

WORKFORCE

INTRODUCTION

Broadband-enabled technologies will lead to an unprecedented amount of data available for emergency response, and PSAPs will be the nexus between the general public and field responders. This creates several workforce challenges at a time when recruiting and retaining quality personnel has never been more difficult. The stress levels, work environments, expectations, and requirements of the job are sometimes overwhelming for both the veteran staff members and newcomers. Developing strategies to address the impacts of broadband on the PSAP workforce will be critical.

THE WORKFORCE ROLE

The workforce in a fully broadband-enabled PSAP will require the expertise needed to analyze, process, and transmit many new forms of communications, including text, video, photo, telemetry data, and more. This will entail an expanded set of knowledge, skills, and abilities as well as new staffing models to manage the heightened impacts of broadband technology, including critical incident exposure, workforce burnout, retention challenges, and generational differences.

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Recruitment and Retention

Recruitment and retention are already significant workforce challenges for PSAPs. [Research](#) has shown that the national average turnover rate is 17% and can be as high as 56% even at large PSAPs.⁹⁵ High turnover rates result in unnecessary costs in terms of overtime needed to make up for staffing shortages and inefficient use of hiring and training resources. More importantly, recruitment and retention difficulties can ultimately impact operations when PSAPs lack the personnel needed to perform during emergencies.

The Necessary Core Competencies, Knowledge, Skills, and Abilities

Today's PSAP workforce already requires a unique set of core competencies, knowledge, skills, and abilities (KSAs) spanning technical, operational, and legal subject areas. The critical life or death nature of the public safety communications profession distinguishes its workforce from many others, requiring a special type of individual to succeed and thrive in such an environment. Knowledge and experience with emergency operations and today's technologies will remain essential.

A broadband environment will introduce new technologies and an influx of much more data than can easily be managed with the same core competencies required in today's workforce. Data analytics tools can help to detect trends and key pieces of information. But once this data enters the PSAP, the workforce will need to cope with the challenges and seize the opportunities for making use of this information. In many ways, the differences will be in the magnitude of the new technologies and complexity and volume of the data that will be available in the future. For example, the PST may view video of a fire or select the best image of a bank robbery suspect before first responders



are able to reach the scene, placing more emphasis on the need to effectively manage resources with situational analysis and critical decision-making responsibility. More emphasis will be placed on using or quickly learning technical skills, synthesizing large amounts of data from a wide variety of sources, and analyzing the value of the information. Having a basic level of IT skills will be necessary in order to troubleshoot minor technical problems, stay on mission, and be alert to cybersecurity threats.

Examples of Existing KSAs:

- Knowledge of local features and geography, applicable laws, statutes, and codes, specialized systems and equipment, standards, policies, and procedures
- Calmness under intense pressure, multitasking, critical thinking, rapid decision-making, problem solving, active listening, interviewing, triaging, and prioritization
- Ability to comply with government or professional requirements, identify and properly utilize agency resources, and effectively use available communication tools and technologies to meet operational needs

New KSAs in the Broadband PSAP:

- Knowledge of IT systems, technology administration, GIS, and related mapping tools
- Proficiency with social media tools

- Examining data (including multimedia content, sensor information, GIS and related mapping tools, etc.) for quality, authenticity, and reliability
- Interpreting the meaning of the data and deciding what is actionable
- Determining what to tag and store, consistent with state or agency public access, privacy, and evidentiary requirements and sharing rules
- Collaborating effectively with counterparts in complementary sectors such as IT, fusion centers, and public information offices

PSAPs will need a workforce capable of handling a wide range of calls for service, from “basic” 9-1-1 calls (e.g., voice-only) to calls containing incident-related pictures and video. Appendix 9 describes the likely staffing impact with the adoption of broadband technology by comparing staffing considerations before and after broadband implementation. These charts are designed to reflect job tasks rather than specific job titles.

Increased Job Complexity and Stress

[Research](#) has shown that as the number of tasks for PSTs increased, satisfaction and retention decreased.⁹⁶ Job complexity is therefore one of the most important factors for retention in PSAPs and will be a critical issue with the introduction of broadband. In addition to today’s communications channels, broadband-enabled PSAPs will need to contend with platforms that may or may not be integrated into NG9-1-1 networks but can be relevant to emergency response. Public alerting systems such as the Integrated Public Alert and Warning System (IPAWS) will have the potential of an expanded role during emergency events in a broadband environment. Additional platforms will also be available such as reverse 9-1-1 systems, social media platforms, and mobile apps that are deployed specifically for public safety purposes or that are consumer-oriented but play an indirect role in emergency response. Balancing these platforms will be a complex task for PSTs.

PSTs will also be exposed to graphic images and videos, significantly amplifying the already stress-inducing voices and sounds they contend with today. The workforce will need to incorporate staff with the mental and emotional resiliency to handle stressors with greater frequency and severity.

Agency programs such as employee assistance programs, CISM, and debriefings will play a more vital role in protecting the workforce in a broadband environment.

Staffing Options in a Broadband Environment

Broadband technology will provide a number of useful tools that offer new opportunities for managing and meeting staffing needs.

Workforce Sub-Units

Past experience has shown that turnover can be dramatically reduced by splitting operational functions – call taking and dispatching – into separate roles.⁹⁷ Broadband technologies create new opportunities, and in some cases necessities, for specializations. For example, in order to handle the amount of new information that broadband technologies will enable for the PSAPs, and then be able to deliver the best and most relevant of this information to field responders, PSAPs may need to employ or share experienced police and fire investigators, medical professionals, and data analysts to triage incoming data. These specialized units can then pass information along to a different portion of the workforce that focuses solely on communicating with the responders. States or regions can provide opportunities for hosted functions benefitting all PSAPs in those jurisdictions, such as a multimedia analysis center or fusion center. Shared services or specialized staff can also help address or mitigate variations in sizes and resources of PSAPs, such as the number of positions, call volume, or population served.

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Use of Other Governmental Agencies and Departments

Certain aspects of broadband technology are common to multiple state and local governmental functions, such as technology administration and support. PSAPs can leverage existing CIO, CISO, and CTO departments at local or state levels for many of their basic IT needs. Similarly, cybersecurity centers staffed with experts can be centralized and serve multiple PSAPs.

Leveraging Broadband Connectivity

A fully IP-enabled PSAP will be able to extend all NG9-1-1 call receipt and dispatch functionality to other locations, and may support the establishment of virtual PSAPs. This provides new, dynamic opportunities for mutual aid, workload sharing, call overflow management, and workload expansion. These capabilities can also enhance continuity of operations and disaster management, and increase information sharing and coordination among PSAPs.

Generational Differences

Aging in the PSAP brings its own challenges that may be manifested in a broadband environment. Each incoming generation will bring native abilities matching each leap in innovation, at a higher rate of change. Newer generations of PSTs have attained a native cognition of digital technologies, including intuitive, touch-screen, high-speed, and multitasking features. They are generally more data-centric than voice-centric. This impacts the way newer generations learn and interact in team settings.

Along with this potentially greater comfort level with new technology, younger generations bring recruitment and retention challenges. Relatively speaking, the younger segment of today's workforce desires a mobile work environment, changes jobs more readily, and expects rapid career progression.

Retaining the "aging" workforce must remain a priority. While some in this category may have a difficult time adapting to the broadband environment, they will remain essential to PSAP operations. The mature segment of the PSAP workforce has experience, as well as knowledge of existing technology that the younger segment may have no experience with.

FINDINGS

New Workforce Roles

The workforce of the future will need to expand upon existing knowledge, skills, and abilities to include cybersecurity awareness, familiarity with digital, broadband, and IP-based technology, and the ability to sift through and prioritize increased volumes and types of data, including unsettling imagery. Agencies will need to account for the following new job functions as they implement broadband technologies. Many of these duties may be absorbed by existing staff while other functions may require the creation of a new position such as a data or intelligence analyst.

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Operational

- Triage/evaluate incoming data, including video from fixed systems, vehicle and body worn camera systems, and NG9-1-1 callers.
- Receive and process information coming in from sensors and analytical systems. This could include devices that are used by first responders (e.g., biometric telemetry from firefighters working on HAZMAT scenes or a gunshot detection sensor on an officer's vest).
- Collect, analyze, and distribute data from a variety of new sources made available by broadband technology. For example, a PST may need to review multiple incoming video or picture images to determine which (if any) should be forwarded to responding units, flagged for review by investigators at a later date, or stored.

- Liaise between the PSAP and external entities who are managing data on behalf of the agency. For example, a PSAP may elect to initially dispatch EMS units and then route all video calls needing pre-arrival medical care to a third party center that specializes in that function.
- Monitor or analyze social media feeds to identify information critical for first responders. Some PSAPs are already using data mining filters to monitor Twitter message traffic to obtain intelligence at large events, including the location of disturbances and other problems being noted on social media.
- Manage the equipment, software, and network components.

Administrative

Human Resources

Implementation of broadband technologies will result in a dramatic change for PSAP operations and a resulting change in the needs of the PSAP workforce. Human resource departments supporting PSAPs will need to manage a host of new issues and employee requirements. These changes will likely impact the recruiting and hiring process, including the introduction of new candidate testing methodologies. Expected changes in job functions, organizational span of control, and employee training will require a comprehensive review of position classifications and benefits. Promotion and salary structures will need to be reassessed. Each PSAP must make these changes based on its own workforce and agency needs. Additionally, policies will need to be developed regarding employees who cannot cope with the new requirements. If a PSAP adopts broadband technologies in phases, there could be a gradual shift in the workforce.

Critical Incident Stress Management (CISM)

PSTs will be exposed to an increased level of stress due to the changing nature of the PSAP environment, the likelihood of an increase in workload, and the possibility of critical incident stress once live video and other potentially graphic displays are introduced to the PSAP. Each PSAP should develop or amend their CISM intervention plan to accommodate these new risks.

Public/Media Information Management

The implementation of broadband technologies will have a number of different impacts with regard to social media and information management. As more data is made available to the PSAP through the implementation of broadband technology, there will be more pressure on the public safety organization to acknowledge the presence of that data following a major incident. Each PSAP should organize its workforce to ensure responsibilities and policies are clear.

Recruitment and Retention Issues

Recruitment and retention of tech-savvy personnel will be beneficial to deal with the ongoing evolution of technology in PSAPs. This presents a variety of challenges for PSAPs that are either new or different from what they face today.

Aging in the PSAP

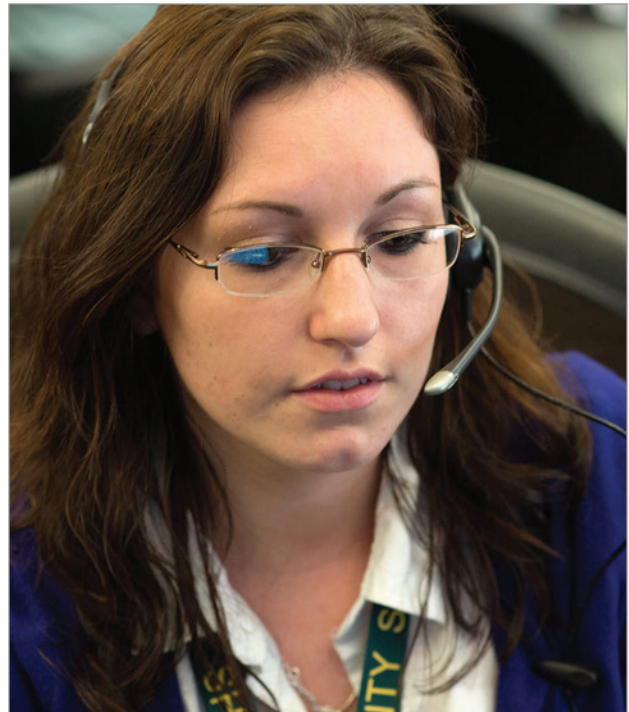
Generational differences in the workforce will become more evident as the complexity and speed of implementation of technology increases. It will be critical to address training and operational issues to retain personnel with substantial experience in emergency communications despite challenges adapting to new technologies.

Appropriate Recognition for PSTs

The nature of PSTs' work generally keeps them out of the public eye. Consequently, they often do not receive appropriate recognition for their sacrifice, dedication, and public service. The lack of recognition, and often respect, translates to a challenge for morale, as well as salary and other benefits. This ultimately creates a substantial recruitment and retention issue.

Staffing Levels

Technology adoption and staffing levels are intertwined. If a PSAP is dealing with a staffing shortage, adding the challenge of adopting new technology could be more difficult and even detrimental to operations. Conversely, broadband technology has the potential to help PSAPs deal with staffing shortages, for example, by creating connections to other PSAPs for failover during high call volumes. According to APCO's [research](#), the vast majority of PSAPs lack sufficient staff to comfortably



handle the workload, stress is worse without adequate staffing, the workload for PSTs has been increasing, and staffing is the most important factor in predicting retention rates.⁹⁸ As discussed further below, APCO Project RETAINS and the accompanying tool kit to assist PSAPs with estimating staffing needs are currently being updated.

Quality Assurance Programs

In conjunction with the challenges of broadband technologies, PSTs will continue to face pressure to keep call processing times as short as possible, while balancing the value of the information at hand. Comprehension of primary versus secondary or supplemental information will continue to play an integral role in the PSAP. In other words, knowing what baseline information is necessary to trigger a dispatch and with some incidents, modify a response based on additional information received. In some instances more time may be required to process broadband-based information, but the result may lead to a much more effective response. Agencies should give careful consideration to establishing a quality assurance program that accounts for the use of broadband information as well as developing a comprehensive training program for new and experienced staff members. ■



RECOMMENDATIONS: WORKFORCE

New Recruitment and Retention Strategies

PSAPs should consider a variety of recruitment and retention strategies to grow and maintain a workforce having skills in new technologies.

New Focus on the PST Career

The future PSAP workforce will involve the same passion for serving to protect the safety of the public and responders, coupled with an interest and talent for embracing new broadband and information technologies. This is a profession that deserves more attention for its importance to saving and protecting lives, and, in a broadband environment, it will be a profession with more options for growth and advancement. Accordingly, governments at all levels should drive interest in and development of post-secondary educational programs to produce graduates trained in IT, PST, and related emergency response skills.

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For example, federal and state scholarship programs could create or expand upon public service programs to include NG9-1-1. There are already programs that offer scholarships to attract much-needed talent for public service. In recent years, such programs have been expanded to improve the cybersecurity workforce in government.⁹⁹ These educational programs could also incorporate simulated PSAP environments, to help prepare candidates for the exposure to the at times intense nature of emergency communications.

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Job Exposure During Recruitment and Training

A common problem for PSAP retention is losing new PSTs soon after they finish initial training because the job proved more difficult than expected. This results in a significant loss of investment in terms of training resources and the lost opportunity of another potential hire who might have remained. To address this issue, PSAPs could increase the amount of exposure candidates receive prior to or early in the application process, which could eliminate candidates who will not stay before further investment is made in their hiring and training. For example, the application process could include listening to several emotionally difficult calls that have been handled by employees in that center. A realistic demonstration of actual incidents and how they were processed may be necessary to portray the type of work an applicant may need to perform, and additional consideration should be given to strategies that would include longer exposures so potential hires have a sense of what it's like to work a full shift.

Researching New Hiring Models and Incentives

The lack of budget and hiring flexibility makes it hard for PSAPs to maintain adequate staffing. Many PSAPs must manage staffing shortages for long periods between hiring cycles, and the shortages can get worse the longer they go on due to the increased workload on PSTs in an understaffed PSAP. Some agencies over-hire to create a buffer against anticipated attrition. Agencies could also consider more flexibility in hiring, including looking to other public safety disciplines for candidates that did not end up completing the recruitment process but may be interested in a PST career.

Agencies should also consider offering incremental years of service incentives as part of recruitment and retention. Pay bonuses based on years of service – x% for one year, 2x% for two years, etc. – could offer a more compelling incentive to remain through a minimum length of service than non-binding commitment agreements which are widely used today. Additionally, where agencies lose personnel to neighboring jurisdictions that offer better salary or benefits, agencies could offer a deferred signing bonus that is not awarded until the completion of the minimum service term.

Professional Development

Retention, particularly of the younger segment of the workforce, could be improved through increased training and professional development opportunities. As described in the Training section of this report, PSAPs can leverage broadband technology for online classes and interactive training, which could increase job satisfaction as well as performance. PSAPs can also expand career opportunities by crafting new positions and staffing options. Plus, the additional functions required in a broadband-enabled PSAP will most likely require a restructuring of the normal recruitment practices, work hours and shifts, pay grades, job responsibilities, and promotion track. During this

restructuring, managers could be creative with job titles and levels of responsibility. If there are more promotion opportunities, chances to cross train, diverse operational roles, and increased levels of responsibility, personnel could be more likely to stay with an organization.

Research New Staffing Models

As discussed above, PSAPs have a number of options to meet the future workforce demands of a broadband environment. This can include a combination of specialized workforce sub-units, using other agencies and departments, and leveraging broadband technology to improve connectivity and thereby enable human resource sharing for mutual aid, periods of high volume, continuity of operations, etc. Further research is needed into the technology, training, and governance issues associated with these dynamic approaches.

Increase Recognition of PSTs

APCO will continue its efforts to ensure PSTs receive the respect and recognition they deserve. One strategy for increasing the public's understanding and appreciation of the life-saving work performed by PSTs is to encourage more widespread reporting of 9-1-1 stories. This in turn could help raise awareness of the value of serving in such a public safety capacity, along with the new options and opportunities that broadband technology will enable at PSAPs. Accordingly, APCO will investigate creating a new award that recognizes a journalist, anchor, or news organization for admirable coverage of 9-1-1 operations.

Continued Research and Support for Staffing and Retention Issues

APCO Project **RETAINS** was launched to address staffing issues for PSAPs. As part of the Project, APCO conducted a national study of staffing and retention issues, the results of which informed an Effective Practices Guide.¹⁰⁰ Current models that aid in determining adequate staffing are available; however, updates will be needed in the future for accurate calculations in an NG9-1-1 environment. For example, some current staffing formulas require the input of incident types such as domestic violence and emergency medical dispatch to help compute staffing recommendations. It

will be necessary to re-examine these and make additions to adequately capture the challenges that NG9-1-1 incidents will bring and the time it takes to process them. APCO is updating the research for Project RETAINS and the accompanying tool kit to assist PSAPs with estimating staffing needs and addressing retention issues, mainly focused on the current environment. It will be a few years before full NG9-1-1 can be realized. At that future point, APCO will consider a next (third) iteration of Project RETAINS to incorporate broadband-specific inputs to help address NG9-1-1 staffing issues.

Notes

95 Staffing and Retention in Public Safety Communications Centers, APCO Project RETAINS (Aug. 2005), <https://www.apcointl.org/doc/conference-documents/personnel-human-factor/283-project-retains-effective-practices-guide-2005/file.html>.

96 *Id.*

97 *Id.* at 34, describing how one agency reduced PST turnover from 40% to 8-13%.

98 *Id.*

99 For example, see the Commonwealth of Virginia's Cybersecurity Public Service Scholarship Program, <http://schev.edu/index/tuition-aid/financialaid/state-student-aid/cybersecurity-public-service-scholarships>. Also, the National Security Agency (NSA) and DHS jointly sponsor the National Centers of Academic Excellence in Cyber Defense (CAE-CD) program. The goal of the program is to reduce vulnerability in our national information infrastructure by promoting higher education and research in cyber defense and producing professionals with cyber defense expertise for the Nation: <https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-defense/>.

100 For more information on APCO Project RETAINS, visit <http://retains.apcointl.org/>.