and events that crossover midnight for example.

d. Is there data you need but are not currently collecting? How can you get that data? If you cannot get that data, is there a different way to measure the KPI?

Answer Time Performance- When gathering data from phone and recording systems, some points to consider include:

a. What system information indicates an incoming phone call?

b. How will abandoned calls be used in metrics?

c. In what format(s) are call times stored in (i.e. date/time stamps, seconds, milliseconds)?

d. Do date/time stamps need to be converted based on time zone, crossing midnight or daylight savings time?
CAD CFS Entry Time Performance – When gathering data from CAD, some points to consider include:

a. Are there test events in the live system? If so, how can they be effectively eliminated from the data population?
b. Are there multiple agencies in CAD? If so, which ones should be part of the data population?
c. Do CAD user agencies have dispatch groups? Which dispatch groups should be included? Are there special dispatch groups that are not part of the initial dispatch that should be eliminated from the data population?
d. How are CAD events initiated? (i.e., phone call from public, officer-initiated events, ASAP to PSAP) Which events belong in the data population?
e. Do all event attributes exist in one table in the CAD database? Do attributes need to be combined from other tables? If the latter, has the data retrieval method been tested and reviewed to verify agreement with the intended data population?
f. Have events been eliminated that do not meet criteria for the intended data population?

Useful Summary of Statistical Terms

This section provides introductory explanations of statistical elements used to craft KPI.

a. Average
   - Definition: As used in this document, the average is a central number used to describe the middle number of data set.
   - Calculation: An average is determined by adding all values of the data set and dividing by the number of items in the data set.
   - Example: In a data set of [1, 2, 5, 8, 9, 10, 14], the average value is ‘7’ (1 + 2 + 5 + 8 + 9 + 10 + 14 = 49 / 7 = 7).
   - Relevance: Averages are useful for setting and measuring performance in organizations, understanding peak volume times for staffing, and communicating emergency call center performance with the public. For example, computing the average cost per call (Total Call Volume / Budgetary Expenses) allows an ECC to properly budget for changes in staffing levels.

b. Maximum
   - Definition: As used in this document, maximum refers to the largest number in a set of data.
   - Example: In a data set of [1, 2, 5, 8, 9, 10, 14], the maximum value is ‘14’.
   - Relevance: Maximums are often used as an ongoing internal metric of performance; and to identify potential staffing, technical, or external issues. For example, monitoring the maximum call answer time at a regular interval can identify time periods where staffing is inadequate, a technical issue is preventing proper call routing, or when a potentially catastrophic event is in progress.

c. Median
   - Definition: As used in this document, median refers to the middle number in a sorted list of values. It is the exact middle number of a dataset, where half the values are the same or higher than that number, and the remainder are the same or lower than that number.
   - Example: In a data set of [1, 2, 5, 8, 9, 10, 14], the median value is ‘8’ since there are 3 values less than 8 and 3 values greater than 8. When an even number of values
are present, take the average of the middle two values as the median. In a data set of $[1, 2, 5, 6, 8, 9, 10, 14]$, the median value is '7' ($6 + 8 = 14 / 2 = 7$).

- Relevance: Average values can be skewed by outliers (extreme large or small values in a dataset). Employing median values in conjunction with averages leads to a better understanding of the central tendency when data is not symmetric. For example, use both the median and average to best understand call taker performance for a period where 7 calls were answered within “x” seconds as follows: 1, 3, 3, 4, 5, 5, and 48. The average answer time is 9.9 seconds ($1 + 3 + 3 + 4 + 5 + 5 + 48 = 69 / 7 = 9.857$), while the median answer time is 4 seconds (4 is the midpoint of the data with 3 higher values and 3 lower values). The outlier time of 48 seconds skews the average and may indicate further issues to investigate.

d. Minimum
- Definition: As used in this document, minimum refers to the smallest number in a set of data.
- Example: In a data set of $[1, 2, 5, 8, 9, 10, 14]$, the minimum value is ‘1’.
- Relevance: Evaluation of minimum values provides an ECC with insight to potential performance capabilities. For example, if an ECC has a KPI to dispatch 75% of Priority 1 calls in 60 seconds or less but finds that the minimum dispatch time they are able to achieve is 55 seconds, the ECC should evaluate the achievability of this KPI, and consider if modifications (i.e., staffing, definition of Priority 1 events) need to be made.

e. Percentage
- Definition: A subset’s proportion of the total set expressed as a fraction of one hundred. Calculation: Calculate the percentage by dividing Value A (the numerator, or subset) by Value B (the denominator, or whole set).
- Example: If an ECC takes 200 calls and 190 of those calls are answered within ten seconds, then 95 percent ($190/200 = 0.95 * 100 = 95$) of the ECC’s calls are answered within ten seconds.
- Relevance: Many ECC KPI require computation of percentages. Examples include percent of calls answered in a set amount of time or percentage of time resources are unavailable. When computing percentages, care should be taken to carefully define the entire population of relevant items (denominator) and the number in that population that meets the criteria for computation (numerator).

f. Percentile
- Definition: As used in this document, the percentile describes the percent of values in the data set that fall below a given value.
- Calculation: The percentile is calculated by dividing the amount of values that are equal or less than value by the amount of values in the data set.
- Example: In a data set of $[1, 2, 5, 8, 9, 10, 14]$, the value of ‘10’ falls in the 86th percentile as six of the seven values in the data set fall at or below that value.
- Relevance: ECC’s may make staffing decisions based on the expected amount of calls during a given period. Staffing based on the median amount of calls indicates the ECC may be adequately staffed to handle workload fifty percent of the time. Staffing at the 90th percentile will ensure the ECC can handle the work ninety percent of the time.
g. Range
   o Definition: As used in this document, the range is the difference between the highest, or maximum, value (Value X) in a set of numbers to the lowest, or minimum, value in that same set of numbers (Value Y).
   o Calculation: Calculate the range by subtracting Value Y from Value X.
   o Example: If the highest value in a data set is 20 and the lowest value is 2 then the range of the data is 18.
   o Relevance: Range gives the analyst a sense of the disparity in the data set.

h. Ratio
   o Definition: As used in this document, the ratio is an expression of how one set of items (Value C) compares to another set of items (Value D).
   o Calculation: A ratio is expressed by dividing Value C by Value D so that it is determined how many of items of Value C there are for every one of Value D, it may be show as C/D, or C:D.
   o Example: If an ECC has 15 dispatchers and 3 supervisors, then the ratio of dispatchers to supervisor is 5:1.
   o Relevance: Staff to supervisor ratio, or span of control, is a commonly used measure for evaluating effective organizational structure. Optimal span of control varies by organization; it may be determined by supervisor experience, nature of the work being performed, and experience of the employees. Continual evaluation of this metric over time allows an ECC to understand the best way to structure their workforce.

i. Sample
   o Definition: As used in this document, the sample refers to a subset of the entire population.
   o Example: 9-1-1 Call Quality Assurance processes often use a sampling of data because reviewing every call would be too onerous to accomplish on a regular basis.
   o Relevance: When performing statistical analysis, sampling allows the agency to infer conclusions about the whole, based on a subset. Samples are used when it is impractical to study an entire population. There are many ways to sample data: random, systematic, convenience, cluster, or stratified. A well-designed sample removes bias in the data and drives decision making without the workload associated with reviewing an entire data population.

j. Sample Size
   o Definition: Sample size refers to number of data points in the data set being studied.
   o Example: The dataset sample size recommended by APCO for meaningful 9-1-1 Call Quality Assurance is two percent of all 9-1-1 calls for the period.
   o Relevance: Identifying the appropriate sample size and makeup is important. Size is important as an inappropriately small data set may skew the results of the data analysis. In such cases, expanding the dataset provides a more accurate analysis of overall performance over time. Makeup of the sample set is also important; for example, if you are selecting a sample for QA/QI, you will want to make sure that the sample reflects the overall calls by key characteristics associated with the KPI such 9-1-1 calls.

k. Trending
   o Definition: Trending refers to extracting patterns in data over time.
Example: An ECC can look at hourly call volume over a series of weeks, months, or years to determine peak call volume hours, regardless of seasonality or other factors.

Relevance: Reviewing trends over time provides an ongoing characterization of performance. Year-over-year or month-to-month trends help to identify the need for changes to budget, operations, or staffing.

I. Utilization

Definition: Utilized (or utilization) refers to the amount of time a resource is being used out of the amount of time a resource is available.

Calculation: Utilization is expressed as a percentage of total time.

Example: If a resource is used 15 minutes out of an hour, then resource utilization is 25% (15/60 = .25 * 100 = 25).

Relevance: Utilization helps the agency determine proper resource allocation and staffing.

Source: https://www.pscmagazine-digital.com/psc0120_january_february_2020/MobilePagedArticle.action?articleId=1545030#articleId1545030
As stated in the scope and need of this standard, the full intent is to provide ECC Management with KPI as they relate to personnel performance measurements, accuracy and quality of information logged or provided by ECC personnel, and help identify specific areas of personnel performance, which should be measured according to standard and best practices in order to benchmark individual effectiveness.

As KPI are an essential part of quality assurance and improvement for the technical, operational, maintenance, business, and liability functions of the center as a physical plant, so are the KPI for the personnel responsible for the use and deployment of those aspects, for which training can occur.

The following are a few tutorial notes and explanations for the example instruments provided. These instruments are examples only for assessing each phase of the cycle regarding the use of KPI for PSTs.

Example:  Determination of Major Job Duties & Associated Performance Indicators

<table>
<thead>
<tr>
<th>Position</th>
<th>Duty 1</th>
<th>Applicable Key Performance Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call – Taker</td>
<td>General Knowledge</td>
<td>KPI 3.1 – Knowledge of Center information, daily workload, terminology, jurisdiction and geography</td>
</tr>
<tr>
<td>Law Enforcement</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
These tables can be expanded to encompass as many duties as need to be identified and can include as many of the KPI as might be applicable to those duties. It would be beneficial to identify both the duty and the associated KPI by number, as they are organized within the Key Performance Indicators of Emergency Communications Centers so that as they carry from the standard document and the actual evaluation, they are easily referenced and utilized for ratings and remarks. For example the Call-Taker job duties 1-4 above the duty is identified as Duties 1, 2, 3 & 4 and have corresponding KPI identified from the standard as a basis for performance indicators for those duties. There can be as many duties as the agency desires, and the KPI can be pulled from as many sections as are applicable.

Example Instrument on next page. This can be copied, pasted and then modified to meet your agency’s needs.

**Determination of Major Job Duties & Associated Performance Indicators Instrument**

<table>
<thead>
<tr>
<th>Position</th>
<th>Duty 2</th>
<th>Applicable Key Performance Indicators</th>
</tr>
</thead>
</table>
| Call – Taker                    | Agency Policy Knowledge and Application | KPI 3.1.3.1 – Agency SOP/SOG  
KPI 3.1.3.2 – Agency SOP/SOG implementation during each call for service                                  |
| Law Enforcement Radio Dispatcher|                                      |                                                                                                         |
| Fire Services Radio Dispatcher  |                                      |                                                                                                         |
| Emergency Medical Services Dispatcher |                                      |                                                                                                         |
### Example: Documenting Job Performance

<table>
<thead>
<tr>
<th>Position</th>
<th>Duty 2</th>
<th>Applicable Key Performance Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call – Taker</td>
<td>Agency Policy Knowledge and Application</td>
<td>KPI 3.1.3.1 – Agency SOP/SOG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KPI 3.1.3.2 – Agency SOP/SOG implementation during each call for service</td>
</tr>
<tr>
<td>Date</td>
<td>Call# / Action</td>
<td>Documented Notes:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fire Services Radio Dispatcher

Emergency Medical Services Dispatcher