



# Commonwealth of Pennsylvania Public Safety Answering Point (PSAP) Inventory Report



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**pennsylvania**  
EMERGENCY MANAGEMENT AGENCY



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**A NOTE TO THE READER**

The information presented in this document represents a best effort to capture substantial data in order to present a “snapshot in time” view of the 9-1-1 community in the Commonwealth. In doing so, considerable effort was made to present the data in a consistent manner; for example, vendor names were standardized where possible. In addition, the data was vetted and validated by local 9-1-1 representatives prior to submission. Because 9-1-1 service in the Commonwealth is continually evolving—both technologically and operationally—this should be considered a “living document” that will be modified frequently going forward.



## EXECUTIVE SUMMARY

In the Commonwealth of Pennsylvania, 9-1-1 service is provided by public safety answering points (PSAPs) that are distributed geographically across the state's 67 counties. Although an individual PSAP operation typically is overseen by the appointed 9-1-1 Coordinator for that jurisdiction, the Commonwealth maintains overall accountability for the sustainment of the 9-1-1 system.

The Pennsylvania Emergency Management Agency (PEMA) has been appointed to act on behalf of the Commonwealth and, as such, maintains several roles as defined by Act 12<sup>1</sup> of June 29, 2015. Chief among them are the following:

- To cooperate with county and regional 9-1-1 systems to develop interconnectivity of 9-1-1 systems through the establishment, enhancement, operation, and maintenance of Internet Protocol (IP)-based networks.
- To facilitate the implementation across the Commonwealth of NG9-1-1, which embodies an overarching IP-based system that provides the structure for all modes of 9-1-1 traffic (e.g., voice, text, images, and streaming video) to flow from the public, to the PSAP, and continue on to emergency responders. Such systems are known as Emergency Services IP Networks, or ESInets.
- To establish and publish annual uniform standards regarding the implementation and integration of technology associated with the next generation of 9-1-1 call delivery and processing—commonly referred to as Next Generation 9-1-1 (NG9-1-1) Core Services (NGCS).

As the 9-1-1 industry landscape transitions from current legacy technology and equipment to an NG9-1-1 platform, there will be considerable hardware, software, and facility evolutions necessary to take full advantage of the system and data-sharing capabilities.

As a precursor to this transition, Section 5314 of Act 12 requires a comprehensive inventory of each PSAP's facilities, hardware, software, communications infrastructure, network capabilities, and related equipment and services. It seeks specifically to determine the stage of each PSAP's advancement toward NG9-1-1.

In order to capture this information, PEMA directed Mission Critical Partners, Inc. to develop a PSAP inventory methodology, create a data-collection tool, schedule and physically visit each PSAP, validate the data collection, and assess the data to create this PSAP inventory report. The data-collection efforts primarily took place over a 6-7 week period in January and February 2016.

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<sup>1</sup> Act 12 of 2015 amends Chapter 53 of Title 35 (Health and Safety) of the Pennsylvania Consolidated Statutes. <http://www.legis.state.pa.us/cfdocs/legis/li/uconsCheck.cfm?yr=2015&sessInd=0&act=12>



The major focus areas of the survey include the following:

- Facilities
- Deployed hardware, software, and services
- Maintenance contracts associated with deployed equipment and services
- Communications infrastructure
- Network capabilities and limitations
- Core services, including customer premises equipment (CPE)/phone, computer-aided dispatch (CAD), radio, records management systems (RMS), call logging
- Managed data systems and networks
- Current and potential shared and/or collocated equipment, facilities, and services
- Leased equipment utilized in any facet of PSAP operations

Key observations that were formed as a result of the survey interviews and subsequent data analysis are as follows:

- The state is diverse in terms of population, geography, and resources.
- Philadelphia and Allegheny Counties “bookend” the state in terms of call volume and the number of telecommunicators, while the remainder of the state is mostly rural geography, with smaller regions of urban and suburban populations.
- In terms of a transition to NG9-1-1, there are pockets of advancing regions within the state—including the Northwest, Southwest, and Southeast—which have been successful in taking first steps toward NG9-1-1 by implementing a regional ESInet.
- Many, if not most, PSAPs are looking to share resources—such as customer premises equipment (CPE) and computer-aided dispatch (CAD)—and some have already been successful in that regard. Other communities will follow, mostly due to anticipated cost savings.
- More than half of the PSAPs inventoried are expecting to replace either their CPE, their CAD system, or both, by the end of 2018—this represents a substantial capital investment that cannot be reasonably borne by the Commonwealth, unless there is a focus on resource sharing across multiple PSAPs, across a region, or across two or more regions.
- However, in any resource or service sharing scenario, it is vital that a hosting facility has a power supply adequate for additional load. Several PSAPs indicated that the implementation of additional power supply would be required before any additional equipment could be installed.
- Core service technology, as the Commonwealth transitions to NG9-1-1, will provide meaningful opportunities for collocating backup PSAPs—or allowing a neighboring primary PSAP to act in a backup role—dramatically improving redundancy and resiliency.
- Of the PSAPs surveyed, only ten advised that they did not currently have a fiber-based network. Such networks are essential in an NG9-1-1 environment, because of the high-bandwidth applications—such as streaming video—that will be transmitted over ESInets.



- More than 9 million 9-1-1 calls were received and processed by the Commonwealth's PSAPs in 2015; 70 percent of these calls were generated by wireless devices. Meanwhile, the number of such calls from Voice over Internet Protocol (VoIP) and multiline telephone systems (MLTS) also are rapidly increasing. Such non-wireline calls create location verification challenges for PSAPs that are best remedied through industry standardization.
- The current level of text-to-9-1-1 calls placed today is relatively low, but more than one-third of PSAPs across the Commonwealth already have implemented this vital service, with additional PSAPs expecting to participate in 2016.

Based on the analysis of information gathered from PSAP leadership during the inventory phase, it is evident that the Commonwealth is entering an early NG9-1-1 transitional state. Regional assessments have been conducted for many of the PSAPs, providing valuable information toward an NG9-1-1 roadmap. However, without structured governance models in each region, advancing NG9-1-1 Commonwealth-wide may prove to be difficult. Where a regional authority, or governance arrangement, currently exists, the migration toward NG9-1-1 technology is intentional and deliberate in design. Moving forward, a regional authority with decision-making and vision-casting responsibilities, and working in close partnership with PEMA and the 9-1-1 Advisory Board, can provide the support and unified voice necessary to forward cooperative ventures such as regional network deployment and information sharing.

A scan of the current technology landscape identifies some areas that will need attention as the Commonwealth and PSAP leadership continues the NG9-1-1 transition. The age of some established technology—namely CPE and CAD—will make ESInet deployment challenging. Older iterations of system software are incapable of NG9-1-1's interface requirements, and aged hardware does not have the physical capacity for network integration. However, there are a significant number of PSAPs that have planned a system upgrade or replacement of these vital core services.

Although this process of upgrading or replacing aging equipment and systems must proceed, the Commonwealth is not in a position to financially support the number of individual projects slated to take place in the next two years. Rather, there are potential opportunities to invest in resource-sharing technology that will continue to move Pennsylvania further along on the path to NG9-1-1.



## 1. INTRODUCTION

In the Commonwealth of Pennsylvania, 9-1-1 service is provided by public safety answering points (PSAPs) that are distributed geographically across the state's 67 counties. Although an individual PSAP operation typically is overseen by the appointed 9-1-1 Coordinator for that jurisdiction, the Commonwealth maintains overall accountability for the sustainment of the 9-1-1 system.

The Pennsylvania Emergency Management Agency (PEMA) has been appointed to act on behalf of the Commonwealth and, as such, maintains the following roles as defined by Act 12<sup>2</sup> of June 29, 2015:

- To adopt rules and regulations as necessary to enforce Commonwealth law.
- To designate a State 9-1-1 Coordinator.
- To establish, in consultation with the appointed 9-1-1 Advisory Board, a Commonwealth-wide 9-1-1 plan that sets forth 9-1-1 system priorities.
- To establish and publish annual uniform standards regarding the implementation and integration of technology associated with the next generation of 9-1-1 call delivery and processing – commonly referred to as Next Generation 9-1-1 (NG9-1-1) Core Services (NGCS).
- To publish guidelines and application procedures for the collection and distribution of 9-1-1 fees that encourage the implementation of NGCS.
- To receive, review, and approve or disapprove all individual PSAP or regional 9-1-1 system plans submitted.
- To cooperate with county and regional 9-1-1 systems to develop interconnectivity of 9-1-1 systems through the establishment, enhancement, operation, and maintenance of an Internet Protocol (IP) network.

Act 12 requires all telecommunication service providers and retailers to remit a 9-1-1 service fee of \$1.65 per customer per transaction, including wireline, wireless, multi-line telephone system (MLTS), Voice over Internet Protocol (VoIP), prepaid services, and any other method capable of sending an emergency call to a PSAP. These fees are accrued at one single point of collection at the Commonwealth level. Through a collaborative process involving the input of the 9-1-1 Advisory Board, these fees will be distributed to the PSAPs in accordance with Section 5306.1 of Act 12 of 2015, and taking into account individual recurring costs, capital needs, and the research and implementation associated with NG9-1-1.

NG9-1-1 embodies an overarching IP-based telecommunications system that provides the structure for all modes of 9-1-1 traffic (e.g., voice, text, images, and streaming video) to flow from the public, to the PSAP, and continue on to emergency responders. There are currently several components of the 9-1-1 system that are considered core services, such as call routing, call handling, call processing, and call

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<sup>2</sup> Act 12 of 2015 amends Chapter 53 of Title 35 (Health and Safety) of the Pennsylvania Consolidated Statutes. <http://www.legis.state.pa.us/cfdocs/legis/li/uconsCheck.cfm?yr=2015&sessInd=0&act=12>



logging. These core services are responsible for the successful delivery of 9-1-1 calls and the subsequent processes utilized to dispatch emergency responders, communicate vital information, and record all data associated with an emergency call. In the NG9-1-1 environment, technology platforms are employed to satisfy the redundancy, resiliency, and availability level necessary for a public-safety-grade system.

As the 9-1-1 industry landscape transitions from current legacy technology and equipment to an NG9-1-1 platform, there will be considerable hardware, software, and facility upgrades necessary to take full advantage of the system and data-sharing capabilities. A migration of this magnitude does not immediately realize a decrease in costs. Rather, funds currently supporting legacy and end-of-life technologies can be reinvested into NG9-1-1 technology, applications, and networks. This reinvestment allows PEMA and the 9-1-1 Board to focus their efforts and funding recommendations to align with the fiduciary goals set in Act 12, including:

- Promotion of NG9-1-1 technology.
- Continuation of PSAP regionalization through resource sharing.
- Support of voluntary PSAP consolidation efforts.
- Reduction in purchase costs through joint purchasing opportunities.

The most important goal of Act 12, and the mission of the public safety community across the Commonwealth, is to maintain a 9-1-1 system that is accessible and available to all those residing, conducting business, visiting, or traveling through Pennsylvania. A citizen in need of emergency services should have the same level of service traveling the Pennsylvania Turnpike as they would while working in an urban business complex or hiking a rural trail. Taking a leadership role in the overall 9-1-1 program, PEMA and the 9-1-1 Advisory Board guide and encourage advancements in PSAP operational standards, including:

- Quality Assurance (QA)/Quality Improvement (QI) programs.
- 9-1-1 system performance standards.
- PSAP planning.
- Training standards for call-taking, dispatch, and supervisor functions.

## **METHODOLOGY**

Section 5314 of Act 12 requires a comprehensive inventory of facilities, hardware, software, communications infrastructure, network capabilities, and related equipment and services for all PSAPs within the Commonwealth. It seeks specifically to determine the state of readiness and current ability to advance toward an NG9-1-1 platform.

The inventory is to provide a record of networks, systems and equipment at each PSAP—e.g., radio, telephone, computer-aided dispatch (CAD), Geographic Information Systems (GIS), and call logging/recording systems—as well as related databases. The inventory also is to assess the geographic capabilities and limitations of each, and provide a listing of all leased equipment, including



the lease termination date. Finally, the inventory is to provide a record of equipment or facilities that are or can be shared or collocated.

As directed by PEMA, consultants from Mission Critical Partners, Inc. were engaged to develop a PSAP inventory methodology, create a data-collection tool, schedule and physically visit each PSAP, validate the data collection, and assess the data to create this PSAP inventory report. The time to complete this inventory was severely limited and included several state and federal holidays that affected PSAP personnel availability.

The data-collection efforts took place over a 6-7 week period in January and February 2016. The inventory process involved the following major steps and components:

- In December 2015, Mission Critical Partners assembled a team of twenty-seven 9-1-1 professionals with more than 700 combined years of technical and operational experience in 9-1-1 and public safety.
- A survey tool was developed that includes more than 175 questions designed to obtain inventory information related to 9-1-1 facilities, call delivery, call processing and call dispatch.
- In December 2015, four counties (two each from western and eastern Pennsylvania) were selected to validate the survey tool questions and collection procedures in order to better elicit the needed information.
- The inventory team was trained in early January 2016 in order to consistently collect the data across the diverse 9-1-1 community.
- Twelve survey team leaders were identified to lead teams (with three to four members each) that conducted the survey at every PSAP.
- PEMA introduced the inventory process to the PSAP managers via email and webinars, in order to answer any questions from the 9-1-1 community.
- The teams were responsible for pre-populating the survey tool using available historical data from past PSAP-supplied reports, prior to contacting the PSAPs.
- Survey visits were scheduled in January and early February 2016.
- PEMA staff were briefed weekly on the progress of the data-collection effort, and attended several PSAP visits with the survey teams.
- Using the survey tool, the inventory team gathered the data from the PSAP personnel and worked with them to validate the data supplied as current and correct.
- A common database was employed to store and maintain the data.
- The collected data was reviewed and standardized within reason, providing for adequate coalescing of data without corrupting the integrity of the original text.
- Using the collected data, the inventory team analyzed the data and developed the report sections into a draft report.
- The draft report was reviewed with PEMA and revisions were made to complete the delivered report.



## NG9-1-1 READINESS

Currently, there is no agreed-upon consensus definition or framework to qualify or quantify “NG9-1-1 Readiness.” This section highlights the considerations associated with establishing “readiness” criteria and offers recommendation based on subject matter expertise and 9-1-1 industry experience.

As a starting point, a common misconception within the 9-1-1 community assumes that PSAPs or regions employing an Emergency Services Internet Protocol (IP) Network (ESInet) are operating an NG9-1-1 platform.

An ESInet is the underlying network that NG9-1-1 services and applications traverse; it provides the ability to interface and integrate the functions and databases of a 9-1-1 system that have, historically, been isolated and unable to interact with one another. The ESInet is built to public-safety-grade standards that require a level of redundancy and resiliency that maintains system availability measured to standards such as “five-nines” (99.999 percent), for example.

An ESInet can consist of a relatively small network capacity capable of passing limited amounts of data or information from PSAP to PSAP. However, the end-state goal of an ESInet is to support the systems and services required to fully deliver emergency calls to the PSAPs, and to provide an avenue to transfer calls and associated data quickly and efficiently between all PSAPs on the network.

NG9-1-1 Core Services (NGCS) are related components deployed with the capability to receive, process, and dispatch emergency calls in an IP environment. Similar to legacy core services, NGCS can receive emergency calls delivered using legacy routing services and policies. However, what sets them apart from legacy core services is the ability to receive emergency calls delivered using IP-based devices and media. Additionally, NGCS can also send data to, and receive data from, the NGCS of other PSAPs utilizing an established ESInet.

However, while an ESInet and other NGCS components are part of the NG9-1-1 architecture, their implementation is not a sign of reaching the end state of migration. A measure of readiness for an NG9-1-1 platform is determined through an assessment of the current state of specific operational and technological components in a PSAP. In addition, the ability for PSAP leadership to progress through the transition of emerging technology deployment and operational integration also should be evaluated. Policy and governance issues must also be addressed.

The major focus areas associated with an NG9-1-1 readiness assessment are categorized in the following manner:

- **Business:** The planning and procurement activities related to NG9-1-1. This can include activities such as gap analysis or needs assessment initially. Creating a build-out plan and procurement process naturally follows.



- **Data:** Assigning accountable agents for data integration and management. It is vital to maintain the accuracy of data and the management process. Two items should be established early:
  - A primary point-of-contact for a specific subset of data, and;
  - A data management process that integrates all modifications and alerts accountable agents of data gaps, overlaps, and other inconsistencies.
- **Applications and Systems:** Deploying core functions and services of NG9-1-1 systems. The traditional systems described as core functions in a 9-1-1 include phone for call processing, CAD for call dispatch, and recorders for call logging. Deploying NG9-1-1 ready core function systems provides a platform capable of supporting NG9-1-1 applications that improve vital services such as call routing for wireless devices. It also provides a platform for applications that introduce new capabilities based on emerging technology such as receiving text, pictures, and real-time streaming video.
- **Infrastructure:** Connecting the NG9-1-1 core services and PSAPs. NG9-1-1 applications and systems are designed to interface for a more efficient operation (e.g. – both the telephone and CAD share GIS data and other functionality). Establishing an ESInet provides the infrastructure to interconnect core services that may be located among a group of PSAPs; creating an environment that allows resource and equipment sharing. The infrastructure should also be designed with adequate redundancies to maintain public-safety-grade availability, avoiding any single points of failure.
- **Security:** Ensuring the security and integrity of NG9-1-1 networks and facilities. Cybersecurity applications must be a consideration throughout each step of the NG9-1-1 migration. Allowing critical and confidential information to traverse a network outside of a PSAP facility creates points of vulnerability that has not existed in legacy systems.
- Evaluating the layers of security should be a process that occurs prior to any network use. Thereafter, a monitoring system or service should be established that maintains a constant watch on data security.
- **Operations:** Integrating an NG9-1-1 platform to provide a more efficient operational process, resulting in a more efficient 9-1-1 system for those that rely on its critical mission. Any newly deployed technology is only as effective as the end user's effective application. A full review of training practices, SOPs, and standing policies should be conducted and modified as necessary. Special attention should be placed on uniform application and use of shared resources between PSAPs and/or regions.

PSAPs need to perform an individual assessment to determine their level of NG9-1-1 readiness. However, a more effective transition would be accomplished through a PSAP consortium working together to undertake NG9-1-1 readiness goals. Nationally, small regions up to entire states already have addressed some, most, or all of the listed focus areas successfully. In Pennsylvania, a group effort led by PEMA and the 9-1-1 Advisory Board to set implementation standards based on the listed NG9-1-1 readiness assessment factors would benefit PSAPs as they compare themselves – either individually or regionally – to determine their level of readiness.



## 2. 9-1-1 IN THE COMMONWEALTH TODAY

Throughout Pennsylvania, 9-1-1 calls are delivered to public safety answering points (PSAPs, also known as 9-1-1 Centers), with each responsible for a designated jurisdiction. Each of the Commonwealth's 67 counties are protected by a PSAP located within their jurisdiction, with some exceptions. Notably, one, Forest County, has no PSAP facility, and two additional city-based PSAPs exist (Allentown and Bethlehem). Historically, the technology used to complete the public safety mission was housed within each individual PSAP and isolated from external interfacing and integration. Although there were many reasons for this isolation, PSAPs evolved from a point where inter-PSAP connectivity was not technically possible or financially feasible. This led to disparate implementation of 9-1-1 services as each community made individual decisions regarding products and services.

In recent years, however, as was indicated in some regions inventoried, significant effort has been placed on the research and development of products and services that would embrace the concept of interfaces, networks, and resulting **regional** system efficiencies in the realm of emergency services. As new technologies emerge and are adopted by the very people who call 9-1-1, the need for "Next Generation 9-1-1 (NG9-1-1)" has become readily apparent. Retiring and eliminating expensive legacy technologies will help the Commonwealth improve operational and financial efficiencies, improve resiliency and redundancy, and provide better service to those Pennsylvania residents and visitors in their time of need.

Efforts are underway not only within the Commonwealth, but across the nation, 9-1-1 Authorities are planning, designing, and implementing NG9-1-1. As with any migration of this magnitude, a concerted effort across regions and/or states is required and the process begins with an assessment that allows the invested stakeholders to understand the current state of NG9-1-1 readiness. This is a key starting point for subsequent migration and benchmark planning. To that end, a comprehensive inventory of each PSAP within the Commonwealth was conducted to guide future NG9-1-1 migration. A survey tool was crafted to collect data points regarding each PSAP's current status and stage of advancement toward NG9-1-1 in the following areas:

- Facilities
- Deployed hardware, software, and services
- Maintenance contracts associated with deployed equipment and services
- Communications infrastructure
- Network capabilities and limitations
- Core services – customer premises equipment (CPE)/phone, computer-aided dispatch (CAD), radio, records management systems (RMS), call logging
- Databases
- Current and potential shared and/or collocated equipment, facilities, and services
- Leased equipment used in any facet of PSAP operations



An overview for each individual PSAP is provided later in this report using the established survey, and based on the information available and provided by PSAP leadership. This section of the report will focus on the overall NG9-1-1 readiness, Commonwealth-wide. Observations based on the inventory report data will be categorized into four major domain areas:

- Facilities
- Call delivery
- Call processing
- Call dispatch

Every effort was placed on collecting information for every data point on the survey. Occasionally, data was not relevant to the PSAP's operation, or the PSAP leadership was not in a position to efficiently develop and return the information to the survey teams prior to the production of this report. For every data point inventoried and those discussed in this section of the report, observations were made based on the available information collected during an onsite survey team visit, a second infrastructure review assessment and numerous follow-up email/telephone contacts from the survey teams to the PSAP leadership. Many of the observations are based on county class, which allows a more consistent analysis based on controlled factors such as population and government structure. Because the Cities of Allentown and Bethlehem are not associated with a county class designation, they have been assigned to "Class 9" for the purpose of this report.

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**Table 1: Counties by Class Code (population criteria)**

<b>Class 1</b> 1.5M +	Philadelphia	<b>Class 5</b> 90,000 – 145,000	Adams Blair Lawrence Lebanon Lycoming Mercer Northumberland	<b>Class 7</b> 20,000 – 45,000	Juniata Snyder Union Wyoming
<b>Class 2</b> 800,000 – 1.5 million	Allegheny				
<b>Class 2A</b> 500,000 – 800,000	Bucks Delaware Montgomery			<b>Class 6</b> 45,000 – 90,000	Armstrong Bedford Bradford Carbon Clarion Clearfield Clinton Columbia Crawford Elk Greene Huntingdon Indiana Jefferson McKean Mifflin Perry Pike Somerset Susquehanna Tioga Venango Warren Wayne
<b>Class 3</b> 210,000 – 500,000	Berks Chester Cumberland Dauphin Erie Lackawanna Lancaster Lehigh Luzerne Northampton Westmoreland York	<b>Class 9</b>	Allentown Bethlehem		

***Remainder of page intentionally left blank.***



In any figures and data analyses in this section and report, the symbol “n” will be an indication of the sample size for that particular area of study. For example, “n=68” would indicate that 68 agencies returned usable data. It should be noted that not every county maintains an active PSAP; however, some equipment and systems are still present and is, therefore, documented in this report (e.g., generators, back-up CPE, personnel, etc.). There was minor standardization of the collected raw data points during the processing phase. This was necessary to ensure the integrity of the database used to build points of analysis, summary presentation and observation. For example, a CAD vendor may have been acquired by another company, resulting in a change in brand or company name. Industry knowledge and survey team experience was applied to standardize and regulate the information being submitted to the database.

## **FACILITIES**

A PSAP facility is constructed considering a variety of criteria including space needs, functionality, and resiliency. The building can serve as a standalone PSAP, partitioned government facility, or multi-use building with other private companies and public agencies. Many of the facilities that exist within the Commonwealth today were designed and developed for other purposes than being a PSAP. In fact, Lawrence County’s PSAP facility is also a concert venue and home to the Pittsburgh Symphony Orchestra! With that in mind, the 9-1-1 community has often needed to retrofit and modify these facilities to fit their needs, in a manner as best as possible.

As the Commonwealth moves forward and new PSAPs are built or current ones revitalized, some general guidelines should be addressed. The PSAP operations area itself must provide an ergonomically optimal work environment with furnishings, lighting, and acoustics that support prolonged periods of mental preparedness and alertness with little physical activity. The building structure and support systems must withstand weather events and other hazards that could interrupt PSAP operations. The design should locate a functional training area that should include adequate storage for flexible furniture options and include technologies that support an effective learning environment. The design should allow occasional visitors to view the operations room without interrupting work or allowing access to secure areas. The building materials and finishes must be sufficiently durable and cleanable so staff can readily maintain a professional and hygienic environment. And, the aesthetic design of the building must reflect the importance and professionalism of the PSAP.

It is recognized that PSAPs, both new and old, must integrate its demanding technological requirements, the importance of failsafe operations, and the reality that personnel must adapt quickly from a readiness state to crisis mode—and back again. Ensuring that the PSAP and its critical systems have power is the highest priority. The PSAP must have emergency generators and an uninterruptible power supply (UPS) for mission-critical functions and critical infrastructure. The facility must include sufficient redundancy to ensure continuity of operations in case of equipment failure or during maintenance periods.



As PSAP and local government leadership consider their options to establish or remediate a PSAP facility, numerous standards related to the site design or selection should be considered, including:

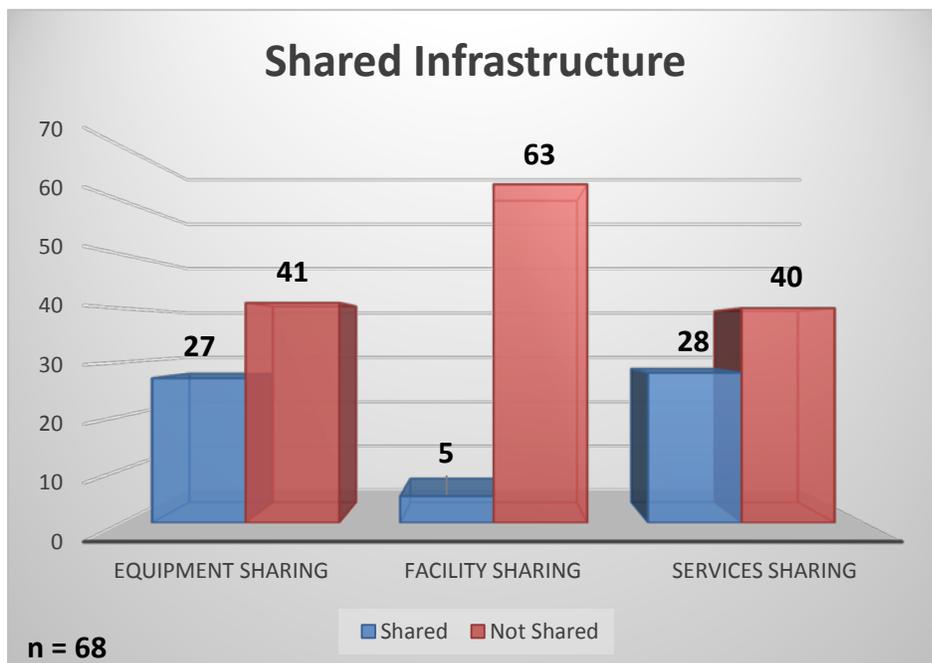
- National Fire Protection Agency (NFPA) 1221 – Standard for Installation, Maintenance, and Use of Emergency Services Communications Systems, 2013.
- Telecommunications Industry Association (TIA) 942 – Telecommunications Infrastructure Standards for Data Centers
- National Emergency Number Association (NENA) 56-506 – PSAP Site Selection Criteria
- Federal Emergency Management Agency (FEMA) – Emergency Operations Center Assessment Checklist

### Facility/Resource Sharing

As the inventory results were aggregated, observations regarding the existing set of PSAP facilities were identified. Sharing facility infrastructure is often key, because it is typically the most expensive fixed asset of a PSAP's operation. However, as the data shows, it is more common to share existing services than it is to share a physical facility.

PSAPs provided information regarding current shared resource solutions, which is depicted in the subsequent figure. Three separate categories are displayed to differentiate between shared equipment, shared facilities, and shared services (in that order from left to right). Examples of each category are located to the right of the figure.

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**Equipment Sharing:**

Radio towers;  
CPE hardware

**Facility Sharing:** Primary PSAPs collocated;  
Backup PSAP established at neighboring primary PSAP, or shared backup PSAP

**Shared Services:** Networks;  
Purchasing; Maintenance Contract

**Figure 1: Shared Infrastructure**

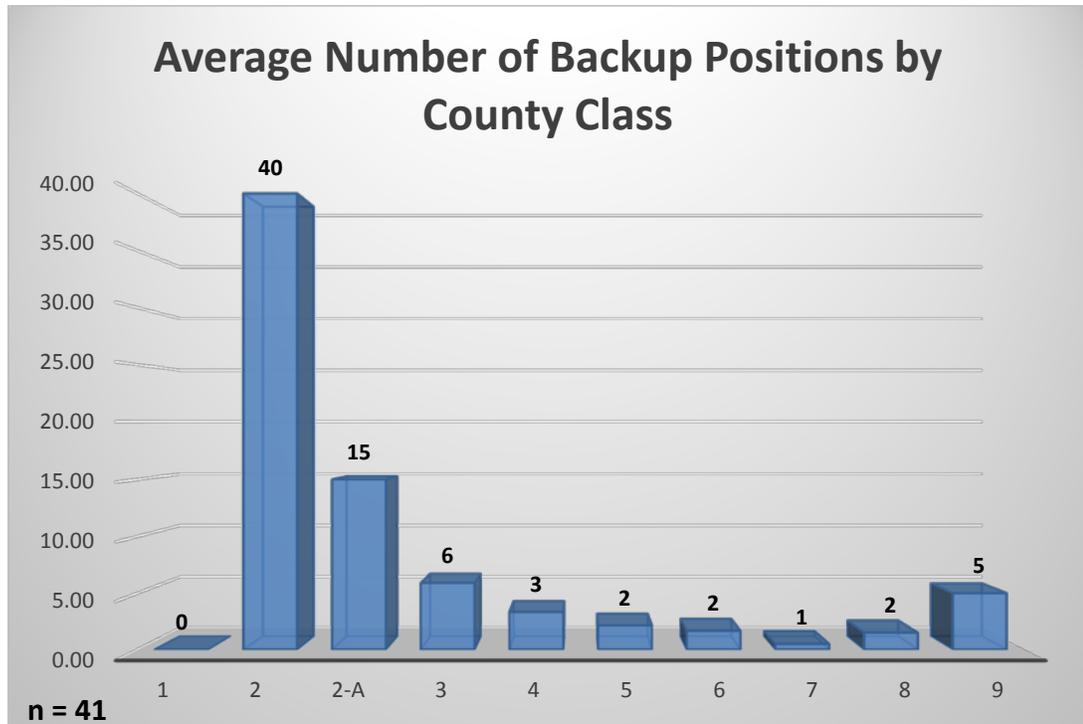
Observations:

- The survey identified that only five PSAPs are sharing facilities. As a result of a regional ESInet in the Northern Tier (which comprises the Northwest and Northwest Central regions), two PSAPs effectively share the workload of three counties, reducing the number of facilities to maintain. Additionally, two PSAPs in the South Central region have entered into an agreement allowing one PSAP to use space in the other as an active backup. Again, this provides an opportunity to remain redundant and remove costly duplication.
- Equipment sharing is occurring among several of the core services, including radio towers and main control switches for CPE systems.
- As a precursor to robust IP-based networks, many PSAPs are sharing some form of communication networks, such as microwave, to provide a form of interoperability within a region. Additionally, hosted systems and solutions are helping PSAPs share the cost associated with annual maintenance contracts.
- The rise in equipment and service sharing provides a positive example of agencies working together to reduce cost and liabilities while maintaining or improving the efficiency of the 9-1-1 system. Future opportunities to increase the level of sharing in all three categories likely exists as emerging technology embraces this concept.



## Backup Facilities

Sixty percent of the Commonwealth's PSAPs maintain a backup center as a level of 9-1-1 system redundancy. The figure below illustrates the number of positions maintained for each PSAP that has an established backup center. The results are sorted by county class.



**Figure 2: Average Number of Backup Positions by County Class**

## Observations

- Although the City of Philadelphia (which is coterminous with the County of Philadelphia) does not maintain an established backup center, there are two designated alternate facilities that are capable of receiving 9-1-1 calls in either an overflow or backup center capacity.
- Costs and upkeep associated with the additional hardware, software licenses, increased preventive maintenance contracts, and furniture can place undue stress on PSAP finances and support staff.
- Routine operational readiness testing is the only way to ensure this level of redundancy does not become an unnecessary and unwanted negative liability as a result of activation failure.
- Core service technology, as the Commonwealth transitions to NG9-1-1, provides meaningful opportunities for collocating backup PSAPs, or allowing a neighboring primary PSAP, or PSAPs, to act in a backup role. Sufficient layers of redundancy still can be maintained.



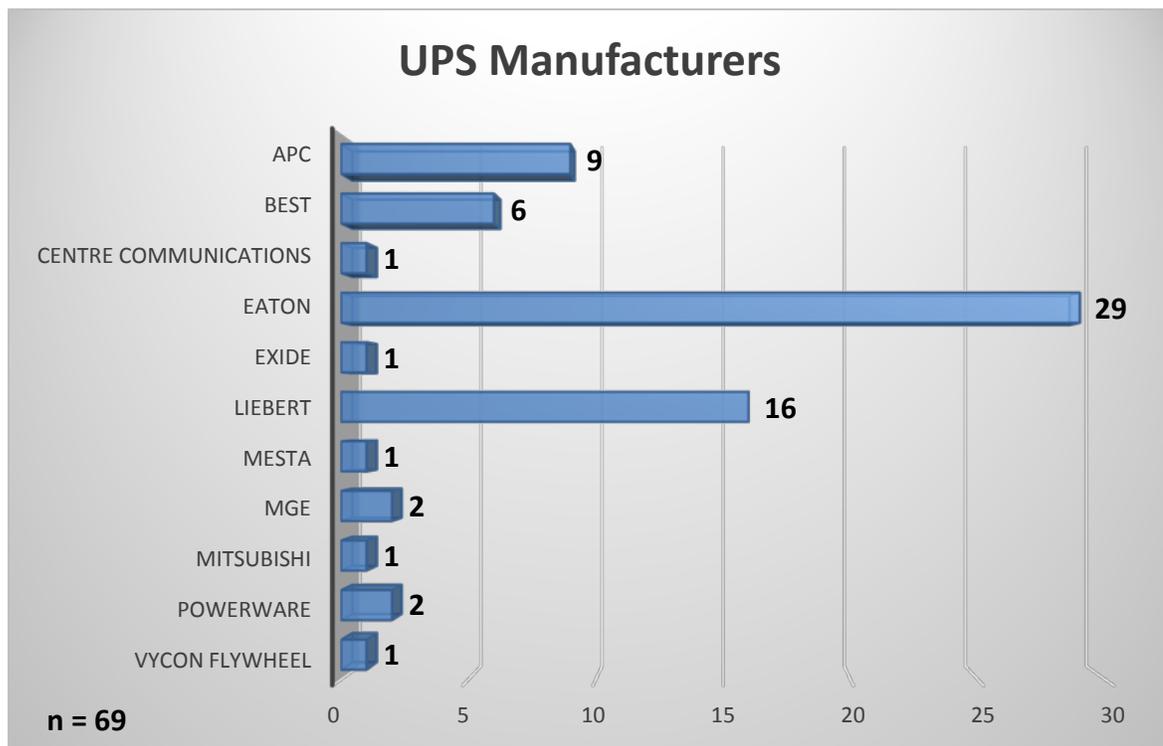
## Disaster Recovery

In addition to established backup facilities, the PSAPs also employ other means of disaster recovery for both individual components and the facility as a whole.

- Thirty PSAPs retain an operation plan to reroute 9-1-1 calls to a neighboring PSAP or entity capable of handling and processing calls for emergency service.
- Two regions – the Southwest and Northern Tier – have established ESInets, which allows for immediate redundancy of some, or all, functions should a PSAP become incapacitated.
- Eight PSAPs deploy a mobile command unit capable of providing 9-1-1 call-taking and dispatch functions.
- Fourteen PSAPs list either no disaster recovery plan or a plan that considers component failure only, and does not include resources or services that exist outside of their main facility. This scenario can be problematic if the PSAP facility is evacuated or otherwise incapacitated.

## Uninterruptable Power Supply (UPS)

A list of UPS units in active service are listed by manufacturer in the figure below. The UPS units are designed to span a critical gap between the loss of commercial power and full activation of onsite generators. Although this gap may only be measured in seconds, it is a vital link to maintain continuity of operations and accessibility of the 9-1-1 system.



**Figure 3: UPS Manufacturers**

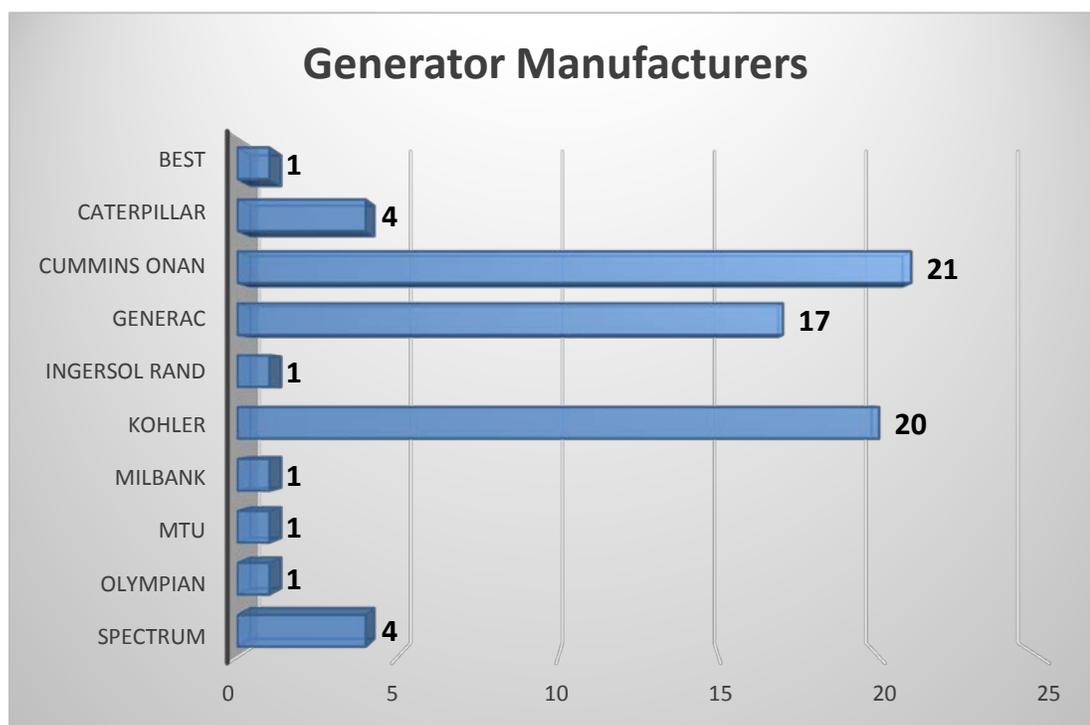


### Observations

- Many of the PSAPs employed more than one UPS unit to either maintain a designated core service or share a total workload.
- Although UPS units have a potential lifespan measured in decades, the internal battery system should be completely replaced after six to seven years of service. There should be no lapse in service level agreements for preventive and unscheduled maintenance.
- Shared equipment and services may require additional UPS units at a shared site. However, the need should equally reduce at sites that no longer house duplicate equipment.

### Generators

Onsite generators provide short-term to long-term power supply to a PSAP in the event of scheduled or sudden loss of commercial power. The figure below provides information on active generators throughout the Commonwealth. A quick scan of the graph reveals that nearly 82 percent of all onsite generators are purchased from three manufacturers.



**Figure 4: Generator Manufacturers**



The next two figures provide some additional detail on the fuel type and age of the onsite generators.

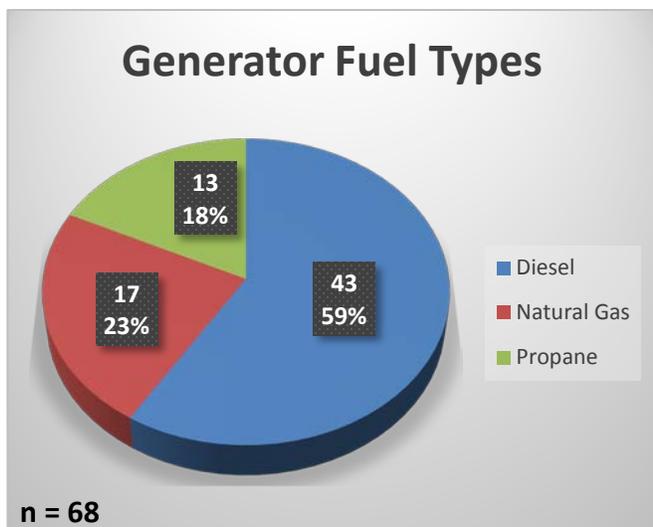


Figure 5: Generator Fuel Types

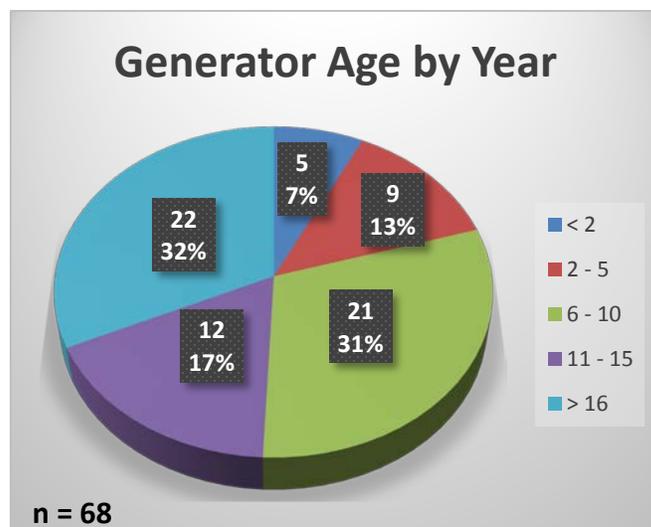


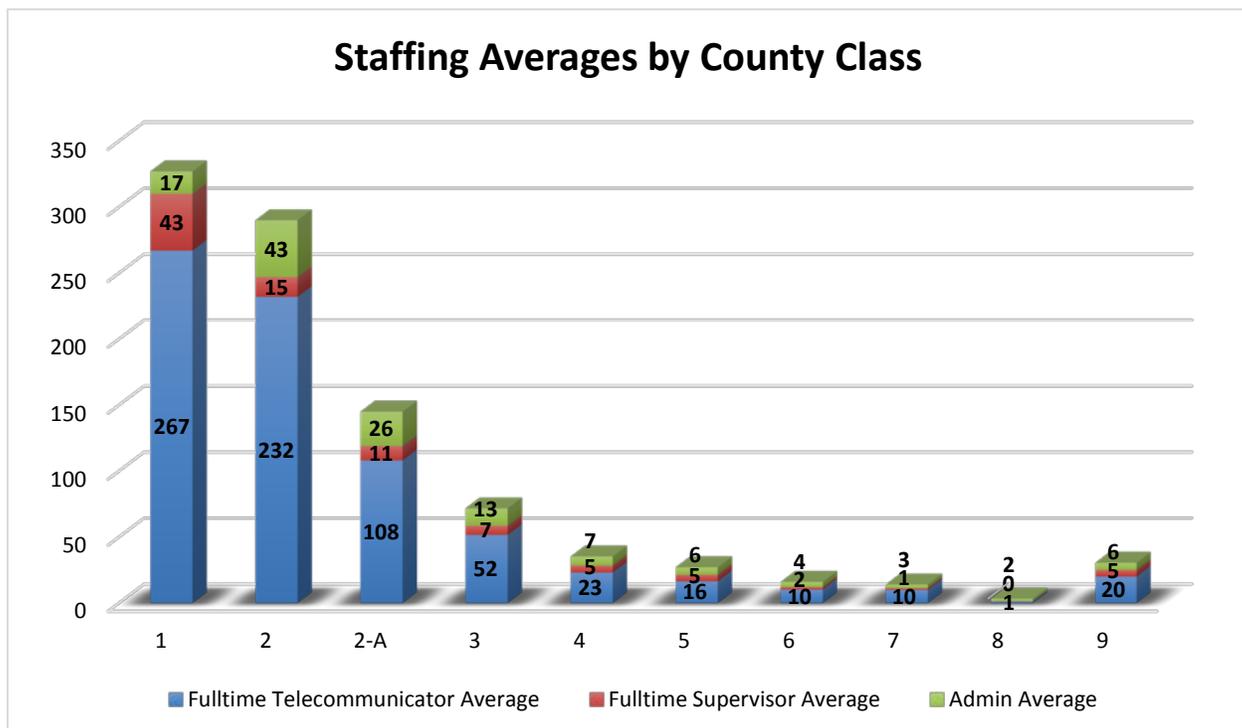
Figure 6: Generator Age by Year

### Observations

- Generators with a natural gas feed are considered to possess an unlimited fuel supply and are, therefore, capable of sustaining a consistent power supply without planning for refueling services. Four PSAPs have diversified fuel-type designs—housing both a natural generator and either a diesel or propane generator.
- Nearly half (49 percent) of all generators in service have been in service longer than 11 years, with 32 percent older than 16 years. According to industry experts, a properly maintained generator could have a life expectancy of 20 to 30 years. This assumes the units are operating between 100 and 300 hours annually. Based on the mission-critical core services dependent on these units, a 10 to 15 year lifespan is suggested.
- Preventive maintenance and a weekly exercise of the unit at full load should be performed on all active units to reduce the risk of activation failure. A UPS system typically can provide power generation only for an hour at most. Commercial power failure, coupled with incapacitation of a backup generator, could prove catastrophic for a PSAP.

### Staffing

Thoroughly trained and adequately equipped telecommunicators, and other support and management staff, are the link to a redundant and resilient PSAP operations. Deployed technology and services only are as effective and efficient as the individuals acting as the end user. The figure below provides staffing averages per county class.



**Figure 7: Staffing Averages by County Class**

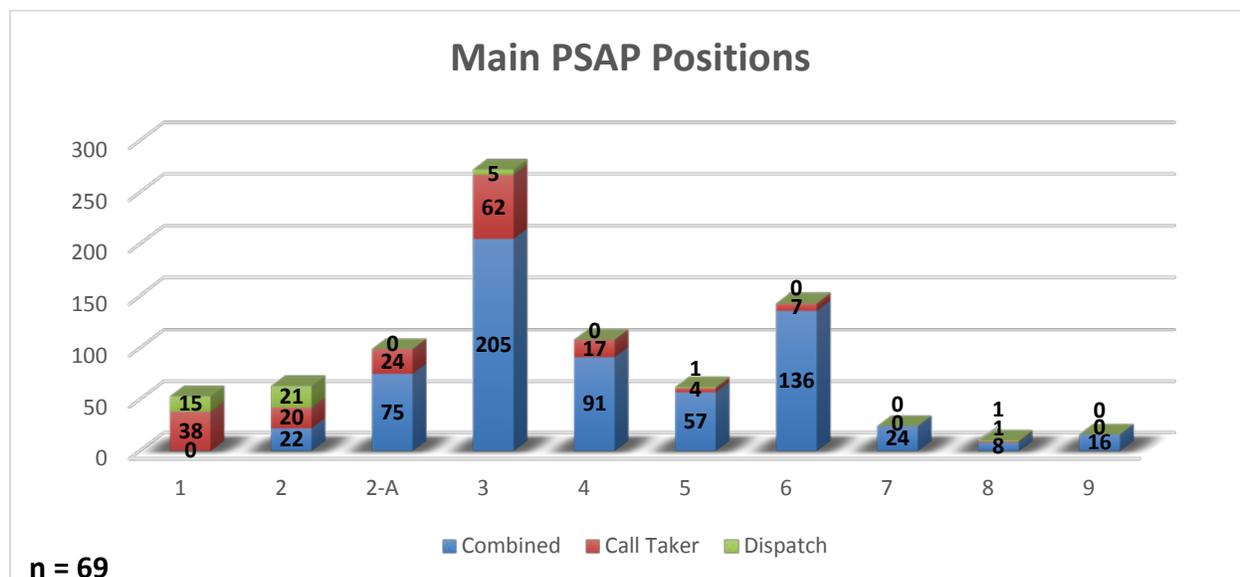
### Observations

- The staffing averages follow a logical and expected declining slope as one scans from left to right on the graph; indicating a movement from urban to rural population ratios. Allentown and Bethlehem (“Class 9”) have average staffing similar to Class Four counties. Their population density results in a relatively higher call volume than a county with a similar population.
- PSAPs located in lesser-populated counties (Class 6 through 8) have very few fulltime supervisors. This requires their fulltime telecommunicators to assume a more active role in the higher decision-making levels. This may require more in-depth training than an individual may receive who fulfills a single role at a larger PSAP. However, emerging technology does allow supervisor and management personnel to maintain virtual connections for offsite monitoring.
- There was significant use of part-time staff noted in the survey to augment fulltime personnel. Best practice methodology suggests that minimum working hours should be established that ensure part-time staff maintain a current working knowledge of policies and procedures.
- The 9-1-1 community nationwide continues to struggle with attrition rates nearing 20 percent. As a result of mandated and unique training requirements, the onboarding process for telecommunicators is measured in weeks—and in some cases, months. The length of the training phase can exacerbate staffing shortages, placing additional burden and undue stress on remaining personnel.



## PSAP Workstations

Workstations are equipped with the hardware and software necessary to perform a telecommunicator's assigned duties. In some PSAPs, call-taking and call-dispatching functions are separated by workstation; in others, the functions are combined. The figure below shows workstation design by function, categorized by county class.



**Figure 8: Main PSAP Positions**

## Observations

- The utilization of function-specific workstations, i.e., call-taker only and dispatch only, drops significantly as one moves from urban to rural counties. With less 9-1-1 calls, there is a reduced need to segregate the call-taking function in the PSAP. This increases the level of cross-training necessary for combined workstations, which may result in an extended training phase.
- Combined workstations must possess hardware and software installed for both functions. Manufacturers of NG9-1-1 core service components are beginning to design their products to interface directly at the workstation level. This could potentially result in reduced costs, and less hardware to install and maintain.
- The statistics provided for the City of Philadelphia (Class 1) represent workstation totals for their primary PSAP only. It was reported that their secondary PSAP has 23 workstations available.

## Network Equipment

Migration to emerging technology and an NG9-1-1 platform requires equipment that provides a gateway to a network outside of the PSAP. Common equipment types include switches and routers; both are



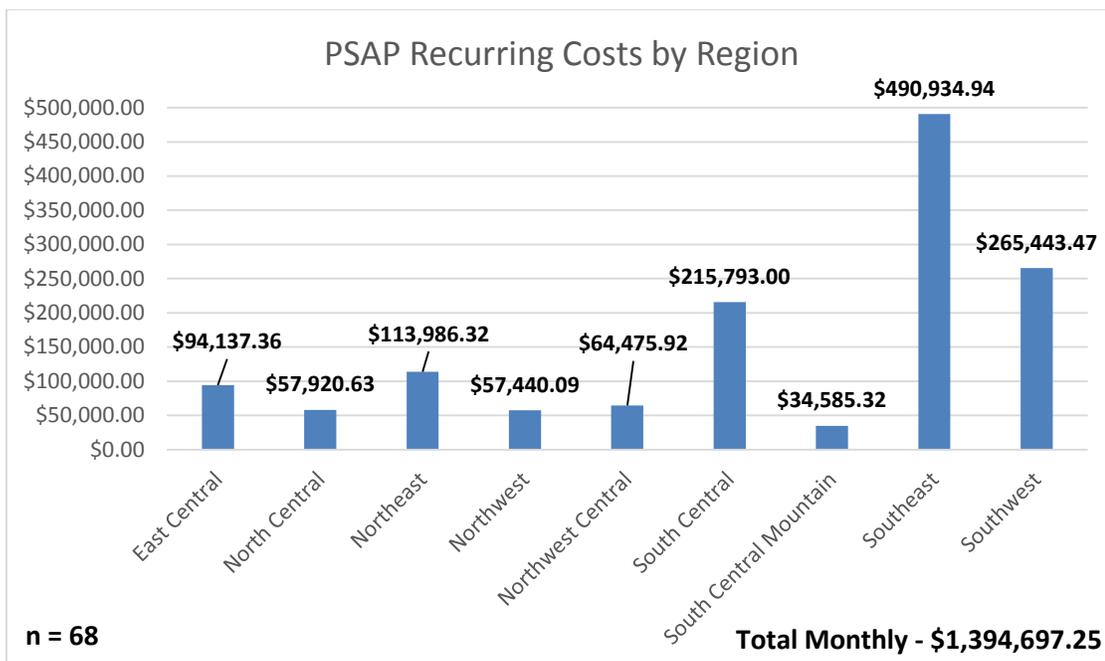
capable of sending and receiving data to and from specific destination(s). Considerable information was gathered regarding the network equipment deployed at each PSAP. Based on the highly divergent nature of the information gathered, the ability to build a meaningful table or graph proved to be problematic. However, the observations below provide some insight regarding the raw data after a completed processing phase.

### Observations

- Network access is implemented in layers—commonly called Layer 2 (L2) and Layer 3 (L3)—that facilitate data sharing, both internal and external to the PSAP. Both network layers are required for NG9-1-1 core services. Currently, 50 PSAPs have L2 hardware deployed and 40 of those PSAPs also have L3 hardware.
- Many PSAPs indicate that their current equipment rooms have available space, with some measured in a few rack spaces and others measured in significant square footage. This information may help to identify potential opportunities for equipment or service sharing.
- Additionally, 40 PSAPs confirmed that their current network equipment possesses open ports for additional network extension. Of note, several PSAPs advised that their current ESInet router could support additional access. Again, this presents potential opportunities for expanding established network access.
- In any resource or service sharing scenario, a full assessment of power needs should be completed to assure that a hosting facility has a power supply adequate for additional load. Several PSAPs indicated that the implementation of additional power supply would be required before any additional equipment could be installed.

### Recurring Costs

Costs associated with 9-1-1 call handling consume a significant portion of the operational budget for a PSAP. The following figure provides information by region on the total monthly cost of services and facilities required to deliver, process, and dispatch 9-1-1 calls.



**Figure 9: PSAP Recurring Costs by Region**

### Observations

- These costs do not include other significant costs to the PSAP including personnel, building/facility maintenance, initial purchase costs of core systems and equipment.
- Costs associated with legacy call delivery services such as selective routers, 9-1-1 trunks, and ALI records represent a large portion of these costs. Migrating to an NG9-1-1 call delivery environment will realize a substantial decrease in legacy recurring costs.
- Maintenance contracts for core systems (e.g., CPE, CAD, logging, etc.) is also a significant area of recurring cost for PSAPs. Again, the migration to an NG9-1-1 platform will provide opportunities to increase resource sharing, resulting in a decrease of deployed equipment and maintenance costs.

### **CALL DELIVERY**

A 9-1-1 call is rapidly ushered through several gateways and networks during the process of delivery to the PSAP. In the legacy environment, the gateways and networks typically are handled externally by local telephone providers. The PSAPs and telephone providers form a partnership to monitor, maintain, and improve the delivery facilities and the interface functionality. All parties are invested to various levels in a resilient and reliable 9-1-1 system, from call delivery to the arrival and provisioning of emergency resources.



Regardless of the medium—e.g., wireline, wireless, Voice over Internet Protocol (VoIP), or telematics—when a 9-1-1 call is placed, the call must be passed from the individual telephone service provider to the established network of the local exchange carrier (LEC). In the wireline environment, this handoff occurs at the end office serving that caller. Wireless calls are routed to a nearby tower site and subsequently handed off to the LEC. VoIP calls are programmed by the VoIP provider to complete this handoff to a specific LEC based on the customer-designated location of the phone.

Traditionally, the LEC network has consisted of legacy telephone company trunks, central offices, and selective routers. Telephone company trunks allow voice and other small segments of data to traverse the network to the PSAP. Central offices house facilities and act as hubs for the network of telephone company trunks. The selective router is a network switch that determines the proper routing policy for the 9-1-1 call based on the available location data associated with the call. Each PSAP procures telephone company trunks dedicated solely to the delivery of wireline, wireless, and VoIP 9-1-1 calls from the selective router.

The replacement of legacy trunks with more robust and efficient IP trunks has been researched and explored in parts of the Commonwealth. An end state Emergency Services IP Network (ESInet) enables the integration of all components of the call delivery process, regardless of the device used to initiate the emergency call. There are different phases of component migration as an ESInet is established. Several regions within the Commonwealth have started on the migration path as they transition certain network components to a regional ESInet. There are some regions currently sharing a network that routes 9-1-1 calls and associated data. However, many of the legacy LEC components, such as central office trunks and selective routers, are still being used concurrently with emerging ESInet technology.

### 9-1-1 Trunks

The 9-1-1 trunks are a dedicated section of the overall telephone network. Only 9-1-1 calls can access and traverse these trunks. Each PSAP maintains a designated amount of 9-1-1 trunks, and the typical design includes multiple, and geo-diverse, selective routes for necessary redundancy. The figure below displays the total number of wireline and wireless trunk lines—as well as the average number of trunk lines in each PSAP—per county class. There is only one First Class and one Second Class county; therefore, their “average” is simply a sum of both wireline and wireless categories.

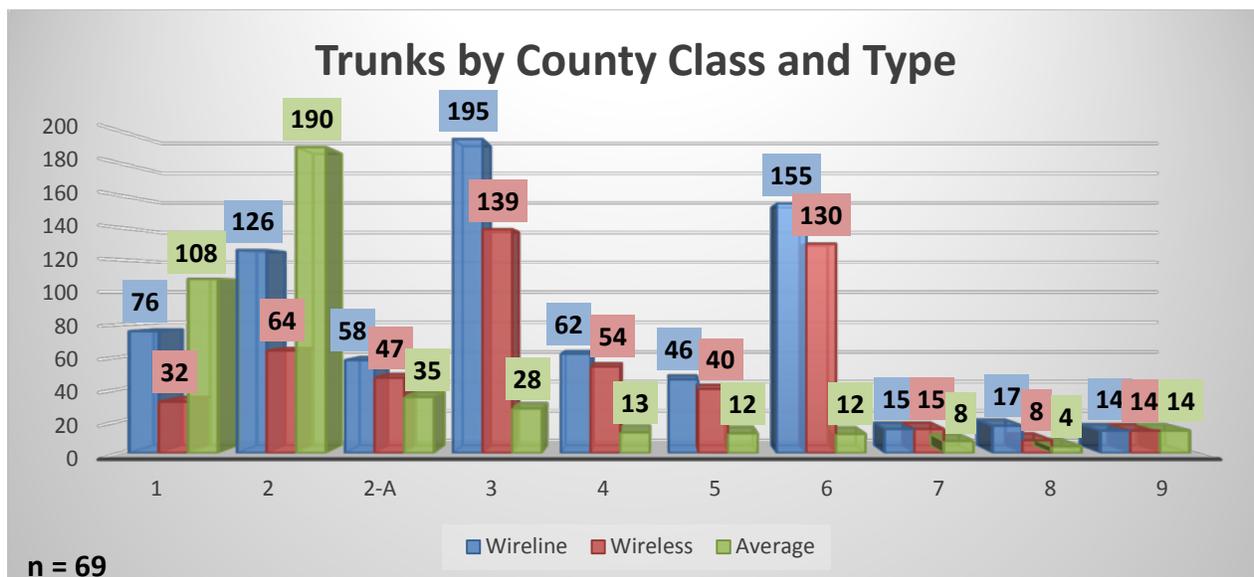


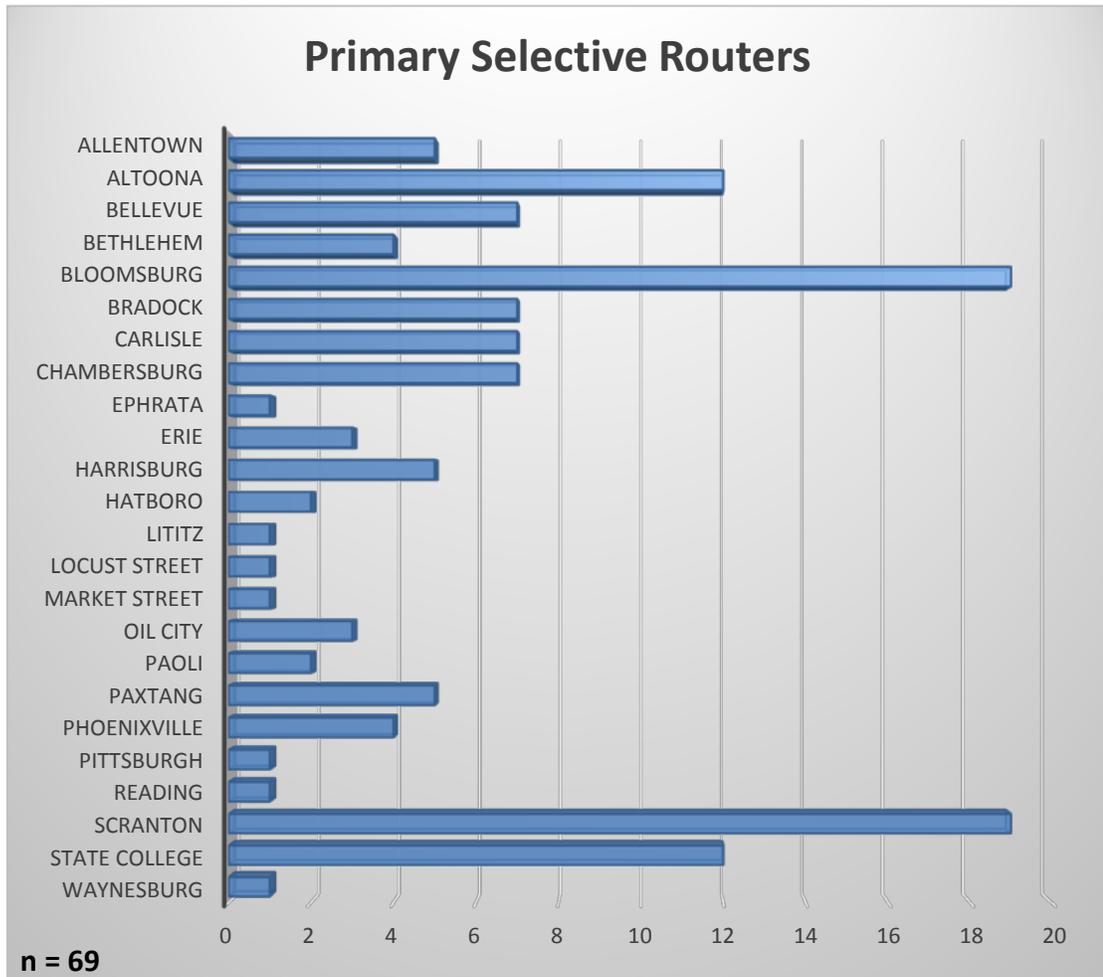
Figure 10: Trunks by County Class and Type

#### Observations

- There appears to be an imbalance of trunks designated for wireline and wireless 9-1-1 calls in virtually every PSAP. Based on the call statistics discussed in this document, wireless calls accounted for nearly 70 percent of the total call volume in 2015.
- Trunk capacity calculations are used to determine the number of trunks a PSAP should acquire. The formulas consider factors such as population, call volume, and the average call duration. Overall, these are suggested categories. PSAP management can take other operational criteria into consideration and adjust the number if they choose.
- Recurring costs associated with 9-1-1 trunk acquisition and maintenance should be taken into consideration when deciding on a trunk count for a PSAP. An exorbitant number of trunks does not allow a PSAP to answer more 9-1-1 calls if the personnel and workstation count does not support a call volume of that magnitude.

#### Selective Router

The selective router is a component of the legacy telephone network located in a LEC central office. It routes 9-1-1 calls to the appropriate PSAP based on static location information. The figure below provides information on the number of PSAPs connected to the 24 selective routers in service across the Commonwealth.



**Figure 11: Primary Selective Routers**

#### Observations

- Similar to the 9-1-1 trunks, selective routers have associated recurring fees. In fact, a significant portion of the nearly \$1.4 million paid monthly by PSAPs across the Commonwealth is linked to the bundled tariff that includes selective routers.
- Location verification functions associated with NG9-1-1 are better equipped than legacy selective routers to handle 9-1-1 calls from wireless and IP-based devices, which now make up almost three-quarters of all 9-1-1 calls.
- IP-based technology for both 9-1-1 trunks and routers will provide opportunities for 9-1-1 call flow resiliency and redundancy at a Commonwealth level, rather than at a PSAP or regional level. However, implementing such technology will require a considerable front-end effort.



## Alternate Routing

The 9-1-1 system is a critical and principal component of the public safety network. As such, PSAPs should plan, implement, and test redundancies to systems and operations to alleviate any potential single point of failure. Alternate routing plans for 9-1-1 calls varied, but most PSAPs possess a plan or method of system-failure notification. The following breaks down those plans into four general areas.

- ESInet – Ten PSAPs connected to the Northern Tier ESInet have redundant and geo-diverse call delivery routing that allow call processing to continue even with an incapacitated PSAP.
- Alternate Routing – Eleven PSAPs have a predetermined alternate route to neighboring PSAPs. This may occur with manual intervention or automatically after the system recognizes a lack of response.
- Internal rerouting – Sixteen PSAPs employ a system that allows 9-1-1 traffic to be diverted internally to an alternate system. This can be completed manually and typically results in minor call delivery interruptions.
- Twenty-seven PSAPs do not have a system in place to reroute 9-1-1 calls. However, callers will receive a busy, or fast-busy, signal when attempting to call 9-1-1. This is not ideal, but it will provide the public some indication that alternative notification methods will need to be employed.

Five PSAPs did not possess an alternate routing plan, or were not sure if one existed for their PSAP.

## Communication Networks

Several iterations of established communication networks (e.g., satellite and microwave) have emerged in the last decade. Fiber networks have now become commonplace in the 9-1-1 community. As the bandwidth capabilities continued to increase, so did the reliability to sustain communication applications. PSAP-to-PSAP connections allow for more robust networks that operate over longer distances. Even 9-1-1 traffic, such as text-to-9-1-1, is now capable of being delivered to a PSAP using an Internet Service Provider (ISP).

The following observations are based on the extensive information provided by the PSAPs regarding their current communication networks.

- Of all the PSAPs in the Commonwealth, only ten advised that they did not currently have a fiber-based network. However, all ten maintained a non-fiber-based network, such as microwave and T1.
- Eight PSAPs have removed all non-fiber-based networks and only maintain fiber connections.



- Several networks are being used as regional communication networks. Three regions—East Central, South Central, and Southeast—are leveraging microwave networks for this purpose. Meanwhile, the Northern Tier and Southwest regions both operate a fiber-based ESInet. Currently, the Northern Tier region is actively passing 9-1-1 traffic on its ESInet, while the Southwest anticipates the same capabilities in 2016.
- The City of Allentown and Northampton County share a network specific to shared 9-1-1 telephone equipment.
- PSAPs are starting to diversify ISPs based on the movement toward IP-based communications. For example, mobile data computers (MDCs) or automatic license plate readers (ALPR) used by many law enforcement officers today require an Internet connection between their vehicle and the PSAP.

## **CALL PROCESSING**

### Customer Premises Equipment (CPE)

The 9-1-1 telephone equipment at the PSAP commonly is referred to as customer premises equipment (CPE), and is the primary tool for the call processing function. Typically, each PSAP is equipped with its own CPE. This is the equipment that provides the Automatic Number Identification (ANI) and Automatic Location Identification (ALI) information to the telecommunicators. As such, CPE also is known as the ANI/ALI controller. Because the data is transmitted over the same channel as the voice call in legacy CPE, there is inherent delay in connecting the voice portion of the call to the 9-1-1 operator.

Over the last few years, however, CPE has featured the integration of the telephone and computer. Modern CPE is computer-based and integrates several different applications. Most suppliers of the integrated workstation include “instant recall recorders” and a Telecommunications Device for the Deaf (TDD) for communications with deaf, hard-of-hearing, or speech-impaired callers as standardized options. In addition to the integration of such functions, operation is significantly easier.

The figures below provide CPE information by manufacturer and information on the relative age of current CPE solutions, respectively. Both are important areas to consider for potential regional initiatives.

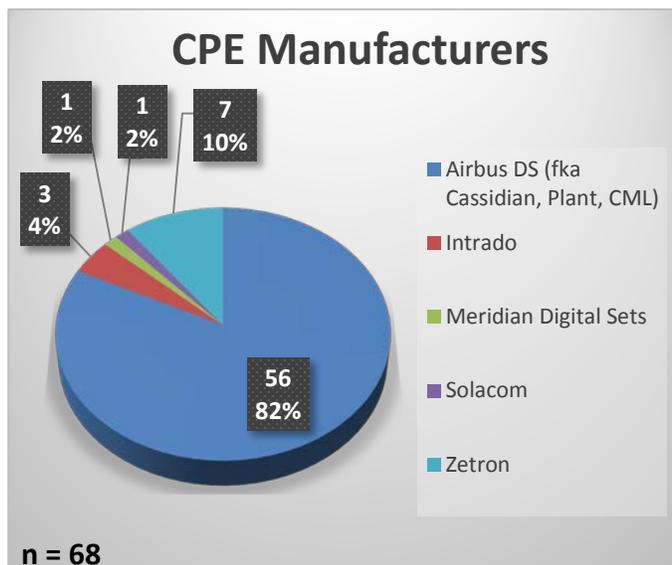


Figure 12: CPE Manufacturers

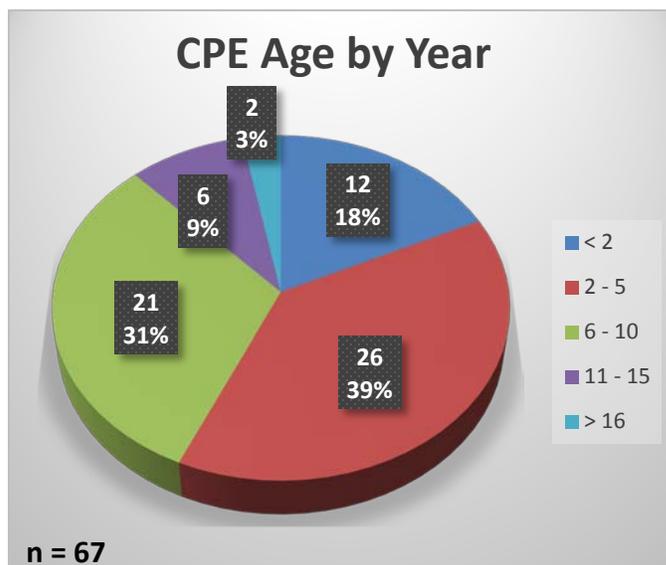


Figure 13: CPE Age by Year

### Observations

- Approximately 43-percent of active CPE solutions have been in service for more than five years—12 percent of which are at least ten years old. One PSAP is using a 9-1-1 system that was deployed in 1991.
- Thirty-two PSAPs (47-percent) reported that they expect to either upgrade or replace their CPE prior to 2018. Either action requires significant funding investments.
- There are currently three regional CPE solutions—Western Pennsylvania County Regional ESInet (WestCORE), the Northern Tier, and Allentown/Northampton—that share equipment, services, and some aspects of system redundancy through a deployed ESInet.
- There is potential for additional shared CPE solutions in the Commonwealth that could substantially decrease the investment required for the number of anticipated CPE upgrades or replacements.
- Eighteen percent of current CPE solutions were deployed in 2014 or later. It is likely that they use NG9-1-1-capable technology, and have the ability to interface with other NG9-1-1 core services.

### 9-1-1 Call Counts

The figure below provides information on total 9-1-1 calls handled in the Commonwealth in 2015, categorized by county class. Class 2-A totals are based on two of three counties in that category, as data could not be captured for the third county.

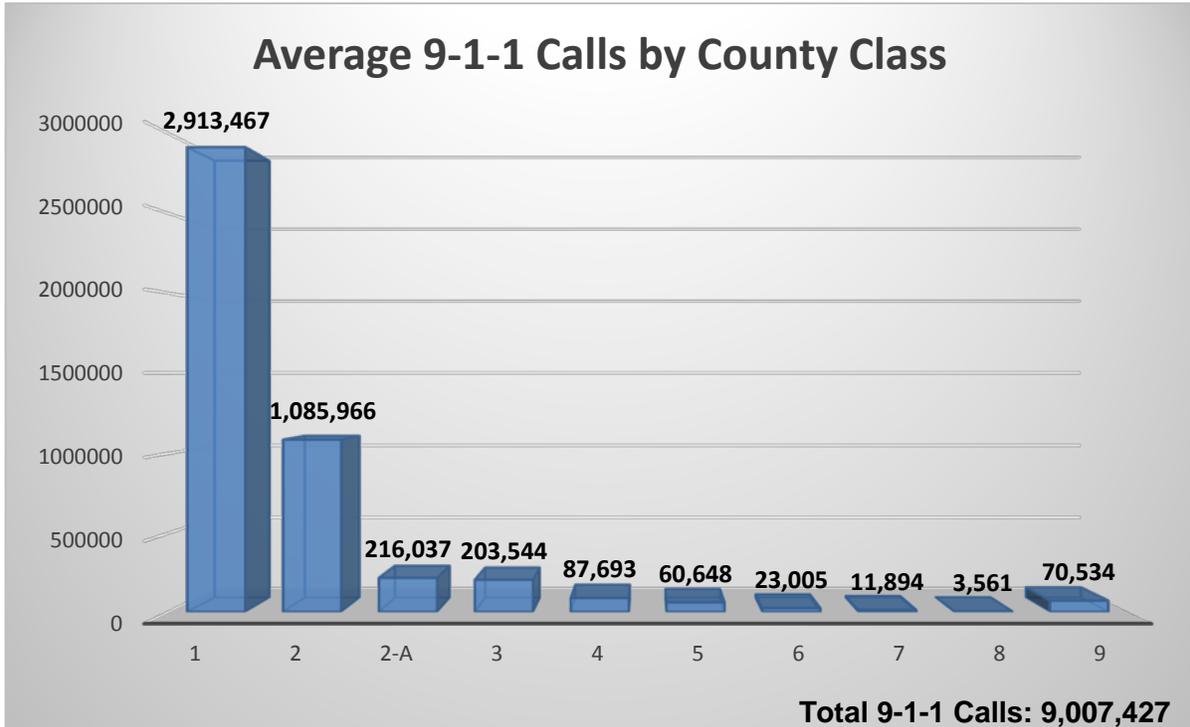
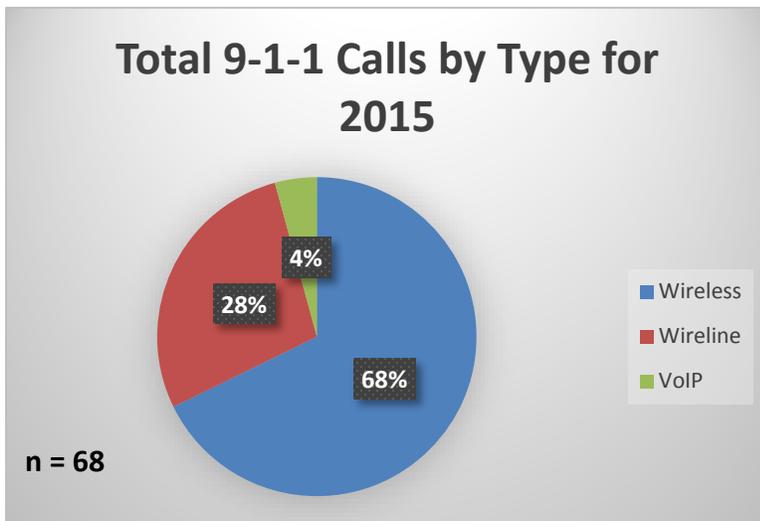


Figure 14: Average 9-1-1 Calls by County Class

The figure below provides information on the percentage of all 9-1-1 calls originating from wireline, wireless, and VoIP devices.



Note: VoIP calls typically are delivered to a PSAP using a wireline 9-1-1 trunk. Therefore, some PSAPs were unable to differentiate between wireline and VoIP 9-1-1 calls. The true VoIP percentage is most likely higher than what is displayed.

Figure 15: Total 9-1-1 Calls by Type for 2015

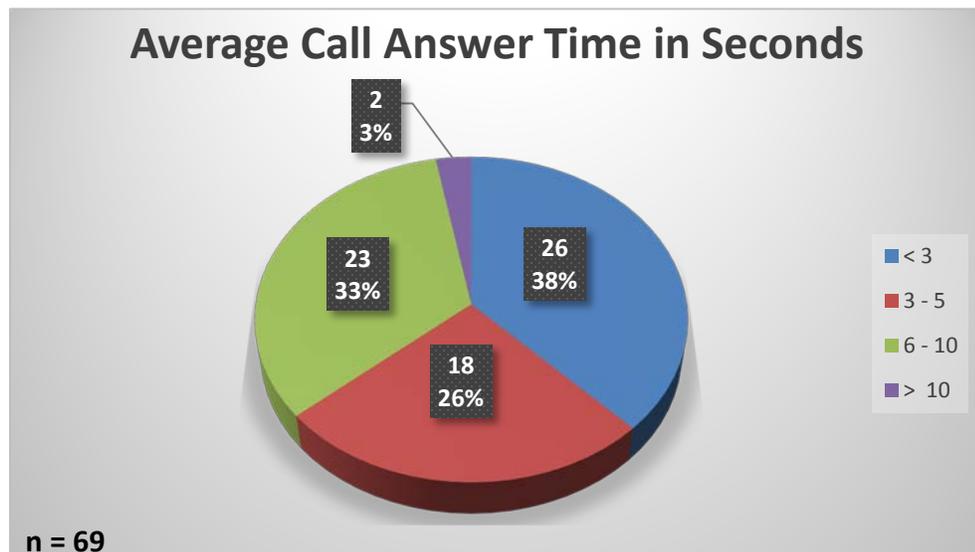


## Observations

- More than 9 million 9-1-1 calls were received and processed in 2015.
- Similar to national averages, nearly 70 percent all 9-1-1 calls across the Commonwealth originate from wireless devices. With the continuous increase in this category, focus on the efficiency and accuracy of associated location verification processes should escalate both Commonwealth-wide and nationwide.
- VoIP and multiline telephone system (MLTS) calls also have continued to increase and have become a more substantial portion of the overall call volume. Similar to calls from wireless devices, complexities of the location verification process can be reduced through industry standardization of location verification processes.
- Two counties—Allegheny and Philadelphia—account for approximately 20 percent of the Commonwealth’s population, but receive more than 40 percent of the total 9-1-1 call volume.

## Call Answer Time:

Average call answer time provides a metric for PSAPs to determine their average speed of answer for all 9-1-1 calls, measured in seconds, which is indicated in the figure below. There is also a Commonwealth mandate that all PSAPs answer 90 percent of all 9-1-1 calls in ten seconds or less. This is a different metric and will be discussed in the subsequent observations.



**Figure 16: Average Call Answer Time in Seconds**

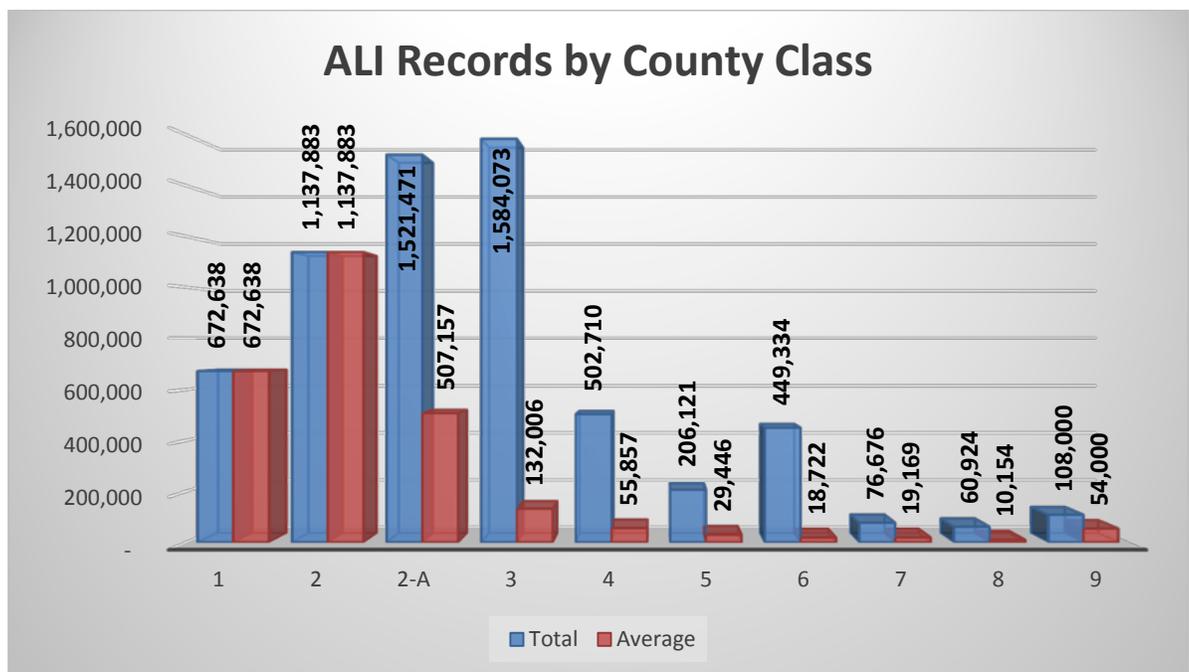


## Observations

- Of the responding PSAPs, more than one-third have an average answer time that is less than three seconds. An additional 26 percent of PSAPs report an average answer time between three and five seconds. Many current CPE systems have a “forced answer” function that can help reduce average call answer time in a PSAP.
- The Commonwealth mandates that 90 percent of all 9-1-1 calls are answered within ten seconds. Of the 50 PSAPs supplying information, an average of 95 percent of the 9-1-1 calls answered met that standard.
- The increase in mobile technology directly affects the number of 9-1-1 calls received that are reporting duplicate information on the same incident (e.g., a vehicle accident on a heavily traveled highway). More-sustained events, such as a severe thunderstorm, also can tax available personnel and resources in a relatively short timeframe. These sharp and short-lived spikes in call volume often account for the reduction to answer each call within the 10-second parameter.

## Automatic Location Identification (ALI) Records

ALI records provide address/location information for a given phone number at the time of a 9-1-1 call. The ALI record totals are contained in the figure below.



**Figure 17: ALI Records by County Class**

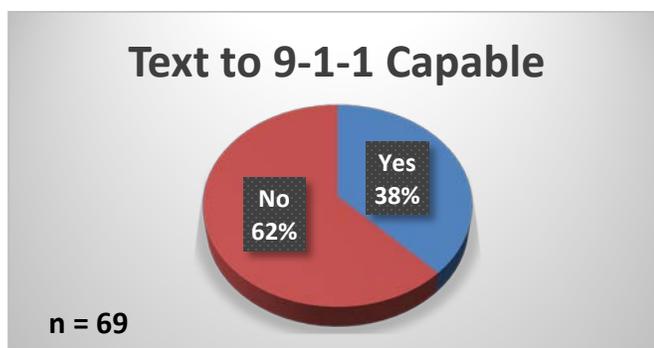


## Observations

- Historically, a single ALI database based on the MSAG was maintained by the LEC in a static database and updated as necessary. The introduction of separate, and dynamic, databases maintained by third parties, such as VoIP providers, has created layers of maintenance and retrieval complexities for PSAPs.
- As technology migrates away from wired phones to mobile devices, static tabular databases become less relevant to the call delivery process. Rather, real-time location verification functions will route calls based on unique coordinate information. This type of technology places significant confidence in the accuracy of available mapping or Geographic Information System (GIS) data.
- PSAPs experience a monthly recurring cost associated with maintenance of ALI records.

## Text-to-9-1-1

The implementation of text-to-9-1-1 technology has gained substantial attention in recent years. PSAPs in Pennsylvania have been working steadily to adopt this technology, with the current state indicated in the figure below.



**Figure 18: Text to 9-1-1 Capable**

## Observations

- PSAPs that employ text-to-9-1-1 technology received 3,191 emergency texts in 2015. This represents a relatively small percentage of 9-1-1 traffic. However, there are many cases reported throughout the Commonwealth that support its implementation and value as a means of 9-1-1 access.
- There are three text deployment options: Internet or website based; delivery using established 9-1-1 trunks; and full CPE integrated. The recommended end-state solution is full CPE integration.



- A majority of PSAPs still are working, or have no current plan, toward text-to-9-1-1 deployment. Some CPE vendors are in the design and/or testing phase of their integrated solution. Once these are complete, the opportunity exists to realize a significant rise in deployed text-to-9-1-1 solutions.

### Ringdown Circuits

Legacy ringdown circuits are direct communication paths between two points. Although ringdown circuits can be integrated into the CPE and mimic the characteristics of a telephone system, they require no dialing to activate. These circuits ensure quick and uninterrupted communication between two locations via a dedicated path. Historically, PSAPs established ringdown circuits to neighboring PSAPs, relevant public safety agencies (e.g., the Pennsylvania State Police (PSP) barracks and/or municipal police departments), and other critical infrastructure (e.g., nuclear power plant, hospitals, and the Pennsylvania Turnpike).

Fifty-seven PSAPs maintain a combined 314 ringdown circuits and pay associated recurring costs. This legacy technology easily can be duplicated and improved in an NG9-1-1 ESInet environment. For example, the Southeast region recently tested a five-county dial plan using established Pennsylvania Department of Transportation (PennDOT) fiber to migrate direct communication paths off designated ringdown circuits.

## **CALL DISPATCH**

### ***Computer-Aided Dispatch (CAD) System***

CAD systems allow public safety operations and communications to be augmented, assisted or partially controlled by an automated system. This can include, among other capabilities, emergency vehicle dispatching recommendations, vehicle status, incident reporting, and incident management information.

Most importantly, the CAD system tracks the status of incidents and public safety units and recommends units to assign to the call. All aspects of a CAD system are optimized for rapid response and system reliability. Because time is of the essence, the CAD system accurately provides a date and time stamp for every activity. When properly designed and implemented, CAD systems increase the accuracy and reliability of the public safety dispatch process. For example, call processing time is reduced, while case and assignment numbers are created and tracked automatically.

CAD systems collect the initial information for an incident and then typically provides the information to one or more records management systems (RMS) for case management and required state/national reporting. The CAD system also supports other activities that assist in the effective use of public safety resources, including shift change roll call, “be on the lookout” (BOLO) files, and the ability to schedule a call in the future, such as funeral escorts and residence checks.



Common CAD functions include:

- Event entry
- Event prioritization
- Unit recommendation for assignment to calls
- Time-stamping
- Address verification
- Unit status monitoring and recording
- Alert timers
- Call history
- 9-1-1 interface
- Paging interface
- Radio system interface
- Mobile data interface
- GIS system interface

Information regarding the manufacturers and age of currently deployed CAD solutions is contained in the figure below.

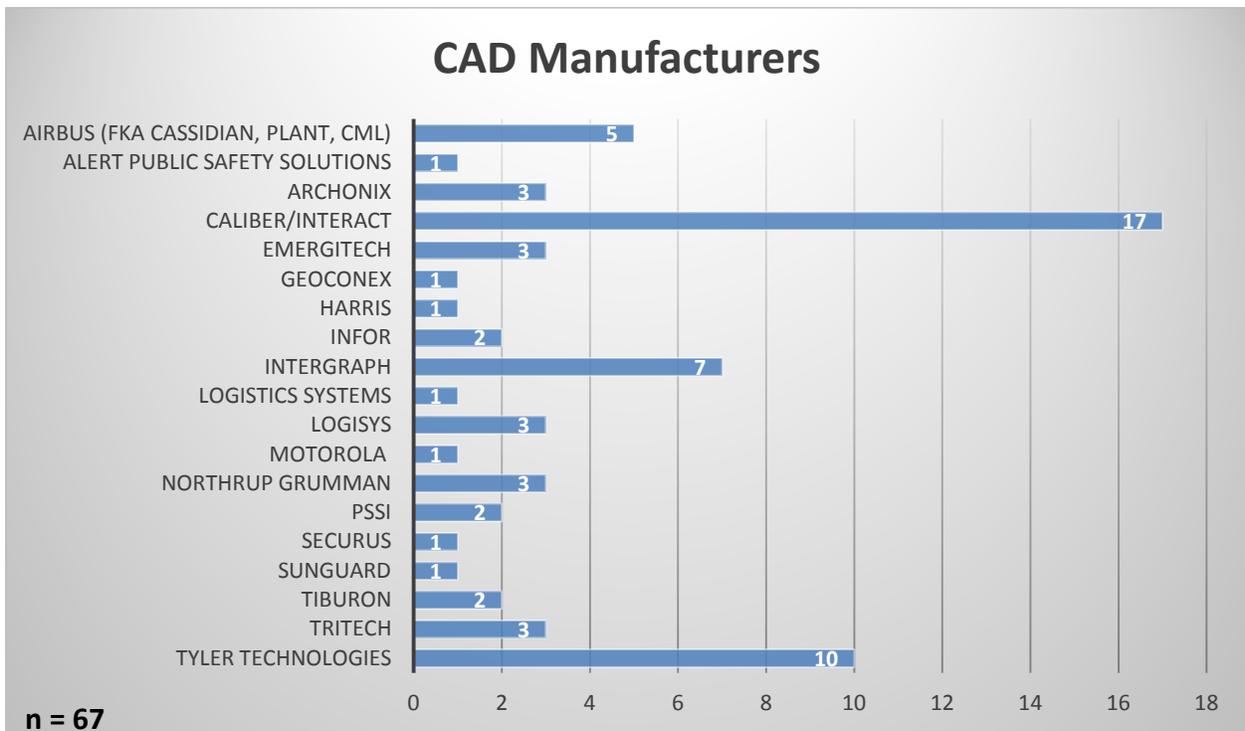
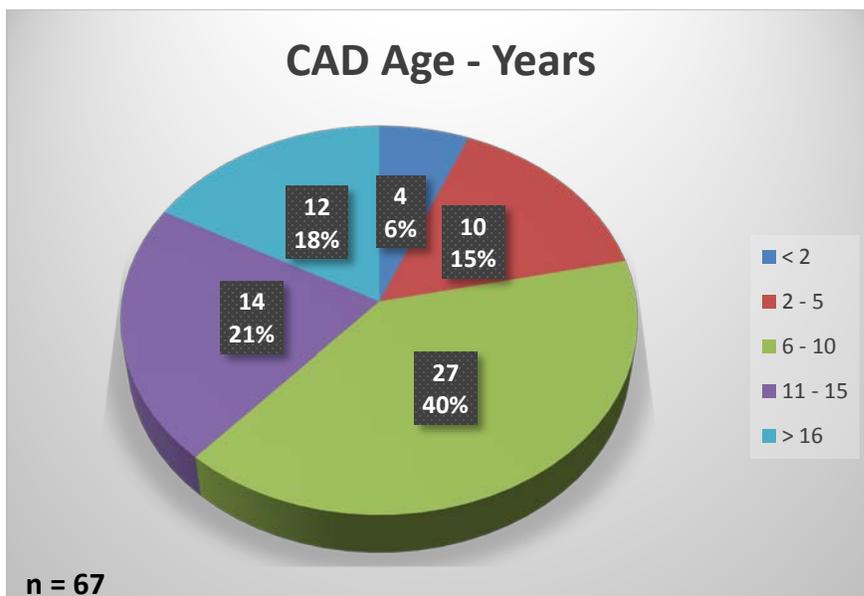


Figure 19: CAD Manufacturers

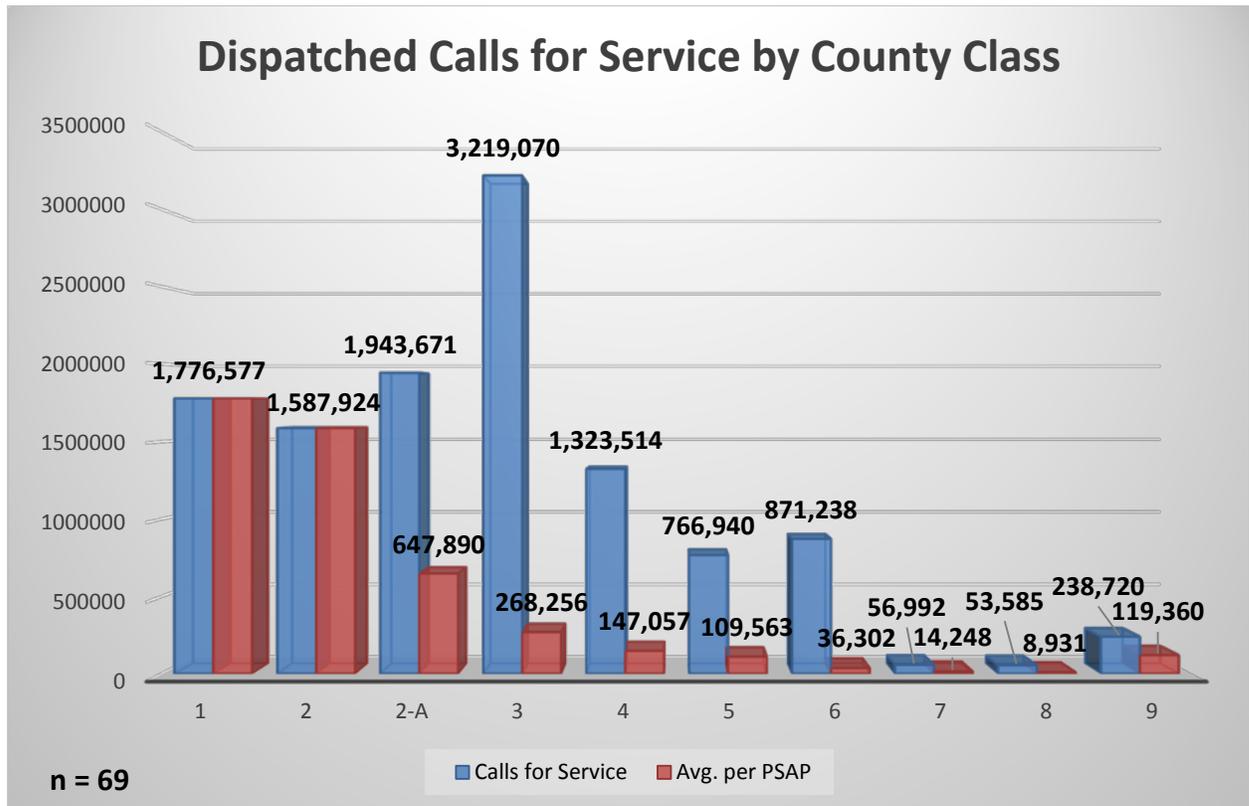


**Figure 20: CAD Age in Years**

### Observations

- Thirty-seven PSAPs (54-percent) are planning a system upgrade or complete CAD replacement by 2018. Either action requires a substantial financial investment.
- CAD products are developed to varying degrees of functionality. For PSAPs handling relatively small volumes of emergency traffic and agencies, system functionality does not need to retain the same level of complexity as a CAD system deployed in a PSAP handling much higher quantities of agencies and emergency calls. Product cost can then be scaled based on functionality.
- Some regions are in the beginning stages of investigating CAD system sharing. If PSAPs are able to operate efficiently on the same functional platform, this approach maintains redundancy, while eliminating unnecessary equipment and recurring cost duplication.
- In cases where functionality levels differ between PSAPs, NG9-1-1 technology provides opportunities to interface disparate CAD systems and creates a means to share data. This CAD-to-CAD technology helps to streamline communication, but there is very little resource sharing, unlike a regional CAD deployment.
- Nine CAD systems were deployed in 2014 or later. It is likely that they use NG9-1-1-capable technology, and have the ability to interface with other NG9-1-1 core services.

Information on total dispatched calls for service in 2015 is found in the figure below.

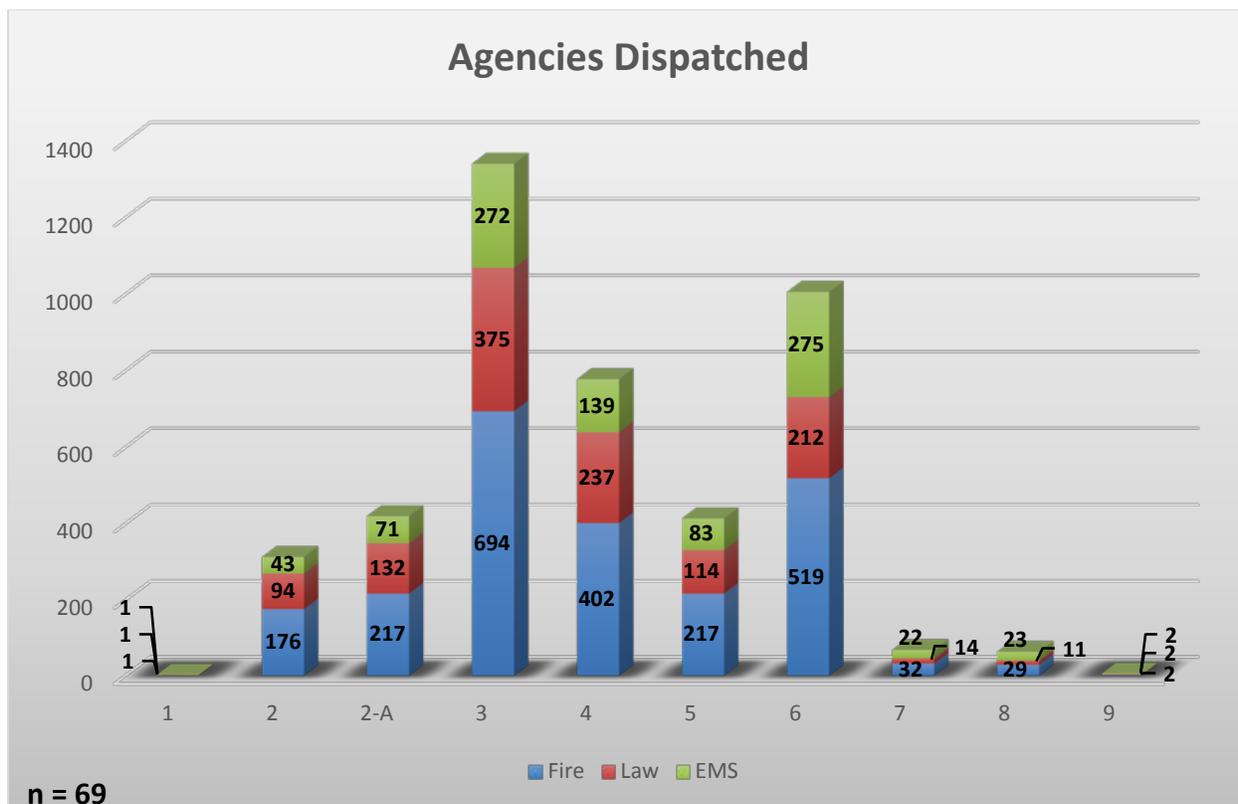


**Figure 21: Dispatched Calls for Services by County Class**

#### Observations

- PSAPs dispatched and managed nearly 12 million calls in 2015, or 32,434 calls per day.
- Approximately 75 to 80 percent of all 9-1-1 calls across the Commonwealth involve law enforcement agencies. Local police departments typically are alerted to a fire or EMS response in their jurisdiction.
- In areas that integrate alternate communication paths, such as mobile data computers (MDCs), PSAPs are able to continue sharing detailed information with responders without taxing the radio system or broadcasting sensitive, or confidential, information.
- In many counties, the Pennsylvania State Police is the primary responder in municipalities that do not provide local law enforcement. These calls are not consistently represented in the total calls for service, as PSAPs vary on the method of incident documentation.

The figure below provides information on the number of law enforcement, emergency medical service (EMS), and fire agencies dispatched. The data is categorized by county class.



**Figure 22: Agencies Dispatched**

### Observations

- There are 1,192 municipal law enforcement agencies, 2,289 fire departments and 931 EMS agencies dispatched by the PSAPs in Pennsylvania. It is the responsibility of PSAP personnel to process, dispatch, and manage emergency incidents for all agencies.
- Because each individual agency is responsible for directing and managing their operations, variances between agency procedures can range from slight to substantial. The PSAPs managing emergency incidents must be aware of these variations and make necessary adjustments to their operational procedures, or work with agencies to find compromise. There are some PSAPs that manage between 100 and 200 agencies, which exponentially increases the difficulty and complexity of the mitigation process.
- In addition to the 4,412 police, fire and EMS first responder agencies listed above, many PSAPs process, dispatch, and manage incidents for numerous ancillary agencies, such as probation departments, coroner's office, district attorney's office, park rangers, fish and game officers, and the sheriff's office.



## Alternate Methods of Call Dispatch

Radio systems continue to be the primary method of call dispatch across the Commonwealth. On-duty law enforcement agencies are contacted directly by radio and provided location and incident detail that allows the emergency responder to determine route and mode of travel. Traditionally, volunteers and paid staff associated with EMS and fire agencies have been provided a means of audible alert first, followed by an announcement providing location and incident detail. Improvements in technology or integration with emerging technology have provided opportunities to increase redundancy, accessibility, and functionality for the call dispatch function.

Short message service (SMS) text, for example, provides a quick burst of data to alphanumeric paging units. Unlike an audible announcement, the text message can be stored and referenced minutes or days later if necessary for response record keeping. Of the 59 PSAPs employing alternate dispatch methods, 50 use some form of SMS text. It has become so commonplace in the realm of dispatch that most agencies would consider this more of an expected service. Several of the PSAPs have improved the accessibility of this service by integrating privately owned mobile devices, which enables responders to reduce the number of devices they acquire and maintain.

The next iteration of alternate dispatch technology is the integration of wireless device applications provided by private third-party vendors. Two very common applications used by PSAPs are “I Am Responding” and “Active 9-1-1.” Responders are able to download an application on their wireless device and have emergency calls received on that device through the application. Twelve PSAPs have deployed this technology for their first responder community. However, because message delivery is dependent on the commercial wireless networks, PSAPs cannot guarantee the network quality of service (QoS) at the time of message delivery. If the commercial wireless network is overloaded at the time an emergency message is transmitted to a wireless device through a third-party application, present QoS may delay the message delivery process. Therefore, adequate QoS must be guaranteed before this technology can be considered public safety-grade.

## Pre-Arrival Instructions

Scripted pre-arrival instructions are a tool that all PSAPs should use in their day-to-day operation. Pennsylvania law requires the implementation of an emergency medical dispatch (EMD) program in every PSAP. Ten PSAPs also have implemented optional pre-arrival instructions for fire and law enforcement incidents.

Two organizations represent 94 percent of the implemented programs:

- National Academy of Emergency Medical Dispatch (NAEMD)—54 percent
- Association of Public-Safety Communications Officials (APCO)—40 percent



Each program has a manual “flip card” method, as well as an automated system integrated into the PSAP’s CAD system. Both options include the same information-gathering and instruction-providing process. A PSAP determines which option to deploy based on operational and financial factors.

The similarities in program deployment provide opportunities for PSAPs to share training resources to complete the initial training and required continuing education phases.

### ***Mapping/Geographic Information Systems (GIS)***

GIS integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information or location information. GIS allows for the display of database information on a visual map. While the GIS does not contain any maps or graphics, it creates the details included on the maps and graphics from the information contained in the databases.

GIS does this by displaying information in layers. Some of the layers commonly used in PSAPs include streets, pipelines, creeks, railroads, fire hydrants, cell tower locations, municipal boundaries, public safety response districts, and so forth. These layers can be added or removed as needed.

Some form of computerized mapping became a de facto requirement for PSAPs with the deployment of wireless 9-1-1, because wireless caller location information is received in geographic coordinates (latitude and longitude) rather than specific addresses. As the 9-1-1 network migrates to the next generation, this will be even more critical.

Integration of the GIS with the various other applications and systems is complex and challenging. Ideally, the 9-1-1 call location data is seamlessly transferred from the 9-1-1 system to the mapping system, and then to the CAD system, so that the caller’s location is displayed as a dispatchable address and entered correctly into the CAD system’s call for service form.

The figure below provides information on the GIS platforms being used by the Commonwealth’s PSAP community.

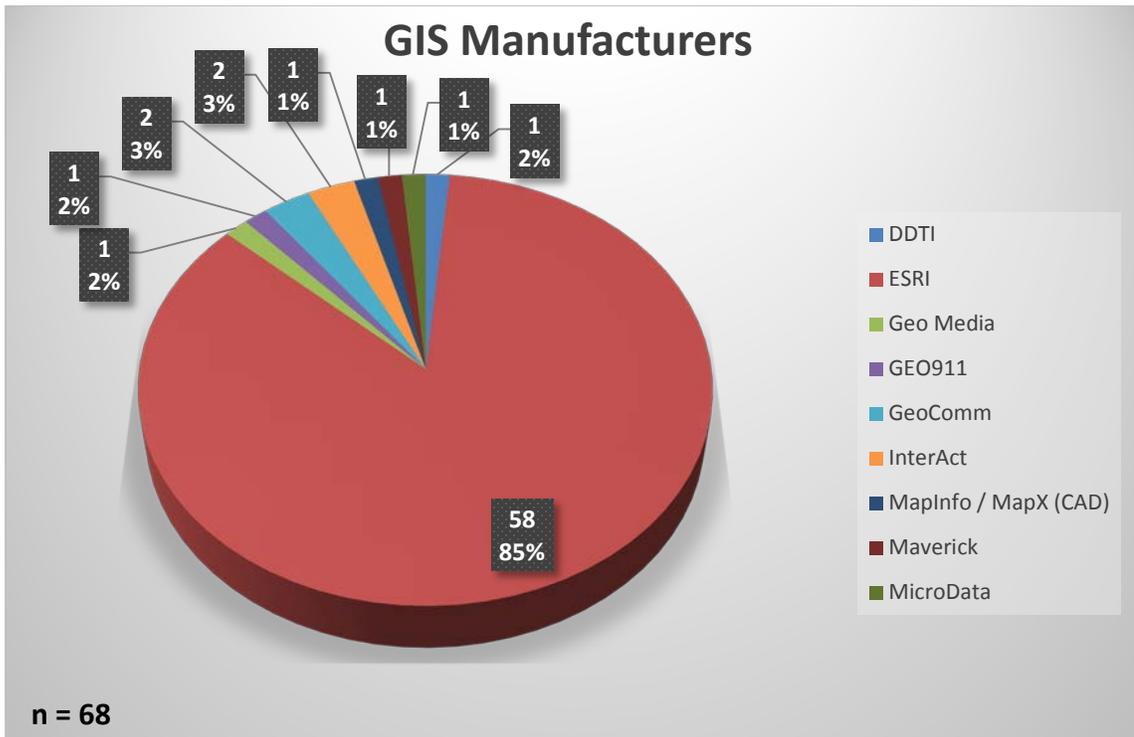
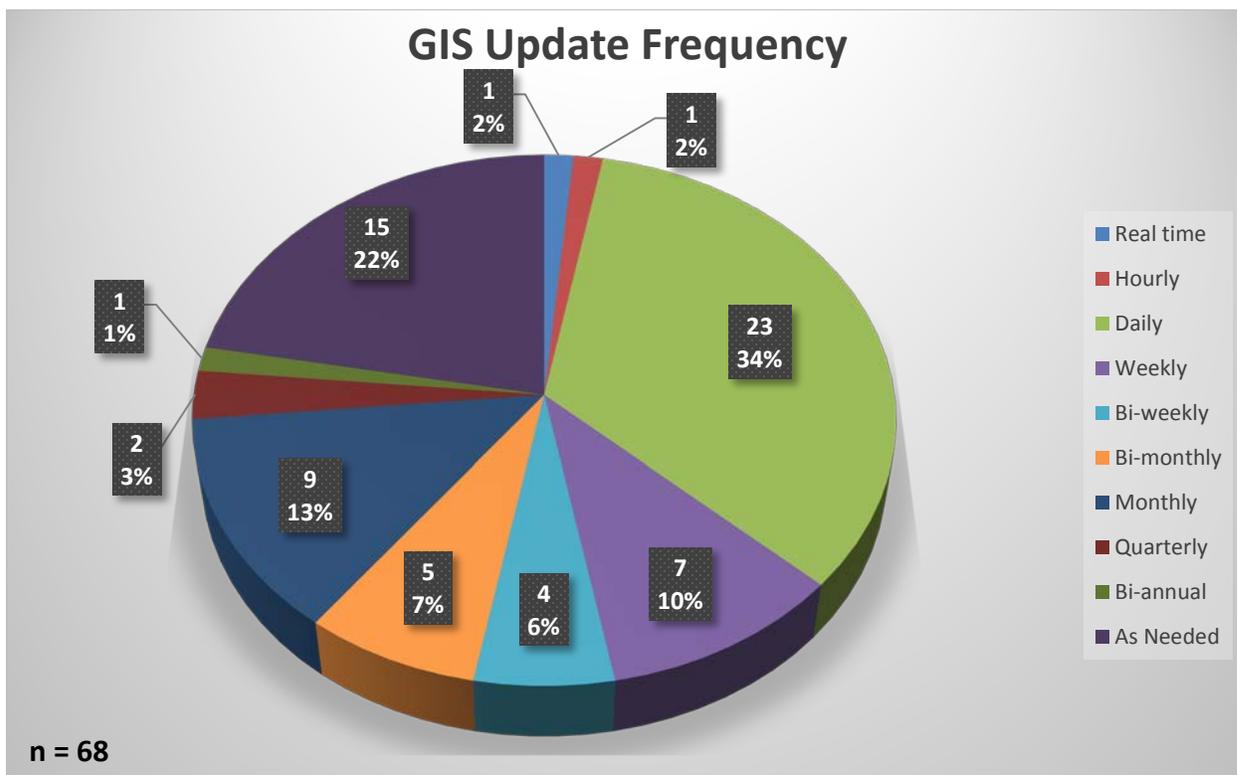


Figure 23: GIS Manufacturers

Observations

- Esri is one of the most, if not the most, widely used GIS platforms across all national industries. Many of the CAD systems used in the PSAPs have built their GIS functions on the Esri platform.
- Some PSAPs enjoy support from GIS specialists located in other county or city departments. Based on the importance of geo-based location services in NG9-1-1 technology, PSAPs are considering, and in some cases moving toward, in-house GIS specialists.
- The ability to update GIS data quickly will greatly affect the integrity of NG9-1-1 location-based call-routing functions. Real-time updates are ideal, but daily or weekly updates should be a target for those migrating GIS functions to NG9-1-1. The figure below provides information on the current database update schedule in 68 PSAPs (again, Forest County does not maintain its own PSAP operations).



**Figure 24: GIS Update Frequency**

### Radio System

Because public safety agencies are directly responsible for the protection of life and property, the radio systems that they use must be designed with that requirement in mind. The elements of risk and danger to public safety personnel are unpredictable factors that are never precisely foreseeable far in advance. As a result, the systems serving these agencies must be designed to satisfy both normal and peak requirements on an instantaneous, 24 hours a day basis. The radio system will need to work as needed to fulfill the agency's responsibilities under all reasonable foreseeable conditions.

Given the critical nature of the public safety function, personnel are dependent on the speed and accuracy of the communications system. The system must have sufficient capacity to allow rapid access to the communications channel or talkgroup when the priority of the particular communications requires it. The system also must have sufficient capacity so that, when assigning a detail or call for service, the dispatcher is able to provide all appropriate information to the responding units. This allows the responders to properly plan their actions upon arrival.

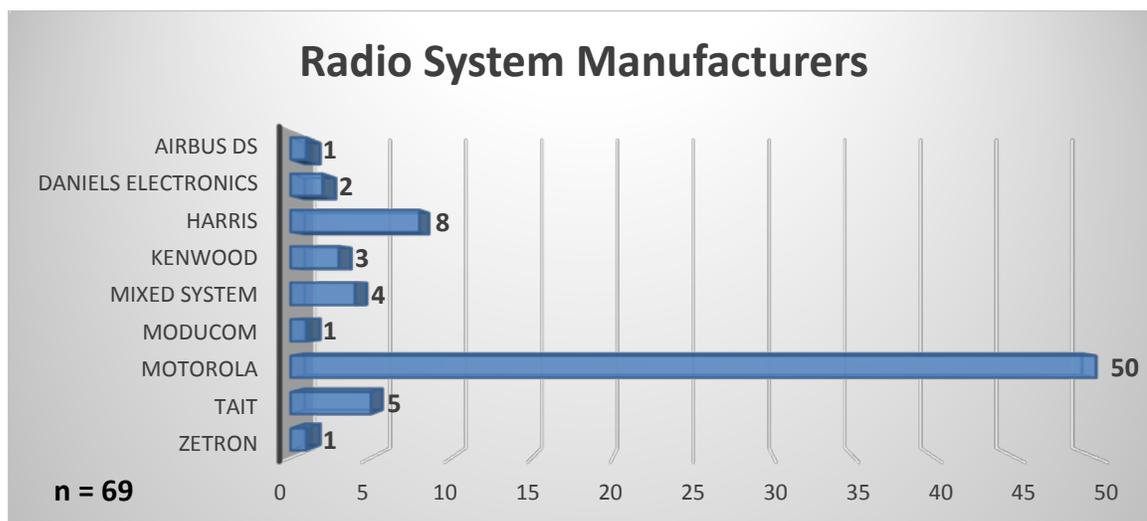
An important part of public safety communications, especially law enforcement communications, is the concept of mutual support. Typically each officer maintains awareness of developments in and near his or her assigned area of responsibility by monitoring the dispatch channel and can be prepared to assist other units as necessary.



The system also must have adequate coverage so that communications can occur in all areas as necessary. In urban areas, this includes coverage inside buildings. Because of their construction, coverage inside many larger buildings can be problematic.

### Radio Systems Manufacturers

The figure below provides information on deployed radio systems by manufacturer.



**Figure 25: Radio System Manufacturers**

### Observations:

- The total number of radio systems deployed is greater than the number of PSAPs because some systems are either mixed or running one piece of the PSAP's operations. This may result in one PSAP possessing systems built by different manufacturers.
- A standard of radio system interoperability—Project 25, or P25—has been published by the Association of Public-Safety Communication Officials (APCO). P25 standards enable emergency responders operating on disparate radio systems to communicate in a mutual-aid scenario. Ideally, all systems listed in the figure above, regardless of manufacturer, would have the capability to interface. Most, if not all, proprietary options on a radio system must be eliminated for the system to be P25 compliant.



## Radio Consoles

The figures below provide manufacturer information regarding the radio console system equipment installed in the PSAPs, and the total and average number of radio consoles installed in the PSAPs, respectively. The latter are displayed per county class.

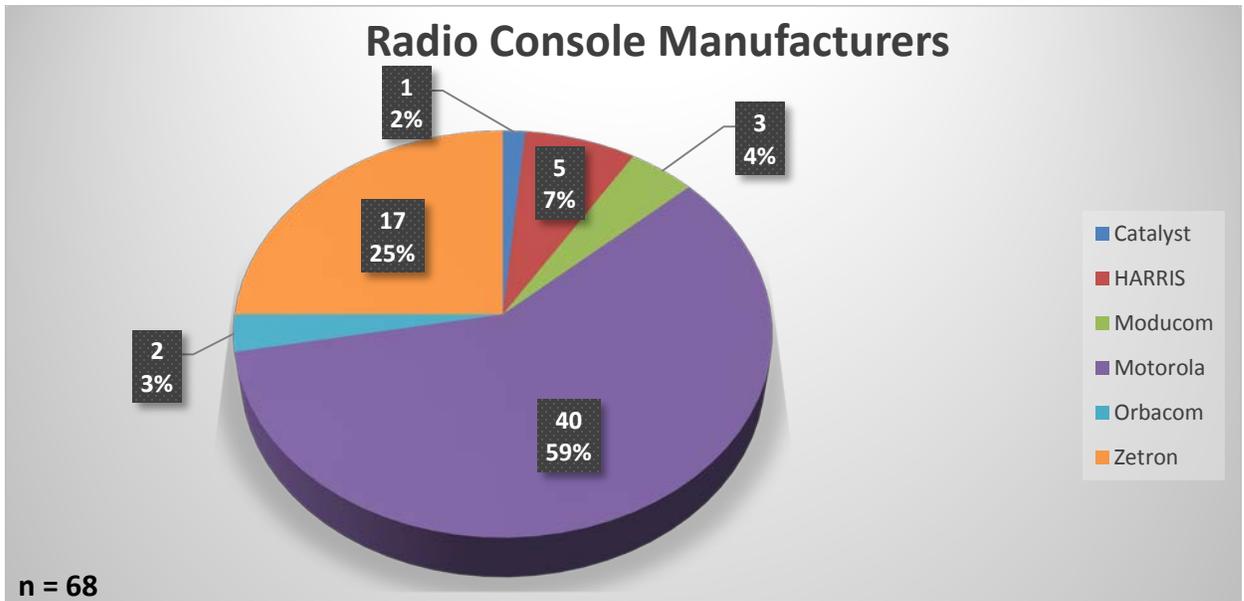
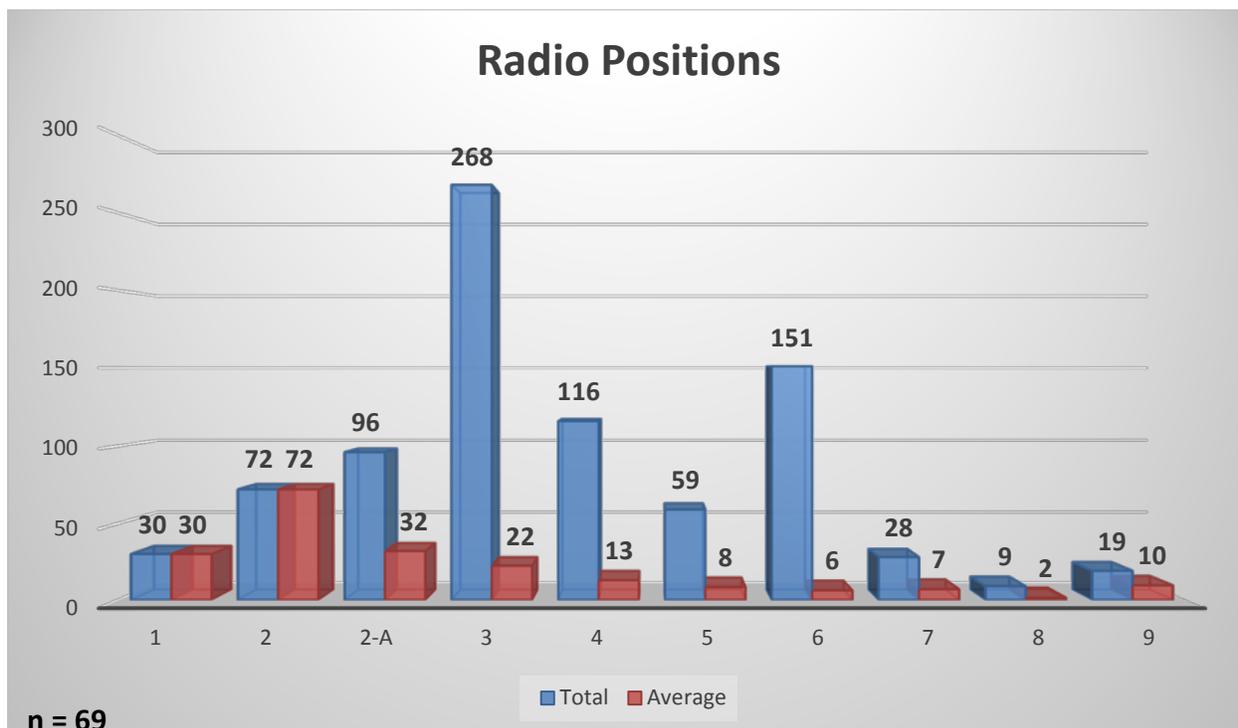


Figure 26: Radio Console Manufacturers



**Figure 27: Radio Positions**

### Observations

- Not every workstation in a PSAP is equipped with radio console equipment. In larger PSAPs specifically, the dispatch and call-taking functions are located at separate workstations. As one moves to PSAPs that handle smaller populations, the majority, if not all, of the workstations are equipped with both call-taking and dispatching equipment.
- In the lesser-populated counties, the PSP handles much of the law enforcement operation. Therefore, the need for radio consoles is much lower. Consequently, 16 PSAPs have less than five radio consoles in their facility.

### Radio Frequencies

Radio frequencies used for call dispatch have been, and continue to be, inconsistent from PSAP to PSAP. Neighboring agencies on opposite sides of a jurisdictional boundary may find themselves unable to communicate on a common radio band. Factors that determine frequency use range from terrain to budget to frequency availability in the area. There are some PSAPs that possess and operate multiple systems. Most public safety-grade radio equipment is migrating from UHF and VHF toward higher bands such as 700 MHz and 800 MHz. PSAPs that operate on common radio bands may have potential opportunities to design working interoperability solutions.



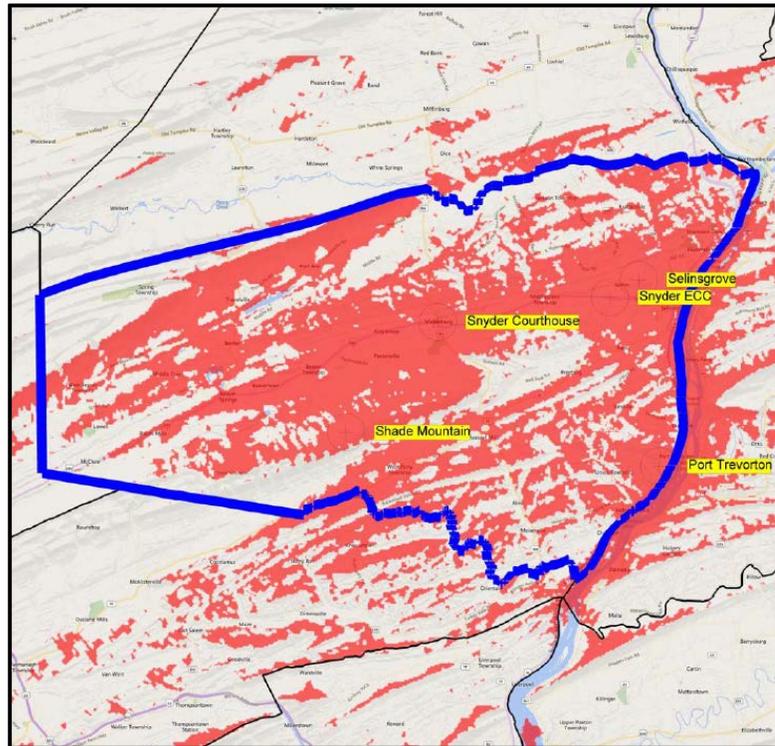
- Twenty-one PSAPs operate on VHF low band (30–50 MHz)—most common use is dispatch for EMS and fire departments.
- Thirty-nine PSAPs operate on VHF high band (148–174 MHz)—this is a mix of dispatch operations for law enforcement, EMS, and fire.
- Forty-two PSAPs operate on UHF systems (450–512 MHz).
- Three PSAPs operate on the 700 MHz band dedicated for public safety (764-776 MHz).
- Thirteen PSAPs operate on the 800 MHz band dedicated for public safety (806–869 MHz).

Radio systems that operate in the 700 MHz or 800 MHz bands often are NG9-1-1 ready and P25 compliant.

### Radio Towers

Radio system replacement and upgrade projects typically identify areas that are underserved by signal coverage. An increase of radio tower sites has typically accompanied these projects, resulting in related front-end and recurring costs for the new infrastructure. The expenses related to new tower sites are one of the most common costs associated with lease agreements for most PSAPs. There are a total of 778 tower sites in use across the Commonwealth. Of those sites, 522 are owned by local municipal governments. However, some of these sites still require a land lease. A majority of the other 256 sites are leased space on commercial towers. The average annual cost of lease space on a commercial tower site is approximately \$20,000–\$25,000. PSAPs that work to collocate their equipment at tower sites likely reduce their costs associated with tower site acquisition and maintenance. It also can be a first step toward system integration.

Propagation studies, as depicted in the figure below, assess the signal coverage of a PSAP's radio system. These typically are conducted during a system upgrade or replacement project, but they also can be conducted if significant coverage issues are reported. Historically, emergency responders and PSAP personnel were aware of gaps in radio signal coverage and did their best to bridge the gap. Due to heavy construction, in-building coverage often was problematic for portable radios. Additionally, mountains and other rugged terrain can create areas of weak, or no, radio signals.



**Figure 28: Propagation Study Map**

Many of the PSAPs have provided results of completed propagation studies, which will be available as supporting documentation to this report.

### ***Logging Recorder System***

Industry standards require both the continuous recording of emergency telephone conversations and radio transmission for long-term retention, as well as the capability of immediate playback of both recorded telephone and radio traffic.

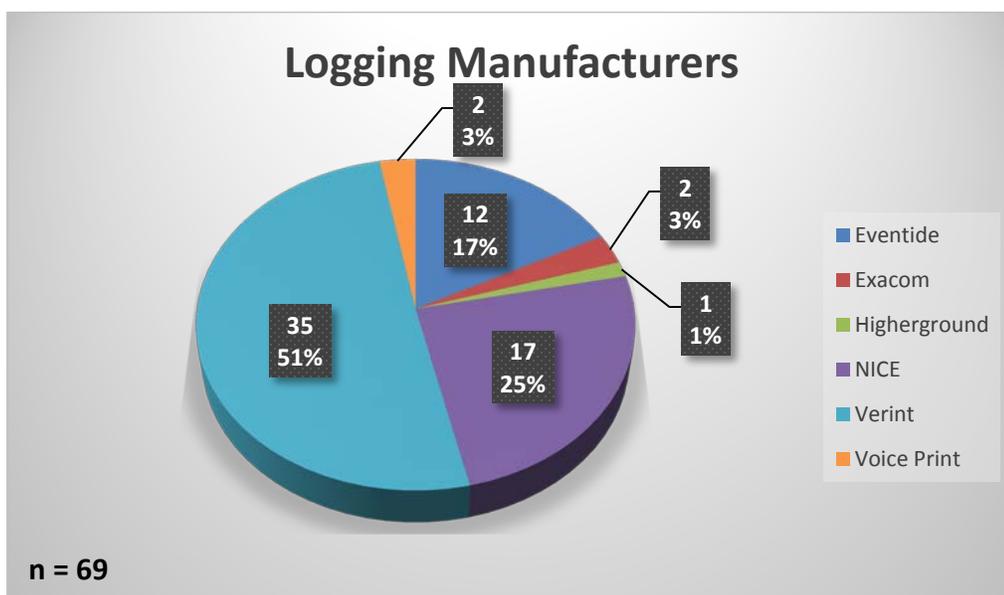
Logging systems are an indispensable source of information for criminal, fire/EMS, civil, and internal investigations. The judicial system relies on accurate and easily retrievable evidential data, and PSAP personnel are often required to provide outputs from logging recorder systems and associated testimony. They enhance agency training and quality assurance programs. The ability to instantly replay a conversation while still recording other calls and radio transmissions literally can be the difference between life and death. This is especially true when a person requesting assistance is not able to repeat their request or the conversation is garbled, or spoken too quickly for easy understanding.



As the 9-1-1 community continues to transition to NG9-1-1, the logging systems will be able to capture and record many other pieces of useful data associated with an incident, including pictures, streaming video, text, and screen recording of integrated PSAP systems.

### Logging System Manufacturer:

The figure below provides information on deployed logging systems by manufacturer.



**Figure 29: Logging Manufacturers**

### Observations

- Although this core service was traditionally a storage receptacle for voice records and other small pieces of data, logging systems are now being designed to maintain almost any possible media record (e.g., streaming audio, pictures, CAD screen recording) used in processing or dispatching an emergency call. Many also provide platforms for quality assurance and quality control (QA/QC) programs in the PSAP.
- Many of the logging systems designed today have massive storage capacities. Based on call volume and retention requirements, there is typically ample storage space to share between two, or more, PSAPs.

### ***Records Management Systems (RMS)***

An RMS is an agency-wide system that provides for the storage, retrieval, retention, manipulation, archiving, and viewing of information, records, documents, or files pertaining to department operations.



The RMS covers the entire lifespan of records development, from initial generation through completion. An RMS is a comprehensive computer program designed to enter and track appropriate statistical data and provide the agency management staff with the information needed to manage the agency. The RMS system also must interface with appropriate state and federal databases so that automated reporting can occur. Statistics are gathered at the local, state, and federal levels and, ultimately, provide a nationwide view of activity as it is reported by public safety agencies throughout the country. The data is used to indicate the levels and nature of crime, fires, and, emergency medical activity, and to provide a reliable management tool for decision-makers within the public safety community.

The National Incident Based Reporting System (NIBRS) provides law enforcement with the tool to fight crime by producing detailed, accurate, and meaningful data. The National Fire Incident Reporting System (NFIRS) does the same for the fire service, while the National EMS Information System Dataset (NEMSIS) performs the same function for the EMS community. Frequently, the RMS is interfaced with the CAD system so that when calls are closed in the CAD system, the call record is transferred to the RMS to facilitate the capture of all relevant information, without having to rekey the data into the RMS.

The figure provides a count of RMS deployments by manufacturer.

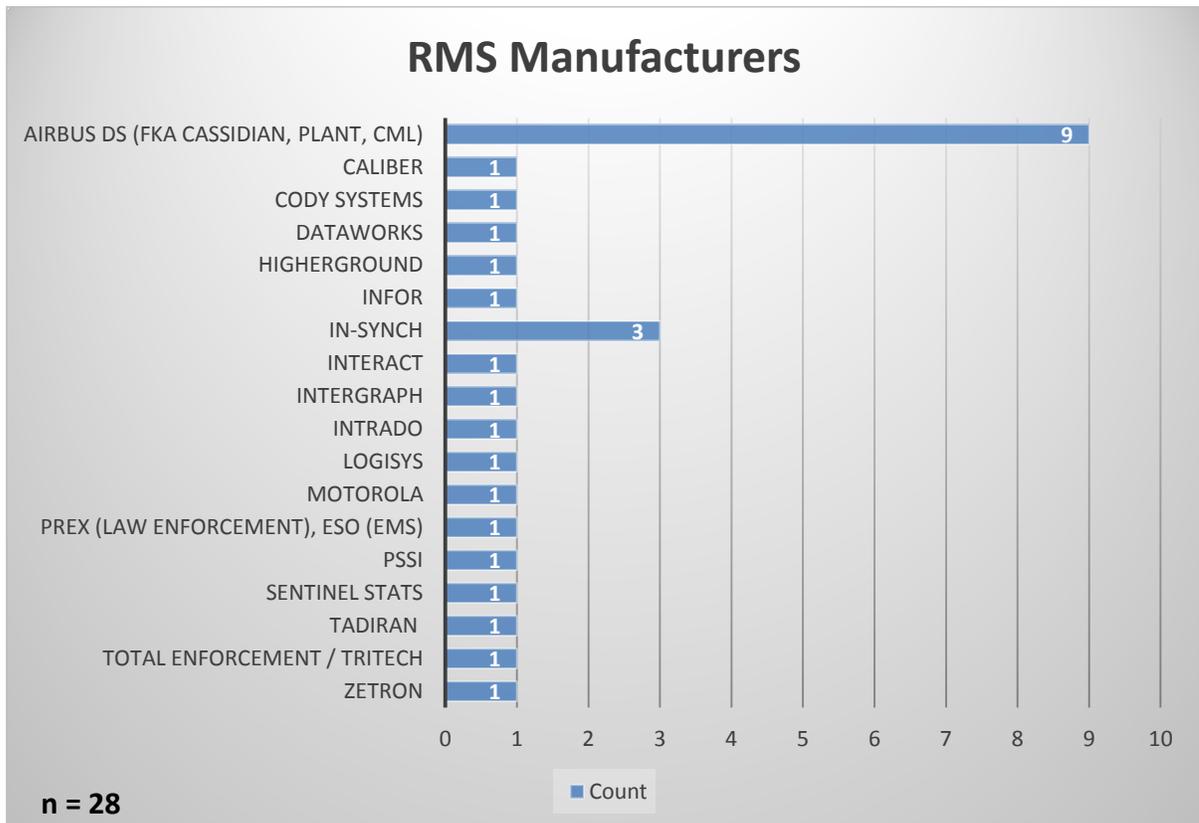


Figure 30: RMS Manufacturers



## Observations

- Historically, many of the municipal law enforcement agencies have managed their own in-house RMS. Based on their primary purpose, only 28 PSAPs have an active RMS.
- A movement toward a centralized RMS likely would support proactive policing techniques, such as crime mapping.
- Information maintained in an RMS can easily be accessible through NG9-1-1 interface technology, providing law enforcement, EMS, and fire agencies the ability to share information from region to region, or across the Commonwealth.

## Other databases

In addition to the databases associated with PSAP core services, 34 PSAPs acknowledged that they are either fully or partially responsible for maintenance tasks associated with several public safety-based ancillary databases. Some PSAPs may have administrative staff available for these assignments. Others may be delegating these tasks to personnel in operation positions (e.g., senior telecommunicator supervisor) as an assignment to be completed during slow periods in the PSAP. Consistency and uniform configuration can be issues when database maintenance tasks are shared or completed in a piecemeal fashion.

Programs of note are:

- Special needs registry
- Warrant database
- Community alert systems (e.g., Roam Secure Alert Network (RSAN), Everbridge, Code Red)
- Premise alert
- Business/emergency contacts
- Dog license database
- Addressing database

## **SUMMARY**

Based on the analysis of information gathered from PSAP leadership during the inventory phase, it is evident that the Commonwealth is entering an early NG9-1-1 transitional state. Regional assessments have been conducted for many of the PSAPs, providing valuable information toward an NG9-1-1 roadmap. However, without structured governance models in each region, advancing NG9-1-1 Commonwealth-wide may prove to be difficult. Where a regional authority, or governance arrangement, currently exists, the migration toward NG9-1-1 technology is intentional and deliberate in design. Moving forward, a regional authority with decision-making and vision-casting responsibilities, and working in close partnership with PEMA and the 9-1-1 Advisory Board, can provide the support and



unified voice necessary to forward cooperative ventures such as regional network deployment and information sharing.

Throughout the process, and specifically during the on-site survey meetings, it was clear that PSAPs are embracing the regional concept. In the early phases of assessments and discussions, the regional structure was built on the nine established emergency management regions throughout the Commonwealth. However, based on current working relationships, existing and potential resource sharing opportunities, and many other logistical reasons, the PSAP community has re-aligned into an eight-region network. Of note, the members of the Northwest Region have migrated to either the Southwest or Northern Tier. There were several other shifts throughout the other regions that will benefit the transition to NG9-1-1 moving forward.

Location services become a primary focus in the NG9-1-1 platform. Routing 9-1-1 calls from wireless and mobile IP devices requires GIS data that is accurate and based on a unique coordinate system. This effort introduces GIS specialists, managers, and others from that industry as new participant in the 9-1-1 system. Some PSAPs and regions have enlisted individuals with this area of subject matter expertise in their NG9-1-1 transition. Through Commonwealth partnerships, there are opportunities to coordinate current regional efforts, and initiate GIS data collecting and managing efforts in areas that have not yet started.

A scan of the current technology landscape identifies some areas that will need attention as the Commonwealth and PSAP leadership continues the NG9-1-1 transition. The age of some established technology—namely CPE and CAD—will make ESInet deployment challenging. Older iterations of system software are incapable of NG9-1-1's interface requirements, and aged hardware does not have the physical capacity for network integration. However, there are a significant number of PSAPs that have planned a system upgrade or replacement of these vital core services.

Although this process of upgrading or replacing aging equipment and systems must proceed, the Commonwealth is not in a position to financially support the number of individual projects slated to take place in the next two years. Rather, there are potential opportunities to invest in resource-sharing technology that will continue to move Pennsylvania further along on the path to NG9-1-1.

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### **3. PSAP INVENTORY SUMMARIES**

#### **3.1. EAST CENTRAL REGION**

##### **SUMMARY**

The East Central region consists of seven counties: Berks, Columbia, Luzerne, Montour, Northumberland, Schuylkill and Wyoming. This region has a static residential population of 1,089,838 and an even greater amount of transient population due to employment, tourism and outdoor recreation. These same counties also are part of the East Central Task Force (formerly Terrorism Task Force) and meet on a regular basis. (The name change was warranted because task forces in general are dealing with an all-hazards approach to everyday events.)

The East Central region has an executive board that decides how money will be distributed to each county and for what purpose. To that end, development of regional plans and plan templates for use across the region, including an interoperable emergency communications plan, is being addressed. In addition, investment in mobile response resources, including mobile communications vehicles and command posts, is a priority the region is considering.

Each county maintains a single consolidated public safety answering point (PSAP) that provides emergency call-taking (9-1-1), non-emergency call taking and comprehensive radio dispatch functions. Law enforcement, the fire service, and emergency medical services (EMS) are dispatched from each county's single site. In addition, each PSAP handles a variety of ancillary tasks. Most handle call processing and dispatch for their county-based departments, such as the coroners' office, detectives, probation and parole officers, and the sheriff's department to name just a few. Also, some counties handle calls for non-county agencies such as "crime stoppers."

Note: At the time of this report, Montour County's PSAP still was operational; however, they plan to consolidate their operations with Columbia County in 2016. This consolidation is an example of cooperation amongst counties. Montour County has a relatively low call volume, which Columbia County can absorb without great impact to their operations.

The total 9-1-1 call volume for the East Central region was 747,046 in 2015. In addition to handling 9-1-1 calls, each PSAP answers 10-digit and "800" service calls for non-emergency incidents. This added an additional 891,000 phone calls for the region in 2015.

The region is responsible for managing emergency incidents for 180 law enforcement agencies, 391 fire departments and 123 EMS companies. Combined, the region managed 842,428 calls for service in 2015, an average of 2,308 incidents per day. Although every year the amount of agencies decreases as a result of consolidation and regionalization, the call volume historically increases a percentage point or two. The reason for the agency loss usually is driven by financial or volunteer staffing considerations.



The region has established a microwave and T1 network that is used as an interoperable link between the counties, as well as Eastern PA MedCom, which is a secondary communications center for patient reports from EMS units to hospitals. In addition, Berks County and the Southeastern Pennsylvania Regional Task Force (SEPA RTF) are planning to interface their networks, giving SEPA RTF and the East Central Task Force the ability to design and deploy additional network links in the future.

Looking ahead, the regional vision and cooperation enables the improvement of delivery of emergency services and decreases the financial investment toward overly redundant hardware and facilities. Currently, the region's monthly recurring costs for system sustainment is approximately \$94,137, excluding maintenance contracts and personnel costs. Continued deployment of NG9-1-1 technologies and services provides opportunities to invest recurring costs in emerging technology, and improve the capabilities and accessibility of the overall 9-1-1 system.

There are some challenges to regionality. For instance, many of the design and deployment phases for regional projects involve a sizable time investment, which taxes the available administrative staff from each PSAP. However, contracted services have been engaged to bear the majority of the project deliverable burden. Additionally, considerable front-end effort is needed to mitigate disparities in technology, operational policies and procedures, as well as possible political differences.

The regional technical committee members are aware of these potential hurdles in the mission, and continue to enter into healthy discussions and focused collaboration toward issue resolution. Their commitment to the regional vision has been a key to their continued success.

### **3.1.1. Berks County**

#### **Overview**

Berks County is a Third Class County with a population of 412,948. The County covers approximately 866 square miles, and has 73 townships and boroughs within its boundaries, plus the City of Reading, which is the County seat.

The County's public safety answering point (PSAP) dispatches for 41 law enforcement agencies, 71 fire departments and 19 emergency medical services (EMS) agencies.

The PSAP handled an average of 573 9-1-1 calls each day in 2015. Of these, 23 percent were wireline, 75 percent were wireless and 2 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 99.99 percent of the time. The PSAP has ringdown connections with the Pennsylvania State Police, neighboring counties, the City of Reading, and the Limerick nuclear power generating station.



## Considerations

Key factors affecting Berks County and its PSAP include the following:

- The County and its PSAP are proud of its financial model. Berks County is the only County-operated PSAP in the state that invoices entities directly for 9-1-1 service; according to the County, the municipal and 9-1-1 surcharge fees that it collects covers the cost of provisioning the service.
- Interstate 78 runs the length of the County, and is heavily traveled. There is commercial truck traffic, which increases the possibility of vehicular accidents including jackknives, which can create hazmat situations depending on the cargo.
- There is freight rail traffic in the County, which creates situations similar to those created by commercial trucking.
- Large warehouses are being developed along the I-78 corridor.
- The Reading Regional Airport, located just outside the City of Reading, hosts a variety of airshows that draw large crowds to the area.
- The County's population is growing steadily, as it is developing into a bedroom community of Philadelphia.

## Staffing

The PSAP has six management positions: a director, a deputy director, a support services manager, a communications operations manager, a technical services manager, and a training/education manager. There are seven full-time supervisors. In addition, 62 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by five part-time telecommunicators, who each work less than 29 hours a week. This would equate to three fulltime equivalent (FTE) positions.

## Facility

The PSAP is located at 2561 Bernville Road, Reading, PA 19605. The PSAP is a tenant in a building that has commercially leased space and colocation data center space, which was formerly a power company headquarters and technical response facility that has been renovated and updated. The entire facility has been built with redundancy, diversity and resiliency in mind. The County's emergency operations center (EOC) shares the facility.

The County's lease on the facility expires in two years and the County has begun negotiations on the next lease period. The facility has two training rooms; one is a classroom setting; the other, located adjacent to the 9-1-1 Center, has consoles for hands-on training that also can be used for overflow call volume. There also is a break room, an industrial-sized kitchen that can accommodate a full EOC activation, bunk rooms, and a locker room.



The 9-1-1 Center has 20 call-taker-only console positions and 13 combined console positions (call-taker and dispatcher). The County also has a backup facility that maintains four call-taker-only console positions and six combined console positions.

### **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Tyler Technologies (formerly New World Systems) Aegis that was installed in 2010. It currently is being upgraded to an enterprise system because it was approaching end-of-life. The upgrade is expected to be complete in mid-2016.

### **Customer Premises Equipment**

The customer premises equipment (CPE) system is an Airbus Vesta v3.2 that was installed in August 2015. It replaced a legacy CPE that was provided by Verizon on a 5-year lease.

### **Radio Systems**

The radio system is a 15-site Motorola Astro v7.13 Project 25 simulcast trunking system that was installed in 2014.

### **Radio Console System**

Motorola MCC 7500 consoles were installed in 2014

### **Facility Infrastructure**

The PSAP is served by redundant fiber-optic and copper feeds from Verizon routed diversely to the facility, and through the facility to the PSAP space.

The building has connections to many service providers for use of the PSAP and many other data center tenants. In building entrance facility #2, these include Verizon, Zayo, Windstream, MAW Communications, CenturyLink, Comcast Business Systems, Comcast Metro-E service, Affinity, Level 3, Sunesys, and XO Communications. Each carrier has high-count fiber connections that feed the facility. Verizon and others step down the fiber to provide digital and analog services over copper to the facility.

The two entrance facility rooms have power-limited connections available, but additional power is available to be installed as needed. The two entrance facility rooms have a basic grounding system, but it does not comply with communications site grounding standards. The spaces have an adequate cable runway system that runs overhead. These spaces serve the building and are not dedicated to the PSAP. Building entrance facility #2 seems to have the majority of the building-serving connections, while building entrance facility #1 has many empty racks and less equipment.



The PSAP has purchased an extended demarcation from each service to their space. Copper feeds run to the PSAP telephone room, while fiber-optic cables run to the PSAP's information technology (IT) room.

The facility has a dedicated radio room. This space appears to have a grounding system that complies with communications site grounding standards, and access through an antenna port for radio frequency (RF) communications (VHF low band and high band, UHF, and microwave). The facility also has a distributed antenna system (DAS) for retransmission of cellular services in the PSAP space, and for P25 radio.

The telephone room and radio room are connected to the IT room for shared network connectivity from the County IT department.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported with a series of building-serving UPS systems, approximately nine individual systems. They are Eaton 9395 X-Per UPS located on the A1-Level of the building. The UPS systems' output is through automatic transfer switches (ATS). These systems are installed in three different rooms, diversely located in the building. Each system's capacity appears to be 1,100 kilowatt (kW), with approximately 36 minutes runtime with the current load.

### Backup Power

The UPS is fed with normal emergency power from a series of three diesel generators providing two megawatts (MW) each. Each generator has a belly fuel tank with 1,000 gallons of fuel, and a larger 12,000-gallon tank that provides runtime from four to five days at full load.

## **Equipment Rooms**

The PSAP is divided into three distinct equipment rooms: the telephone room, the radio room, and the IT room, which primarily is supported by the County's IT department.

Fiber-optic cables feed diversely to the IT room, and have network extensions to the telephone and radio rooms. Copper-based voice services feed diversely to the telephone room.

The radio room has connections for all RF and microwave antennas through a standard antenna port system.

### Telephone Room

- There is an Airbus (Cassidian) geo-diverse-capable CPE system. Currently, both the A and the B servers reside in the same location, however, plans exist to relocate the B side to the backup PSAP.



- A Nortel Opt-61 provides the PSAP with administrative call traffic separate from the CPE.
- An older Plant CML system, and associated equipment, still remains in the room.
- The room has a telecommunications main ground bar (TMGB), connecting to the CPE through a very short raised floor system.
- The room has limited power connections; however, more can be added if coordinated with the building.
- There are 24 Category 6 connections from this room to the IT room for network services.

#### Radio Room

- The radio room has a more robust grounding system.
- Power panels exist from the UPS and can provide additional power as needed.
- The space houses the radio master site, logging recorders, radio feature servers, Inter-RF Subsystem (ISSI) gateway, microwave and RF radios, two Alcatel SAR-8 routers, an MLC8000, dehydrator, and a 48 VDC power plant.
- A distributed antenna system (DAS) supports cellular service providers and public safety radio for retransmission in the PSAP space.

#### IT Room

This space is maintained by the County's IT department. As such, the PSAP Director has less input and control concerning what is installed there.

- There is no grounding system visible in this room.
- Services are then connected to County's IT switches by 3Com, H3C, Enterasys (now Extreme Networks) Series S4 and two Hewlett-Packard firewalls.
- Also housed in the first rack is a 3Com voice gateway.
- Category 6 unshielded twisted pair (UTP) copper connections run from the IT room to the telephone room (24 connections) and to the radio room (seven connections).



**Table 2: Berks County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>BERKS COUNTY</b>	3	412,948	866 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	No	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	47,473	157,623	3,889
<b>Number of Trunks</b>	12	12	0
<b>Primary Selective Routers</b>	Phoenixville/Reading (Verizon)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta (Installed: 2015)		
<b>Computer-Aided Dispatch (CAD)</b>	Tyler Technologies (FKA New World System), Aegis, v10.2 (Installed: 2010)		
<b>Logging Recording System</b>	Nice, NiceLog, v6.1.0.158		
<b>Geographic Information System (GIS)</b>	Esri ArcSERVER, v10.3		
<b>Databases Maintained</b>	Special Needs Assessment, Total Visibility (for first responders), Motorola Astro Radio Management		
<b>Leased Equipment</b>	Building lease expires in 2018 Airbus Vesta CPE lease expires in 2020		

### 3.1.2. Columbia County

#### Overview

Columbia County is a Sixth Class County with a population of 66,852. The County covers approximately 483 square miles, and has 32 townships and boroughs within its boundaries, plus the Town of Bloomsburg, which is the County seat.

The County’s public safety answering point (PSAP) dispatches for 18 law enforcement agencies, 24 fire departments and 12 emergency medical services (EMS) agencies.

The PSAP handled an average of 70 9-1-1 calls each day in 2015. Of these, 25 percent were wireline and 75 percent were wireless. Last year, 9-1-1 calls were answered within 10 seconds more than 98 percent of the time.

#### Considerations

Key factors affecting Columbia County and its PSAP include the following:

- The majority of the PSAP staff serve as first responders, which they feel helps them provide a greater level of customer service.



- They are quite proud of the longevity of the PSAP staff, as most have between 10 and 20 years of service, which is unusual. However, the longevity also could create a staffing challenge if the current staff retires in close proximity to each other.
- The County's PSAP currently is in the process of absorbing the 9-1-1 operations of Montour County.
- Interstate 80 runs through the County, and is heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- Most of the fire departments in the County are volunteer based.
- The annual Bloomsburg Fair draws thousands of visitors, causing the County's population to increase dramatically during the weeklong event.

## **Staffing**

The PSAP has two management positions: a director of public safety and a 9-1-1 communications coordinator. One clerk is shared with the County's emergency management agency (EMA). There is one full-time supervisor. In addition, 10 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by five part-time telecommunicators. This equates to approximately three fulltime equivalents (FTE).

## **Facility**

The PSAP is located at 26 West First Street, Bloomsburg, PA 17815. The facility is a standalone two-story facility that is shared with the County's Planning and Geographic Information System (GIS) departments. The PSAP is on the first floor and the Planning and GIS departments are on the second floor. In addition, there is a meeting room on the first floor that is used for County Commissioner meetings. The PSAP has a small break room, but no training room. The EMA's emergency operations center (EOC) could be used for this purpose, but it would be classroom only, as no consoles exist in the EOC.

The 9-1-1 Center has five combined console positions (call-taker and dispatcher). The County does not maintain a backup facility.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a PlantCML Orion CADstar v3.0.73 that was installed in 2007. (PlantCML is now part of Airbus DS Communications.) The system is being replaced with a LogiSYS CAD system; it is expected that the new system will be in place by May 2016. Adjacent Lycoming County also is moving to a LogiSYS CAD system, which creates the possibility of regional redundancy.



## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Sentinel Patriot v4.0 that was installed in April 2014.

## **Radio Systems**

The radio system is a hybrid, though most of the equipment is Motorola. Interoperability problems exist because some of the law enforcement and EMS agencies that are served by the PSAP are on VHF low-band frequencies, while others are on VHF high-band frequencies.

There is a 70-foot lattice tower onsite located on the south side of the building. This site has some ancillary local antennas on it that handle the Bloomsburg police department repeater system and amateur radio functions. In addition, there is a microwave link to the Catawissa Tower. There is no shelter for the tower site, and all lines enter the building via the power room and then run across to the equipment room.

## **Radio Console System**

The PSAP utilizes Motorola MCC 5500 consoles.

## **Facility Infrastructure**

The PSAP is served by copper feeds from Verizon. There is no fiber to the facility. The sole equipment room is located off the communications center room. The equipment room does have a grounding system in place—via a grounding bus and grounding ring—which appears to comply with communications site grounding standards.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported with three 10 kilovolt amperes (kVA) Eaton Powerware model 9355s, with extended battery modules. The system was installed in 2009. The UPS output is through a transfer switch, which is in the same room. The contact onsite stated that these units are nearing maximum capacity, in the 90 percentile range. Maintenance is provided by Eaton.

### Backup Power

The facility is powered by a Generac Model SG300, 300 kilowatt (kW) generator, and was installed in 2009. The generator is shared with the courthouse and powers the entire facility. It is supplied by a piped natural gas line. Maintenance is provided by Hunter & Lomison.



## Equipment Room

Columbia County has one equipment room that supports the PSAP. The equipment room has all network, telephone, and communications center/IT resources housed in it. In addition, the room houses all other ancillary connections that are needed. The room houses six cabinets and one wall of telephone punch downs.

The equipment room is small, but some expansion is possible. One rack has ample space for additional shelves and another would be available due to the decommissioning of some equipment. Other racks hold the Airbus Patriot Sentinel equipment, Eventide recording equipment and server, voters, Plant CML CAD equipment and subsequent network equipment, and Motorola radio equipment. Telephony maintenance is provided by Keystone Communications, and any IT needs are contracted to private vendors on an as-needed basis.

Cisco 2900 switches are deployed and quite a few ports are available. All connections are layer 2. There is no layer 3 availability.

**Table 3: Columbia County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>COLUMBIA COUNTY</b>	6	66,852	483 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	No	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	6,337	19,319	0
<b>Number of Trunks</b>	4	3	0
<b>Primary Selective Routers</b>	Bloomsburg/Scranton (Verizon)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Sentinel Patriot v4.0 (Installed: 2014)		
<b>Computer-Aided Dispatch (CAD)</b>	PlantCML Orion CADstar v3.0.73 (Installed: 2007)		
<b>Logging Recording System</b>	Eventide Nexlog 740 v2.1		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS/ArcMAP v10.3.1		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	None		

### 3.1.3. Luzerne County

#### Overview

Luzerne County is a Third Class County with a population of 321,423. The County covers approximately 890 square miles, and has 36 townships, 36 boroughs and 4 cities within its boundaries, including the City of Wilkes-Barre, which is the County seat.



The County's public safety answering point (PSAP) dispatches for 61 law enforcement agencies, 110 fire departments and 44 emergency medical services (EMS) agencies, and has ringdown connections with the neighboring counties.

The PSAP handled an average of 1,081 9-1-1 calls each day in 2015. Of these, 55 percent were wireline, 43 percent were wireless and 2 percent were voice over Internet Protocol (VoIP). There also were 394 text-to-9-1-1 calls. Last year, 9-1-1 calls were answered within 10 seconds 97 percent of the time.

## **Considerations**

Key factors affecting Luzerne County and its PSAP include the following:

- The Susquehanna River runs through the county; the river draws significant tourist activity, and is prone to flooding.
- Interstates 80 and 81 intersect in the County and the Northeast Extension of the Pennsylvania Turnpike (I-476) passes through the County, and all are heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- There is a considerable amount of industry in the County, including several industrial parks and chemical-processing facilities.
- There is a nuclear power plant—Susquehanna Steam Electric Station—to which the County's PSAP is connected via a ringdown line.
- There is one casino in the County—Mohegan Sun Pocono—that draws significant tourist activity.
- In addition, there is freight rail traffic, which creates situations similar to those created by commercial trucking.
- Several state and county parks that draw significant tourist activity also are located in the County, in particular the 13,050-acre Ricketts Glen State Park, which is very popular with hikers.
- The County's population is growing steadily, as it is developing into a bedroom community of Philadelphia.

## **Staffing**

The PSAP has three management positions: an executive director, a data/technical manager, and a PSAP manager. There are nine full-time supervisors. In addition, 65 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by eight part-time telecommunicators, each of whom work less than 30 hours per week, and who equate to five full-time equivalents (FTE).



## **Facility**

The PSAP is located in a single-story County-owned building located at 100 Young Street, Wilkes-Barre, PA 18706. The PSAP is the sole occupant of the building. The facility has a break room, a conference room and a training room.

The 9-1-1 Center has five call-taker-only console positions, and 14 combined console positions (call-taker and dispatcher). The PSAP is unique in that it physically separates its call-takers and dispatchers, in order to avoid the call-takers being distracted by the radio communications. In addition, the training room has six call-taker-only console positions that could be used in overflow situations.

The County also has a backup facility that maintains four combined console positions.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Tritech Total Command CAD that was installed in 2012. There is no expected upgrade date at this time.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Sentinel Patriot v3.3 Rev. A that was installed in 2012.

## **Radio Systems**

The radio system is a hybrid that involves numerous vendors—primarily Motorola and Tait—and radio frequencies, with VHF high band being the most common. The County is considering a replacement system, but no timetable has been set. When it does occur, it likely will be a trunked system given the large number of users.

## **Radio Console System**

Zetron Acom consoles were installed in 2014.

## **Facility Infrastructure**

The PSAP is fed with copper cable from Verizon. The telco demarcation and primary protection are located in the data room. There is a feed from Service Electric for cable television (CATV) and Internet access.



## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported by three Best Ferrups FE-Series 15 kilowatt (kW) UPS control units, with two battery banks per control unit. Runtime is between 15 and 30 minutes at full load.

### Backup Power

The UPS is fed with normal/emergency power from a Kohler 300 kW diesel generator. The generator has a fuel tank with 100 gallons of fuel; a larger 3,000 gallon underground tank provides runtime of two days at full load.

## **Equipment Room**

The PSAP equipment is located in the facility's data room and contains the following:

- Four cabinets, four racks, and two workstation cabinets all with communications equipment. The equipment in the workstation cabinets will soon be decommissioned.
- There is also a row with two cabinets, and one rack of CPE equipment; separated in the same row are three UPS controllers and three dual-battery arrays.
- There is an Airbus (formerly Cassidian) CPE system that is designed to be geo-diverse; however, both the A and the B servers currently reside in the same location.
- A Nortel Norstar provides the PSAP with administrative call traffic separate from the CPE.
- The room has a telecommunications main ground bar (TMGB) that is connected to some of the equipment; however, the overall ground system is not compliant with communications site grounding standards.
- The room has limited vacant power connections; however, additional connections can be acquired once the old equipment is removed.
- Network connectivity exists primarily in the CAD and radio console equipment racks. The core router has available 100 megabits per second (Mbps) connections, and feeds a core switch (Cisco 3700). The internal network is supported on Cisco 2900 and Baystack 10/100 Mbps switches in the racks.

### Radio Shelter

This space supports eight racks of radio equipment, and has a more robust grounding system. Limited additional power exists.



**Table 4: Luzerne County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
LUZERNE COUNTY	3	321,423	890 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	No	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	216,038	170,944	7,584
<b>Number of Trunks</b>	12	10	0
<b>Primary Selective Routers</b>	Scranton/Bloomsburg		
<b>Customer Premises Equipment (CPE)</b>	Airbus Sentinel Patriot (Installed: 2012)		
<b>Computer-Aided Dispatch (CAD)</b>	Tritech, Total Command CAD, v2.9 (Installed: 2012)		
<b>Logging Recording System</b>	Voice Print International, Empower System, v5.4		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.3		
<b>Databases Maintained</b>	Smart911, warrants		
<b>Leased Equipment</b>	None		

### **3.1.4. Montour County**

#### **Overview**

Montour County is an Eighth Class County with a population of 18,490. The County covers approximately 131 square miles, and has nine townships and two boroughs within its boundaries, including the Borough of Danville, which is the County seat.

The County’s public safety answering point (PSAP) is located at 30 Woodbine Lane, Danville, PA 17821. It dispatches for two law enforcement agencies, seven fire departments and four emergency medical services (EMS) agencies, and has a ringdown connection with Geisinger Medical Center.

The PSAP handled an average of 29 9-1-1 calls each day in 2015. Of these, 42 percent were wireline and 58 percent were wireless. Last year, 9-1-1 calls were answered within 10 seconds 95 percent of the time.

#### **Considerations**

Key factors affecting Montour County and its PSAP include the following:

- This facility is scheduled to close by the end of the second quarter of 2016 and its operations will be absorbed by the Columbia County PSAP. According to the current PSAP Director, the facility no longer will retain any equipment after the consolidation is complete.



- Interstate 80 runs through Montour County, and is heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- One of the largest medical centers in the state—Geisinger Medical Center—is located in the County; the hospital has medical evacuation capabilities.
- The Susquehanna River flows through the County; the river is prone to flooding.

## **Staffing**

The PSAP has one management position of chief dispatcher. There is one full-time supervisor. In addition, seven full-time telecommunicators handle both call-taking and dispatching; they are supplemented by two part-time telecommunicators, who equate to one fulltime equivalent (FTE).

## **Facility**

The PSAP is located at 30 Woodbine Lane, Danville, PA 17821. The PSAP is located in a standalone facility, which is shared with the County's emergency management agency (EMA).

The 9-1-1 Center has two fulltime combined positions (call-taker and dispatcher). The County does not maintain a backup facility.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Tiburon Dispatch Now v1.2.7.9 that was installed in 2008. No upgrade is currently planned.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is a Zetron 3300 v5.6.7 that was installed in June 2007. No upgrade is currently planned.

## **Radio Systems**

The radio system is a two-site Motorola hybrid system that operates on VHF low band, VHF high band, and UHF frequencies. The system was installed in 2008.

A 100-foot tower is located on the west side of the facility. This site also has an unlicensed microwave link to the Pennsylvania State Police site at Montour Ridge.

## **Radio Console System**

Zetron 4400 v4.7.0.1421 consoles were installed in 2007.



## **Facility Infrastructure**

The PSAP is served by copper feeds from Verizon. Currently, the facility does not have fiber optic connectivity.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported by a Best 12.5 kilovolt amperes (kVA) UPS unit, which is located in the equipment room. The UPS system output is through a transfer switch that also is in the main equipment room. The current load is unknown and could not be captured at the time of the visit. There is no maintenance contract.

### Backup Power

Backup power for the facility is provided by a Generac 45 kilowatt (kW) generator that was installed in 2008. The generator powers the entire facility under a 40-percent load. It is supplied by a piped natural gas line. The generator is located outside the facility and sits in an enclosed, open-air shed-type structure. The generator is under a maintenance contract with The Line Guys.

## **Equipment Room**

Montour County has one equipment room that supports the PSAP. It is located adjacent to the 9-1-1 Center. This room has all network, telephone and communications center/IT resources housed in it, as well as all other ancillary connections that are needed. The room also has a grounding system in place via a grounding bus and grounding ring; both appear to comply with communications site grounding standards.

The room is fairly small and expansion would be tight. One full rack space is available due to the decommissioning of some equipment. Other racks hold the Zetron 3300 equipment, recording equipment, voters, Zetron 4400 networking switches and a modem for the Schuylkill Mobile Fone alphanumeric paging system.

Cisco 2960 switches are deployed and have many available ports. Category 5 wiring is used throughout the building and to the PSAP.



**Table 5: Montour County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>MONTOUR COUNTY</b>	8	18,490	130 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	No	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	4,477	6,196	0
<b>Number of Trunks</b>	4	4	0
<b>Primary Selective Routers</b>	Bloomsburg/Scranton		
<b>Customer Premises Equipment (CPE)</b>	Zetron 3300 v5.6.7 (Installed: 2007)		
<b>Computer-Aided Dispatch (CAD)</b>	Tiburon Dispatch Now, v1.7.2.9 (Installed: 2008)		
<b>Logging Recording System</b>	Eventide VR725, v1.8.1 Build 31		
<b>Geographic Information System (GIS)</b>	Supplied by Columbia County		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	None		

### **3.1.5. Northumberland County**

#### **Overview**

Northumberland County is a Fifth Class County with a population of 94,560. The County covers approximately 458 square miles, and has 23 townships and 11 boroughs within its boundaries, plus 2 cities, one of which is the City of Sunbury, which is the County seat.

The County’s public safety answering point (PSAP) dispatches for 12 law enforcement agencies, 49 fire departments and 12 emergency medical services (EMS) agencies, and has ringdown connections with SCI-Coal Township, a state correctional facility.

The PSAP handled an average of 80 9-1-1 calls each day in 2015. Of these, 22 percent were wireline, 77 percent were wireless and less than 1 percent was voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 97 percent of the time.

#### **Considerations**

Key factors affecting Northumberland County and its PSAP include the following:

- The County and the PSAP staff are proud of the fact that a dedicated training officer exists, which is unusual for a PSAP of this size; they believe this is an important factor in their ability to provide superior customer service.
- A small stretch of Interstate 80 runs through the County, and is heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.



- The Knoebels Amusement resort is located in the County; it is the largest free-admission amusement park in the world, and attracts significant tourist activity.
- Several freight rail spurs that serve specific industries exist in the County; these create situations that are similar to those created by commercial trucking.
- The north and south branches of the Susquehanna River converge in Sunbury, and attract significant recreational boating activities. The river also is prone to flooding, particularly at the confluence where ice floes often cause the water flow to back up.

## **Staffing**

The PSAP has one management position, a 9-1-1 coordinator. There also is a fiscal officer, a Geographic Information System (GIS)/Information Technology (IT) manager, and a training officer. There are four full-time supervisors. In addition, 16 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by three part-time telecommunicators, who equate to one full-time equivalent (FTE).

## **Facility**

The PSAP is located at 911 Greenough Street, Sunbury, PA 17801. It is a large two-story reused commercial facility that is leased by the County. The PSAP shares the second floor with the County's emergency management agency (EMA). The 9-1-1 Center has seven combined console positions (call-taker and dispatcher), and has room for some expansion. Two of the positions are in the training room and could be used for overflow situations. The County does not have a backup facility.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is an Emergitech Forge v2015.1 that was installed in 2012. The County is considering a replacement system, primarily because of the inability of the current system to interoperate with other systems. The County also is interested in a regional solution that could serve multiple counties, and has had preliminary discussions to that effect.

## **Customer Premises Equipment**

The customer premises equipment (CPE) system is an Airbus Vesta v4.2 that was installed in 2014.

## **Radio Systems**

The radio system is a Motorola hybrid system that utilizes a combination of VHF high band and low band frequencies, as well as UHF frequencies. The County currently is developing a trunked radio system in order to improve system coverage. However, while the County has secured the necessary frequency licenses and some equipment has been delivered, the project is not moving forward quickly.



The County plans to use VHF marine frequencies for the new system, which is an unusual allocation by the Federal Communications Commission (FCC) for this purpose; however, the County did not want to use 700/800 MHz frequencies due to coverage concerns stemming from the mountainous terrain, and the number of tower sites that might be needed to mitigate those challenges.

A 6-foot-diameter, 6 gigabits per second (Gbps) microwave dish is on the roof and connects to Northumberland County's Montour Ridge site. The roof also has some ancillary local antennas on it that handle a low-band, four-channel Motorola Micor base station and a VHF high-band repeater.

### **Radio Console System**

The PSAP utilizes Motorola MCC 5500 v2.4 consoles, which may need to be upgraded or replaced when the new radio system is implemented.

### **Facility Infrastructure**

The PSAP is served by copper feeds from Verizon. In addition, a 100 megabits per second (Mbps) fiber circuit runs from the PSAP to the County's government center located on 5<sup>th</sup> Street in Sunbury. The PSAP has two equipment rooms, one located off the communications center room and another located off the emergency operations center (EOC). The equipment rooms have a grounding system in place via a grounding bus.

### **Power Systems**

#### Uninterruptible Power Supply

The PSAP is supported by a 15 kilovolt amperes (kVA) Eaton Powerware model 9155 UPS system that has nine extended-battery modules. These units are located in the equipment room that is off the EOC. The UPS output is through a transfer switch, which is in the same room. Present load is in the 20-percent range. Maintenance is provided by Eaton.

#### Backup Power

The facility is powered by a Kohler 32 kilowatt (kW) generator. The installation date was in 1996. The generator is supplied by a piped natural gas line. The transfer switch is located on the wall in the same area. The percentage of loading is unknown. However, the generator only handles critical infrastructure when commercial power is lost, i.e., only the PSAP's telephone, CAD, radio, and emergency lighting systems. Maintenance is provided by Hunter & Lomison.

### **Equipment Rooms**

Northumberland County has two main equipment rooms that support the PSAP. The first is a server room that is directly off the communications center room and supports some radio and has IT resources. The main fiber network is in this room and connects to the County's government center.



The second room is off the EOC and contains two equipment racks that hold CPE and radio system equipment, but which have ample space for additional shelves. Another standalone cabinet holds an array of Hewlett-Packard servers that are used for the CAD system. A new Motorola master core radio system has been delivered and is awaiting installation. Telephony maintenance is provided by Keystone Communications, while any IT needs are contracted to private vendors on an as-needed basis.

Cisco 2950 and 2960 switches are deployed and have quite a few available ports.

**Table 6: Northumberland County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>NORTHUMBERLAND COUNTY</b>	5	94,560	458 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	No	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	6,665	22,514	174
<b>Number of Trunks</b>	4	4	2
<b>Primary Selective Routers</b>	Bloomsburg/Scranton		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta v4.2 (Installed: 2014)		
<b>Computer-Aided Dispatch (CAD)</b>	Emergitech, Forge, v2015.1 (Installed: 2012)		
<b>Logging Recording System</b>	Nice, Model 40285-448, v3.0		
<b>Geographic Information System (GIS)</b>	GeoComm GeoLynx, v8.1		
<b>Databases maintained</b>	None		
<b>Leased Equipment</b>	Building lease expires in April 2020		

### 3.1.6. Schuylkill County

#### Overview

Schuylkill County is a Fourth Class County with a population of 147,372. The County covers approximately 779 square miles, and has 73 townships and boroughs within its boundaries, plus the City of Pottsville, which is the County seat.

The County's public safety answering point (PSAP) dispatches for 39 law enforcement agencies, 119 fire departments and 31 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police, neighboring counties, and several correctional facilities and hospitals.



The PSAP handled an average of 169 9-1-1 calls each day in 2015. Of these, 25 percent were wireline and 75 percent were wireless. Last year, 9-1-1 calls were answered within 10 seconds 99.2 percent of the time.

## **Considerations**

Key factors affecting Schuylkill County and its PSAP include the following:

- Interstate 81 runs through the County. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- The Yuengling Brewery has a production facility in Pottsville; it is the oldest brewery in the United States and attracts a substantial tourist influx into the County.
- The County also has numerous coal-mining operations that present the possibility of rescue incidents; a tunnel collapse requires very specialized rescue operations.
- The coal-mining industry has been depressed in recent years, and tax revenues have diminished accordingly. Nevertheless, the County Commissioners recognize the importance of public safety and are committed to it; the approach taken by the County regarding the radio system described below is good evidence of this.
- There are several state parks in the County, and the Appalachian Trail runs along the southern border, attracting a great many hikers.

## **Staffing**

The PSAP has two management positions: a director of communications and an operations manager. There also is a quality assurance (QA)/training manager and three fulltime supervisors. In addition, 29 fulltime telecommunicators handle both call-taking and dispatching.

## **Facility**

The facility is located at 435 N. Centre Street, Pottsville, PA 17901, and is shared by the PSAP and the County's emergency management agency (EMA); both are located on the second floor. It is standalone structure with a parking level under the building.

There is a break room/kitchen. Training occurs in a combination training/conference room or in the emergency operations center (EOC), which has console positions that can be used for this purpose.

The 9-1-1 Center has three full-time call-taker-only console positions, and 10 combined console positions (call-taker and dispatcher). The County does not have a backup facility.



## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is an Infor EnRoute that was installed in 2005. It is being replaced with a LogiSYS North Star system. The upgrade is expected to be complete by mid-year 2016.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta Meridian v2.2.0 that was installed in 2006. The County is considering an upgrade or replacement of its CPE in the 2016-2017 timeframe, and is interested in working with neighboring counties on a regional solution.

## **Radio Systems**

The radio system is an 11-site Motorola Astro v7.14 Project 25 simulcast trunking system that was installed in 2014. The County secured exclusive-use Part 22 frequencies for this system; such frequencies make it possible to eventually implement a regional radio system that could cover most of eastern Pennsylvania.

Unlike Part 90 frequencies, Part 22 exclusive-use frequencies do not require an individual license for each base station; consequently, it is easier and more streamlined to add tower sites, as frequency coordination is not required. Several counties in the region have expressed interest in a regional radio system; for instance, Carbon County currently has coverage issues, as do several other rural counties in the region, particularly those that are mountainous.

A microwave dish is attached to the roof of the building, which provides a link to the County courthouse, which is located just west of the PSAP. This path provides both data and RF connectivity to the PSAP. Delivery is diverse with some being microwave and some being T1.

## **Radio Console System**

Motorola Centracom Gold Elite consoles were installed in 2007. There are no current plans for an upgrade or replacement, but the County recognizes that it will need to do so soon because the consoles are approaching end of life. As with the CPE, the County is interested in exploring a regional solution.

## **Facility Infrastructure**

The PSAP is served by a 200-pair copper feed and a 100 megabits per second (Mbps) fiber line, both provisioned by Verizon.



## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported by an Eaton 48 kilovolt amperes (kVA) parallel blade UPS system that was installed in 2014. This unit is located in the main equipment room off the communications center. The UPS system output is through a transfer switch, which is located in the same room. The current load on the system is 30 percent. There is a maintenance contract with Eaton.

### Backup Power

Backup power to the facility is provided by a Generac 100 kilowatt (kW) diesel generator that was installed in 1993. The generator powers the entire facility and is under a 60-percent load; it has a 100-gallon tank and is under a maintenance contract with Mechanical Services.

## **Equipment Room**

The PSAP has one equipment room that is adjacent to the communications center. The room is fairly full and currently could not accommodate any additional racks; however, some racks have decommissioned equipment in them, so they could be available in the future. The main room has racks that hold the Nortel and Airbus phone systems, Infor CAD system, Verint recording equipment, voters, and the Motorola radio system, with position shelves that network to the communications center positions. All of the equipment is supported by Category 5 cabling.

The equipment room also holds four Cisco Catalyst 2960-S switches and two Cisco 2950 switches. All connections are layer 2 and layer 3 at the core. All have available ports with some having up to 12 available ports. In addition, there are two Hewlett-Packard 2620-24 layer 2 switches. Each have up to 10 available ports. Finally, there is a 3COM 24-port router with 18 available ports.



**Table 7: Schuylkill County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>SCHUYLKILL COUNTY</b>	4	147,372	779 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	No	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>Calls for Service (2015)</b>	15,271	46,273	4
<b>Number of Trunks</b>	6	6	2
<b>Primary Selective Routers</b>	Bloomsburg/Scranton		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta Meridian (Installed: 2006)		
<b>Computer-Aided Dispatch (CAD)</b>	Infor, EnRoute, v7.1 (Installed: 2005)		
<b>Logging Recording System</b>	Verint, Audiolog Max Pro, v4		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10		
<b>Databases maintained</b>	None		
<b>Leased Equipment</b>	None		

### 3.1.7. Wyoming County

#### Overview

Wyoming County is a Seventh Class County with a population of 28,193. The County covers approximately 397 square miles, and has 18 townships and 5 boroughs within its boundaries, including the Borough of Tunkhannock, which is the County seat.

The County's public safety answering point (PSAP) dispatches for 7 law enforcement agencies, 13 fire departments and 10 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police and neighboring counties.

The PSAP handled an average of 33 9-1-1 calls each day in 2015. Of these, 27 percent were wireline, 73 percent were wireless. The County was unable to determine the percentage of calls last year that were answered within 10 seconds.

#### Considerations

Key factors affecting Wyoming County and its PSAP include the following:

- PSAP staff undergo an extensive training regimen that exceeds state guidelines.
- The north branch of the Susquehanna River flows through the County; it is prone to flooding and attracts a significant number of recreational boaters.
- The County is home to a large Proctor & Gamble manufacturing facility that stores chemicals onsite.



- It is a very small and rural County that only erected its first traffic light four years ago when a Wal-Mart store opened.
- There are a few freight rail spurs that serve specific industries; as with all freight rail traffic, there is a risk for a hazmat situation developing that could impact the County and its PSAP.

## **Staffing**

The PSAP has two management positions: a director/9-1-1 coordinator and a deputy director. There also is a fiscal officer. In addition, 15 full-time telecommunicators handle both call-taking and dispatching.

## **Facility**

The PSAP is housed in a standalone facility located at 3880 State Route 6, Tunkhannock, PA 18957, that it shares with the County's emergency management agency (EMA). The PSAP is supported by an outside contractor, AMP Global Strategies, which supplies contracted support for all core functions, including CAD support, IT support, CPE and generator/UPS maintenance.

The facility has bunk, break and training rooms, and considerable room for expansion.

The 9-1-1 Center has nine full-time combined positions (call-taker and dispatcher). The PSAP does not have a backup facility.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a SunGuard ONESolution v14.5.0.2258 that was installed in 2014. There is no expected timeline to upgrade.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is a Zetron 3200 v6 that was installed in 2006. An upgrade is scheduled for the second quarter of 2016.

## **Radio Systems**

The radio system is a Tait and Motorola hybrid conventional, primarily analog system that has been used for at least a decade. Despite the fact that the County is surrounded by mountains, there are no coverage issues.

In addition, there is a 100-foot tower located on the west side of the building that provides a microwave link to the Dallas tower site.



## **Radio Console System**

Zetron MAX Dispatch consoles were installed in 2014. Though the consoles are Internet Protocol-based, they would need upgrades to be Next Generation 9-1-1 (NG9-1-1) capable.

## **Facility Infrastructure**

The PSAP is served by fiber and copper (200 pair) feeds from Frontier Communications. At this time, the fiber feed is not connected to the PSAP. Additional room exists for other cabling if needed. Both cables terminate in the sole equipment room located in the PSAP section of the building. The room is protected by an FM-200 fire-protection system. It also has a grounding system which appears to be installed in accordance with communications site grounding standards.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported with a series of two BEST 18 kilovolt amperes (kVA) units, which are located in the main equipment room. The UPS output is through two transfer switches; the current load is 62 percent. The UPS system was installed in 2008 and is under a maintenance contract with AMP Global.

### Backup Power

Backup power for the facility is provided by a Kohler 1000 kilowatt (kW) generator that was installed in 2008. The generator powers the entire facility under a 30-percent load. It is supplied by a 400-gallon diesel tank that provides a three to four day runtime. The generator is under a maintenance contract with AMP Global.

## **Equipment Room**

Wyoming County has one equipment room that supports the PSAP. This room has all network, telephone, and communications center/IT resources housed in it. In addition, the room houses all other ancillary connections needed. The room houses 22 cabinets and one full wall of telephone punch downs, and all equipment sits on an 8-inch raised floor. The room has some area for expansion and some existing rack space available. The equipment room ground system appears to be in accordance with communications site grounding standards.

Cisco 2960 switches are deployed and have many available ports. Category 5 and 6 wiring is used throughout the building and to the PSAP. All IT network equipment is maintained by AMP Global.



**Table 8: Wyoming County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>WYOMING COUNTY</b>	7	28,193	397 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	No	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>Calls for Service (2015)</b>	3,376	8,929	0
<b>Number of Trunks</b>	4	4	0
<b>Primary Selective Routers</b>	Scranton/Bloomsburg		
<b>Customer Premises Equipment (CPE)</b>	Zetron 3200 (Installed: 2006)		
<b>Computer-Aided Dispatch (CAD)</b>	SunGuard One Solution, v14.5.0.2258 (Installed: 2014)		
<b>Logging Recording System</b>	Eventide, Nexlog 740, v2.5.4		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, Server Advanced Enterprise, v10.2.2		
<b>Databases maintained</b>	Special Persons In Need (SPIN)		
<b>Leased Equipment</b>	None		

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## **3.2. NORTH CENTRAL REGION**

### **SUMMARY**

The North Central region consists of Bradford, Clinton, Lycoming, Potter, Sullivan, Tioga and Union counties. The region is along the northern tier of central PA and is primarily rural. There are some limited access highways in the region, but the majority of the residents are served by state and local roads. The two largest cities in the region are Lewisburg in Union County and Williamsport in Lycoming County; both located in the southern portion of the region. The total population of this region is 328,730. All seven counties are members of the Pennsylvania Homeland Security – North Central Terrorism Task Force.

Each county maintains a single consolidated public safety answering point (PSAP) that provides emergency call-taking and comprehensive dispatch functions for law enforcement, the fire service and emergency medical services (EMS). However, the Potter and Sullivan county PSAPs are not 24 x 7 operations. Therefore, they have entered into contracts for partial 9-1-1 service with neighboring counties. The 9-1-1 call volume for the seven-county region for 2015 was 131,697. The region dispatched 204,034 calls for service. Monthly recurring costs for the seven counties were \$57,920.63.

Initial discussions have been held within the group regarding the sharing of regional assets, though not all counties have participated fully. These discussions focused on implementation of a regional Emergency Services Internet Protocol (IP) Network (ESInet), and the potential for shared customer premises equipment (CPE), affecting five PSAPs in the region.

A survey was conducted as part of the process to determine each county's interest in sharing resources and to discern their priorities. Sharing of computer-aided dispatch (CAD), IP connectivity and CPE ranked highest. Meanwhile, the counties of Lycoming, Sullivan, Union and Columbia (located in another region) are exploring the feasibility of a regional telephony solution using Columbia County's current CPE solution.

The North Central region has a willingness to share and collaborate on many areas of PSAP operations; however, only the sharing of geographic information system (GIS) data has been initiated to date. The North Central region currently does not have any specific written agreements for system sharing.

### **3.2.1. Bradford County**

#### **Overview**

Bradford County is a Sixth Class County with a population of 62,800. The County covers approximately 1,147 square miles, and has 37 townships and 14 boroughs within its boundaries, including the Borough of Towanda, which is the County seat.



The County's public safety answering point (PSAP). It dispatches for 7 law enforcement agencies, 25 fire departments and 15 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police, neighboring counties, and several hospitals.

The PSAP handled an average of 53 9-1-1 calls each day in 2015. Of these, 18 percent were wireline and 82 percent were wireless. Last year, 9-1-1 calls were answered within 10 seconds 99.99 percent of the time.

## **Considerations**

Key factors affecting Bradford County and its PSAP include the following:

- The County is the second largest in the state geographically, which is challenging to cover from an emergency response perspective.
- The County has more than 3,000 natural gas wells within its boundaries, so there is potential for hazmat and fire/rescue scenarios.
- No new exploration of the Marcellus Shale is underway, which is having an adverse effect on tax revenues and, in turn, PSAP funding. As a result, the County's plans to move the PSAP to a new facility are on hold.
- The County would like to improve upon its training regimen, and hopes to eventually build a 9-1-1 and fire training center.
- The County is adjacent to New York State, which results in numerous interstate mutual-aid response scenarios.

## **Staffing**

The PSAP has three management positions: a 9-1-1 coordinator, a quality assurance/training officer, and a Geographic Information System (GIS) coordinator. There are two full-time supervisors. In addition, 12 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by six part-time telecommunicators, who equate to four full-time equivalents (FTE).

## **Facility**

The PSAP is located at 22 Burgert Drive, Towanda, PA 18848, in the basement of a one-story building. The facility has a training room that has two console positions that could be used in overflow situations. The County was planning a move to a different facility, but these plans were put on hold after much of the Marcellus Shale-based funding diminished.

The 9-1-1 Center has eight combined console positions (call-taker and dispatcher). The County does not have a backup facility.



## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a GeoConex v10.9 that was installed in 2015.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is a Zetron Max 3200 v6 that was installed in 2006. A replacement is expected to be completed in 2016.

## **Radio Systems**

The radio system is a Tait TaitNet QS<sup>2</sup> simulcast system that was installed in 2015.

The County recently completed the installation of a new Aviat Eclipse microwave network with data speeds up to 150 megabits per second (Mbps).

## **Radio Console System**

Zetron 4000 series consoles were installed in 2015.

## **Facility Infrastructure**

There is a single entrance facility that is served by copper feeds from Frontier. The County believes that fiber from Adelphia is available nearby; however, while large portions of Adelphia were taken over by Zito Business, this area is not on Zito's coverage map.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported by an Eaton UPS system and was installed in 1999; output is through an automatic transfer switch (ATS).

### Backup Power

Backup power to the PSAP is provided by an older Spectrum generator, which was installed in 1980. The County planned to replace the generator, because of its age, when it moved to a new facility, but those plans now are on hold due to funding challenges.

## **Equipment Room**

The PSAP has computer and information technology (IT) rooms that use overhead cable trays. Limited rack space is available; also, several of the cabinets that are currently in use would easily support



additional routers with fiber optic ports for connection of an additional external network. Most of the wiring is Category 6, with some Category 5E; it appears that wiring is installed for each application.

**Table 9: Bradford County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>BRADFORD COUNTY</b>	6	62,800	1,147 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	No	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	3,595	15,873	0
<b>Number of Trunks</b>	4	4	0
<b>Primary Selective Routers</b>	Verizon (Bloomsburg/Scranton)		
<b>Customer Premises Equipment (CPE)</b>	Zetron, Max 3200, v6 (Installed: 2006)		
<b>Computer-Aided Dispatch (CAD)</b>	GeoConex, v10.9 (Installed: 2015)		
<b>Logging Recording System</b>	Eventide NexLog 740, v2.5.4		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.2.2		
<b>Databases Maintained</b>	Code Red (mass notification system), SARA LEPC, gas companies		
<b>Leased Equipment</b>	None		

### 3.2.2. Clinton County

#### Overview

Clinton County is a Sixth Class County with a population of 39,738. The County covers approximately 888 square miles, and has 21 townships and 7 boroughs within its boundaries, plus the City of Lock Haven, which is the County seat.

The County's public safety answering point (PSAP) dispatches for 7 law enforcement agencies, 19 fire departments and 6 emergency medical services (EMS) agencies, and has a ringdown connection with Lycoming County.

The PSAP handled an average of 53 9-1-1 calls each day in 2015. Of these, 15 percent were wireline, 77 percent were wireless and 8 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 90 percent of the time.

#### Considerations

Key factors affecting Clinton County and its PSAP include the following:

- The County is interested in developing a regional Emergency Services Internet Protocol (IP) Network (ESInet) that would be shared by Lycoming, Union and Sullivan counties.



- The County is home to Lock Haven University and Lock Haven Hospital.
- Several state parks and forest areas are located in the County that are popular tourist destinations.
- The northern part of the County is known for its hunting areas—with numerous hunting camps and a state game lands—which leads to emergency calls related to hunting accidents.
- The west branch of the Susquehanna River flows through the County, and is a popular boating and fishing destination, which generates emergency calls involving water rescues.

## **Staffing**

The PSAP has four management positions: a 9-1-1 director/coordinator, a quality assurance (QA) supervisor, a training/operations coordinator, and a secretary. There are four full-time supervisors. In addition, nine full-time telecommunicators handle both call-taking and dispatching; they are supplemented by one part-time telecommunicator.

## **Facility**

The PSAP is located at 311 Frederick Street, Suite A, Lock Haven, PA 17745, in a single-story building. The PSAP shares the building with other County agencies, including the emergency operations center (EOC). The facility was remodeled in 2013.

## **Call Center**

The 9-1-1 Center has seven combined console positions (call-taker and dispatcher), with room for three more. The County also has a backup facility. There are no console positions at the backup facility; however, Verizon network control modems allow for rerouting of calls to this location, and Cisco VoIP phones are used in order to take calls.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a New World Systems (now Tyler Technologies) Aegis v9.0.2 that was installed in 1995. An upgrade is planned for 2017.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is a Zetron 3300 v6.0.0 that was installed in 2010. The system is scheduled to be replaced in 2019; the County is interested in a regional sharing initiative, particularly with Lycoming County, in order to establish backup capabilities.



## **Radio Systems**

The radio system is a Harris MASTR III v17.7 conventional system.

A 150 megabits per second (Mbps) Harris microwave link provides backhaul connectivity. The microwave dish is attached to the facility's roof and is accessible via a roof portal.

The County is close to joining the Pennsylvania Statewide Radio Network (PA-STARNet), an 800 MHz interoperable voice and data network for first responders.

## **Radio Console System**

Zetron Max Dispatch v2.0.4.28 consoles were installed in 2014.

## **Facility Infrastructure**

The facility is served by copper feeds from Verizon, as well as a County-owned fiber-optic feed.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported by an APC Symmetra 11.57 kilovolt amperes (kVA) three-phase UPS system which was installed in 2013. Current load is 13.5 percent; runtime at full load is 2 hours and 23 minutes.

### Backup Power

Backup power to the PSAP is provided by a Kohler 500-kilowatt (kW) diesel generator that currently is at 37-percent load. The system was installed in 2013.

## **Equipment Room**

The PSAP equipment is located in the facility's server room. This space houses two rows of racks and the UPS control units. There are 13 racks in total, and one currently is open; there is space for two additional racks. The room has plenty of vacant power connections. Network connectivity exists primarily in the CAD and radio console equipment racks. A Cisco Call Manager provides the PSAP with administrative call traffic separate from the CPE.



**Table 10: Clinton County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>CLINTON COUNTY</b>	6	39,738	888 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	No	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	2,949	14,724	1,574
<b>Number of Trunks</b>	4	4	0
<b>Primary Selective Routers</b>	Verizon (Bloomsburg/Scranton)		
<b>Customer Premises Equipment (CPE)</b>	Zetron 3300, v6.0.0 (Installed: 2010)		
<b>Computer-Aided Dispatch (CAD)</b>	New World Systems Aegis, v9.0.2 (Installed: 1995)		
<b>Logging Recording System</b>	Verint Audiolog, v5 SP2		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v9.2.1		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	ASP 400 unit, which is part of Aegis CAD platform, is leased and renewed yearly		

### 3.2.3. Lycoming County

#### Overview

Lycoming County is a Fifth Class County with a population of 117,317. The County covers approximately 1,229 square miles, and has 42 townships and nine boroughs within its boundaries, plus the City of Williamsport, which is the County seat.

The County’s public safety answering point (PSAP) dispatches for 16 law enforcement agencies, 43 fire departments and 25 emergency medical services (EMS) agencies. The PSAP has ringdown connections with the Pennsylvania State Police, neighboring counties, Williamsport Hospital, Muncy Hospital, Jersey Shore Hospital, Williamsport Police Department, Williamsport Regional Airport, and the State Correctional Institution (SCI)–Muncy, and speed-dial connections with Columbia and Wyoming counties.

The PSAP handled an average of 151 9-1-1 calls each day in 2015. Of these, 28 percent were wireline and 72 percent were wireless. Last year, 9-1-1 calls were answered within 10 seconds 90 percent of the time.

#### Considerations

Key factors affecting Lycoming County and its PSAP include the following:

- The County is the largest in the North Central region in terms of population, and the largest in the state in terms of geographic area.



- The PSAP staff is proud of the fact that it typically is an early adopter of technology advancements.
- The PSAP also has an extensive training program in place that the staff believes far exceeds the typical 9-1-1 Center.
- Lycoming County also provides dispatching services for Sullivan County (law enforcement, fire and EMS).
- Williamsport hosts the annual Little League World Series, a highly popular event with an international profile that attracts tens of thousands of visitors and an immense media presence.

## **Staffing**

The PSAP has seven management positions, including: a communications manager, communications specialist/projects manager, communications training manager, a computer-aided dispatch (CAD) coordinator, two Geographic Information System (GIS) coordinators, and an administrative assistant. There are three full-time supervisors. In addition, 17 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by two part-time telecommunicators, who equate to one full-time equivalent (FTE).

## **Facility**

The PSAP is located at 542 County Farm Road, Montoursville, PA 17754. The PSAP shares the facility with some County departments, mainly agricultural entities.

The 9-1-1 Center has eight combined console positions (call-taker and dispatcher). The County also has a backup facility that maintains five positions.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a LogiSYS NorthStar v4.4 solution that was installed in 2007. It is scheduled to be upgraded in 2020.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta Pallas that was installed in 2008. It is scheduled to be upgraded in 2016. The County is interested in a regional sharing arrangement with neighboring counties.

## **Radio Systems**

The radio system is a Motorola Quantar system that was installed in 2012.



A microwave dish is attached to the roof of the building; it connects to the County-owned Armstrong Road Tower, and the link provides data connectivity to other County offices, and to the County landfill. In addition, Session Initiation Protocol (SIP) trunks pass over the microwave to provide one path each for phone access at those same facilities.

### **Radio Console System**

Motorola MCC 5500 consoles were installed in 2012.

### **Facility Infrastructure**

The PSAP is served by copper feeds from Verizon and Mitel. In addition, there is a 100 megabits per second (Mbps) fiber line from Windstream that is used strictly for data. However, Comcast brings it into the building.

### **Power Systems**

#### Uninterruptible Power Supply

The PSAP is supported by two UPS systems. One is an Eaton 18 kilovolt amperes (kVA) system that was installed in 2007. The other is a Best 12.5 kVA system that was installed in 1995. The UPS output is through a transfer switch that is in the equipment room. The current load on the Eaton is 27 percent, and current load on the Best is 35 percent. Both are serviced under a maintenance contract with Eaton.

#### Backup Power

Backup power to the PSAP is provided by a Generac 200-kilowatt (kW) diesel generator that was installed in 1995. The generator powers the entire facility under a 40-percent load. The generator is located outside on the north side of the building and sits on a concrete pad; it has three 150-gallon fuel tanks that provide five days of runtime. The generator is not under a maintenance contract and is serviced on an as-needed basis by a local contractor; however, it does go through an annual preventive maintenance checkup.

### **Equipment Rooms**

There are two equipment rooms in the facility. The larger room has a grounding system in place, via a grounding bar and ring, and appears to comply with communications site grounding standards. This room holds the bulk of the 9-1-1 Center servers and equipment, specifically radio, CAD, recording and microwave. The smaller second room is mainly for telephony and network connections, including connectivity to the rest of the government entities in Lycoming County. The County's IT staff is responsible for the smaller room, and this staff is onsite most days. Both rooms are fairly full but could accommodate some expansion.



**Table 11: Lycoming County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>LYCOMING COUNTY</b>	5	117,317	1,229 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	No	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	15,266	39,748	0
<b>Number of Trunks</b>	8	6	0
<b>Primary Selective Routers</b>	Verizon (Scranton/Bloomsburg)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta Pallas (Installed: 2008)		
<b>Computer-Aided Dispatch (CAD)</b>	LogiSYS NorthStar, v4.4 (Installed: 2007)		
<b>Logging Recording System</b>	Verint Audiolog, v5		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.3		
<b>Databases Maintained</b>	9IMS (Management Information System [MIS])		
<b>Leased Equipment</b>	None		

### **3.2.4. Potter County**

#### **Overview**

Potter County is an Eighth Class County with a population of 17,635. The County covers approximately 1,081 square miles, and has 24 townships and 6 boroughs within its boundaries, including the Borough of Coudersport, which is the County seat.

The County’s nine law enforcement agencies, 10 fire departments and eight emergency medical services (EMS) agencies are dispatched by Tioga County.

#### **Considerations**

Key factors affecting Potter County and its PSAP include the following:

- The County is very rural and mountainous.
- Numerous state game lands exist in the County that attract a sizeable influx of hunters seasonally.
- The County also has numerous cabins, and is quite popular with hikers and climbers.

#### **Staffing**

The PSAP has four management positions: a 9-1-1 coordinator, 9-1-1 Master Street Address Guide (MSAG) coordinator, a 9-1-1 MSAG clerk, and a Geographic Information System (GIS) technician. There is one full-time supervisor—the 9-1-1 coordinator—and six part-time staff who support 9-1-1 surcharge assurance and MSAG, Automatic Location Identification (ALI) and GIS data management.



## **Facility**

The PSAP is located at 20 Mockingbird Lane, Coudersport, PA 16915, in a single-story building. Though the County's 9-1-1 calls are handled by Tioga County, the Potter County PSAP maintains two combined console positions (call-taker and dispatch)—as well as radio, customer premises equipment (CPE) and a computer-aided dispatch (CAD) system—in order to function as a backup facility, in the event that the Tioga County PSAP is rendered inoperable or inaccessible.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is an InterAct InterActCAD solution that was installed in 2007. It is scheduled to be upgraded in 2016, in order to align with Tioga County's CAD system.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is a Zetron Max Call-Taking v1.2.4.1 that was installed in 2015.

## **Radio Systems**

The radio system is a hybrid consisting of Motorola, Tait and Kenwood equipment that was installed in 2007. Also available is an Alcatel Lucent MDR 8000 microwave system that connects to Tioga County; the system has three DS3 interfaces per hop (though only one currently is in use).

## **Radio Console System**

Zetron Max Dispatch consoles were installed in 2015

## **Facility Infrastructure**

The PSAP receives telephone service from Zito Media, although Verizon is the local exchange carrier. Fiber-optic connectivity is also available from Zito.

## **Power Systems**

### Uninterruptible Power Supply/ Backup Power

The PSAP is supported by an Eaton uninterruptible power supply (UPS) system, as well as a Generac 70-kilowatt (kW), propane-fueled generator that was installed in 2007. The UPS output is through automatic transfer switches (ATS). Both the UPS system and generator have ample growth potential.



## Equipment Rooms

The facility has computer and information technology (IT) rooms that use overhead cable trays. Several of the cabinets that are currently in use would easily support additional routers with fiber-optic termination jacks. Additional rack space also is available. Infrastructure wiring is mostly Category 6 with some Category 5E; it appears that wiring is installed for each application.

**Table 12: Potter County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>POTTER COUNTY</b>	8	17,635	1,081 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	No	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	N/A	N/A	N/A
<b>Number of Trunks</b>	1	1	0
<b>Primary Selective Routers</b>	Verizon (Scranton/Bloomsburg)		
<b>Customer Premises Equipment (CPE)</b>	Zetron Max Call-Taker (Installed: 2015)		
<b>Computer-Aided Dispatch (CAD)</b>	InterAct InterActCAD, v6.2.3.73 (Installed: 2007)		
<b>Logging Recording System</b>	Eventide NexLog 740, v2.5.4		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.2		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	None		

### 3.2.5. Sullivan County

#### Overview

Sullivan County is an Eighth Class County with a population of 6,437. The County covers approximately 450 square miles, and has nine townships and four boroughs within its boundaries, including the Borough of Laporte, which is the County seat.

The County's nine fire departments and seven emergency medical services (EMS) agencies are dispatched by Lycoming County.

In 2015, an average of nine 9-1-1 calls were placed in Sullivan County each day. Of these, 55 percent were wireline and 45 percent were wireless.

#### Considerations

Key factors affecting Sullivan County and its PSAP include the following:



- The County is very rural; it has forested areas and state game lands that attract a sizeable influx of hunters seasonally.
- The County hosts a famous winter toboggan run (in Eagles Mere) that attracts large numbers of tourists during the winter travel season.
- Two Large state parks—Worlds End and Ricketts Glen—attract large numbers of campers, especially in the summer months.
- The timber industry is a big employer in the area, and logging trucks are numerous on the County's roadways.

### **Staffing**

The PSAP has three management positions: a director, a 9-1-1 coordinator and an operations manager; all are on-call positions. The PSAP has no telecommunicators; consequently, management personnel would answer 9-1-1 calls if the Lycoming County becomes inoperable or inaccessible. Though there is no knowledge of it ever happening, if any of these staff were unable to answer the call it would be a problem, so the County is assessing the situation.

### **Facility**

The PSAP is located at 6864 Route 220, Laporte, PA 18626. It shares the facility with the County's emergency management agency/emergency operations center (EMA/EOC). The PSAP maintains radio, customer premises equipment (CPE), and computer-aided dispatch infrastructure—as well as two combined console positions (call-taker and dispatch)—in order to function as a backup facility in the event that Lycoming County's PSAP is rendered inoperable or inaccessible.

### **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is an InterAct solution that was installed in 2010. It has no scheduled upgrade date.

### **Customer Premises Equipment**

The CPE is a Cassidian (now Airbus) Sentinel Patriot that was installed in 2013. It has no scheduled upgrade date.

### **Radio Systems**

A Motorola Quantar system was installed in prior to 2010, but the exact date is unknown. The facility is served by a 180-foot tower located onsite. In addition to the radio antennas that are attached to the tower, there are two satellite antennas serving the building. One is a post-mounted dish while the other



is roof mounted; serving the Hughes Sevan and ComLabs EMNet connections to the facility, respectively.

## **Radio Console System**

Zetron 4000 Series consoles were installed prior to 2010, but the exact date is unknown.

## **Facility Infrastructure**

The main entrance facility is located in the furnace room, and houses the primary protectors for the service provider's copper entry cable. From this space, telephone circuits are distributed to all areas of the building.

The secondary entrance facility is between the radio equipment shelter and the server room. It is comprised of a 50-pair, 24 AWG (American Wire Gauge) telephone cable with primary protectors at the radio shelter and in the Server room.

## **Power Systems**

### Uninterruptible Power Supply

The server room has a single cabinet-mounted, 16 kilovolt amperes (kVA) APC Symetra LX UPS system, which was installed in 2008. It appears to power just the equipment in the server room. The UPS exhibited a 52-percent load and runtime of 38 minutes.

### Backup Power

The facility has a single Generac 50-kilowatt (kW) propane-powered generator located in the radio tower yard. The generator was installed in 2005. The automatic transfer switch (ATS) for the generator is located in the furnace room near the main power distribution panel.

## **Equipment Rooms**

The facility has two equipment rooms: the server room inside the building and a prefabricated, trailer-type radio equipment shelter.

### Server Room

The server room houses the County's network servers; administrative telephone and local-area network (LAN) equipment; and the building's environmental control system. Other noteworthy items include the following:

- There is no interior perimeter ground bus; CPE racks are grounded, but the bonding wire runs into the ceiling with no connection point visible.
- Power distribution is limited and appears to originate at the main power distribution panel in the furnace room.



- It houses two open racks; three equipment cabinets; and a wall-mount open rack.
- The server room has limited power distribution and the grounding system does not appear to comply with communications site grounding standards.
- There is no space for additional equipment racks or cabinets, though the server cabinet and wall-mount network rack could receive additional equipment.
- The router in the network rack has space for the addition of cards for connection to an external network.

Radio Equipment Shelter

The radio equipment shelter houses the radio systems equipment and transitions the radio signals to the building over a 50-pair telephone cable. Other noteworthy items include the following:

- It is a prefabricated trailer-type shelter with metal exterior skin.
- There is a master ground bus associated with the transmission line entry panel, as well as an interior perimeter ground bus.
- The equipment and supporting hardware appear to be grounded in accordance with communications site grounding standards.

**Table 13: Sullivan County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>SULLIVAN COUNTY</b>	8	6,437	450 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	No	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	1,779	1,431	0
<b>Number of Trunks</b>	3	2	0
<b>Primary Selective Routers</b>	Verizon (Scranton/Bloomsburg)		
<b>Customer Premises Equipment (CPE)</b>	Cassidian Sentinel Patriot (Installed: 2013)		
<b>Computer-Aided Dispatch (CAD)</b>	InterAct, v6.2.0.72 (Installed: 2010)		
<b>Logging Recording System</b>	Verint Audiolog, v3.2		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.1		
<b>Databases Maintained</b>	Addressing spreadsheet		
<b>Leased Equipment</b>	None		

**3.2.6. Tioga County**

**Overview**

Tioga County is a Sixth Class County with a population of 42,595. The County covers approximately 1,134 square miles, and has 29 townships and 10 boroughs within its boundaries, including the Borough of Wellsboro, which is the County seat.



The County's public safety answering point (PSAP) dispatches for 23 law enforcement agencies, 30 fire departments and 20 emergency medical services (EMS) agencies, and has a ringdown connection with Lycoming County.

Only six months of call data was available from the County in 2015. The PSAP handled an average of 56 9-1-1 calls each day during this period. Of these, 100 percent were wireline. Last year, 9-1-1 calls were answered within 10 seconds 96 percent of the time.

## **Considerations**

Key factors affecting Tioga County and its PSAP include the following:

- The PSAP provides call-taking and dispatch services for both Tioga and Potter counties.
- The County is home to the Pine Creek Gorge, which is known as the "Pennsylvania Grand Canyon." The 47-mile gorge is surrounded by the 160,000-acre Tioga State Park and is extremely popular with boaters, hikers, campers and fishing enthusiasts.
- The 62-mile Pine Creek Rail Trail, voted one of the top ten recreation trails in the U.S. by USA Today, also is located in the County.

## **Staffing**

The PSAP has two management positions: a 9-1-1 coordinator, and a quality assurance (QA) coordinator. There are no full-time supervisors. Fourteen full-time telecommunicators handle both call-taking and dispatching; they are supplemented by four part-time telecommunicators, who equate to two full-time equivalents (FTE).

## **Facility**

The PSAP is located at 118 Wells Street, Wellsboro, PA 16901, on the top floor of a two-story building. Access to the facility is controlled by a security system.

The 9-1-1 Center has seven combined console positions (call-taker and dispatcher). The 9-1-1 Center also has touchscreen monitors that allow telecommunicators to quickly access and expand Geographic Information System (GIS) data, if the workstation GIS does not provide enough detail.

The County does not have a backup facility.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is an InterAct Caliber solution that was installed in 2015.



## **Customer Premises Equipment**

The customer premises equipment (CPE) is a Zetron Max Call-Taking that was installed in 2015.

## **Radio Systems**

The radio system is a 23-site, 48-channel Motorola VHF system; the installation date is unknown.

In addition, an Alcatel Lucent MDR 8000 microwave system exists with three DS3 interfaces per hop; currently, only one of the DS3 interfaces is in use. The DS3s terminate in Alcatel Lucent 7705 SAR 8 routers that currently have three vacant card slots and 12 unused Ethernet ports.

## **Radio Console System**

The County is upgrading to Zetron AcomNOVUS consoles in 2016.

## **Facility Infrastructure**

The PSAP is served by a copper feed from Frontier, and by a fiber-optic feed from Blue Ridge Cable that extends to the County courthouse. The wireline entrance is non-diverse; however, a secondary route has been established via three microwave rings.

## **Power Systems**

### Uninterruptible Power Supply/Backup Power

The PSAP is supported by an Eaton 60 kilovolt amperes (kVA) uninterruptible power supply (UPS) system and was installed in 2015. Backup power for the facility is provided by a Generac 175 kilowatt (kW) generator that was installed in 2015. The UPS output is through automatic transfer switches (ATS). The UPS and generator have ample growth potential.

## **Equipment Rooms**

The facility has a radio equipment shelter, as well as computer and IT rooms. There is some rack space available. Also, several of the cabinets that are currently in use would easily support additional routers with fiber-optic ports. Wiring in the rooms is mostly Category 6 with some Category 5E; it appears that wiring is installed for each application.



**Table 14: Tioga County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>TIOGA COUNTY</b>	6	42,595	1,134 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	No	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	20,342	0	0
<b>Number of Trunks</b>	6	6	0
<b>Primary Selective Routers</b>	Verizon (Scranton/Bloomsburg)		
<b>Customer Premises Equipment (CPE)</b>	Zetron Max Call-Taking, v1.2.7.7 (Installed: 2015)		
<b>Computer-Aided Dispatch (CAD)</b>	InterAct Caliber, v10.3.4.1b463 (Installed: 2015)		
<b>Logging Recording System</b>	Verint Audiolog, v5.2.2		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.3		
<b>Databases Maintained</b>	Excel spreadsheet for box alarms, dog licenses database		
<b>Leased Equipment</b>	None		

### **3.2.7. Union County**

#### **Overview**

Union County is a Seventh Class County with a population of 45,021. The County covers approximately 316 square miles, and has 10 townships and four boroughs within its boundaries, including the Borough of Lewisburg, which is the County seat.

The County’s public safety answering point (PSAP) dispatches for 6 law enforcement agencies, 10 fire departments and 6 emergency medical services (EMS) agencies, and has ringdown connections with Evangelical Hospital, Lycoming County, the Pennsylvania State Police, and Bucknell University Public Safety.

The PSAP handled an average of 45 9-1-1 calls each day in 2015. Of these, 26 percent were wireline and 74 percent were wireless. The percentage of 9-1-1 calls that were answered within 10 seconds last year is unknown.

#### **Considerations**

Key factors affecting Union County and its PSAP include the following:

- The County is home to Bucknell University.
- Interstate 80 traverses the County, and is heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.



- A portion of the Bald Eagle State Forest is located in the County.
- The County's PSAP dispatches for a portion of adjacent Northumberland County.

## **Staffing**

The PSAP has one management position, a 9-1-1 coordinator. There are no full-time supervisors. Eleven full-time telecommunicators handle both call-taking and dispatching; they are supplemented by one part-time telecommunicator.

## **Facility**

The PSAP is located at 115 North 15<sup>th</sup> Street, Lewisburg PA, 17838, in the Government Center building. The PSAP shares the facility with numerous County departments including the Commissioners' offices.

The 9-1-1 Center has four combined console positions (call-taker and dispatcher). The County also maintains a backup facility with two combined console positions.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Harris (formerly InterAct) Caliber solution that was installed in 2014. The County is interested in exploring the possibility of a regional CAD solution.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Intrado Viper that was installed in 2007. It has an upgrade scheduled for 2016. The County embraces the notion of a regional CPE solution and is moving in that direction.

## **Radio Systems**

The radio system is a Motorola Project 25 (P25) system that was installed in 2012. A 180-foot, self-supporting tower is located adjacent to the facility.

There is a 100-foot tower on site which sits on the east side of the building, and is one of the main sites for the County. In addition, the tower has an 11 GHz microwave link to the State sites at Montour and Sand Mountain. There is a climate-controlled shelter for the tower site.

## **Radio Console System**

Motorola MCC 7500 Elite dispatch consoles were installed in 2012.



## **Facility Infrastructure**

The PSAP is served by copper feeds from Windstream and Verizon. In addition, it has a fiber line from PenTeleData.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported with by two Eaton 20 kilovolt amperes (kVA) model 9355 UPS units, which are located in the main equipment room. The UPS output is through a transfer switch, which also is in this room. The current load on unit 1 is 20.5 percent, and 22.5 percent on unit 2. They are covered by a maintenance contract with Eaton.

### Backup Power

Backup power to the facility is provided by a Kohler 250-kilowatt (kW) diesel generator that was installed in 2005. The generator powers the entire facility under a 40-percent load. The generator is located outside on the west end of the building and sits on a concrete pad. The generator is covered by a maintenance contract with Caterpillar.

## **Equipment Room**

Union County has one equipment room that supports the PSAP. It is located adjacent to the 9-1-1 Center, and houses all network, telephone and communications center/information technology (IT) resources. The equipment room has a grounding system in place, via a grounding bar, which appears to comply with communications site grounding standards.

The room is small and expansion would be difficult. However, one full rack is available due to the removal of some decommissioned equipment. Cisco 2960 switches are deployed and have 10+ available ports. Category 5 wiring is used throughout the building and to the PSAP.



**Table 15: Union County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>UNION COUNTY</b>	7	45,021	316 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	No	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	4,202	11,988	78
<b>Number of Trunks</b>	4	4	0
<b>Primary Selective Routers</b>	Windstream and Verizon (Scranton/Bloomsburg)		
<b>Customer Premises Equipment (CPE)</b>	Intrado Viper, Power 5.1 (SP2) (Installed: 2007)		
<b>Computer-Aided Dispatch (CAD)</b>	Harris (formerly InterAct) Caliber, v10.3.4.1b458 (Installed: 2014)		
<b>Logging Recording System</b>	Verint, Audiolog, v5		
<b>Geographic Information System (GIS)</b>	ESRI, ArcGIS, v10.3.1		
<b>Databases Maintained</b>	9IMS (Management Information System [MIS]), Special Needs, Automatic Location Identification (ALI), Master Street Address Guide (MSAG), Business		
<b>Leased Equipment</b>	None		

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### **3.3. NORTHEAST REGION**

#### **SUMMARY**

The eight counties and two cities comprising the Northeast region are located along the state's northern and eastern borders with the states of New York and New Jersey, from Susquehanna County east to the Delaware River and south to the Lehigh Valley. The counties' public safety answering points (PSAPs) and emergency management agencies have a long-established relationship of innovation and cooperation.

In 2012, they formed Northeastern Counties Regional Emergency Services Internet Protocol (IP) Network (ESInet), or NECORE. The NECORE group was first established as a means to exercise joint purchasing power among the members for PSAP equipment and services. NECORE has expanded its vision to include development of a regional ESInet to accommodate developing shared Next Generation 9-1-1 (NG9-1-1) systems and services.

The NECORE region consists of two cities (Bethlehem and Allentown) and 10 counties: Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Schuylkill, Susquehanna, Pike and Wayne. These cities and counties (excluding Luzerne and Schuylkill) form the Northeastern Regional Counter Terrorism Task Force, or NERCTTF.

The population of the Northeast counties (excluding Luzerne and Schuylkill, which PEMA includes among the East Central emergency management agencies) is 1,251,463. Currently the NECORE region does not have an established ESInet, but it does have robust regional microwave connectivity between most PSAPs, as well as some leased fiber line connections. Both are suggested as interim solutions for connectivity between PSAPs until an ESInet is developed. NECORE continues to develop a regional vision to identify common objectives, including networking, technology, standard operating procedures, cost distribution and development of a framework that will allow increased sharing of services across county and municipality boundaries within the region.

Only three of the PSAPs in NECORE currently have NG9-1-1-ready customer premises equipment (CPE) systems. The City of Allentown has an NG9-1-1-ready geo-diverse CPE solution that is sized to support up to 250 positions. It currently shares this with Northampton County and is eager to expand. Meanwhile, Pike County's CPE is similarly geo-diverse, capable of supporting additional regional PSAPs, and Lackawanna County's PSAP recently procured a new CPE system.

If a regional ESInet were to be established for NECORE, strong potential exists for regional sharing of other services, such as computer-aided dispatch (CAD) and Geographic Information System (GIS) data. Several members recently have procured, or are seriously investigating, an NG9-1-1 CAD product with the intention of sharing the system. However, NECORE currently lacks established governing authority, and as such works in an advisory capacity rather than as a governmental authority.



Each county and the two cities maintain a single consolidated PSAP, operating both emergency call-taking and comprehensive dispatch functions—each from a single site—for law enforcement, the fire service and emergency medical services (EMS). The 9-1-1 call volume of the 10 PSAPs in the Northeast region was 661,643 calls in 2015. On average, the regional PSAPs meet and exceed the Commonwealth’s mandate of answering 90 percent of all 9-1-1 calls within ten seconds. The 10 PSAPs dispatched 1,186,578 calls for service last year.

The region mirrors the entire state—large areas of rural farmland/mountainous landscape interspersed with suburban and urban areas, containing the third, seventh and eighth largest cities in the Commonwealth (Allentown, Scranton and Bethlehem). A robust network of limited access highways connects the entire region to the remainder of the state and the entire Atlantic Seaboard.

When the NERCTTF was organized, this region was not segmented by metropolitan areas or areas of commonality. For unknown reasons, the region was developed covering a very large geographic area. The distance from the southernmost part to the northernmost part of the region is more than 120 miles. This can create logistical issues that can slow the pace of regional progress. The grouping ignored similarities—e.g., Scranton, Wilkes-Barre and Hazleton comprise one metropolitan statistical area yet are in two different regions, and Berks County is in a different group despite sharing many similarities with the Lehigh Valley—but despite such issues, strong efforts are being made to develop commonalities.

This regional vision can lead to significant ability to improve the delivery of emergency services and decrease the financial investment toward overly redundant hardware and facilities. Currently, the region’s monthly recurring costs for system sustainment exceed \$113,000, excluding personnel costs. Continued deployment of NG9-1-1 services will provide many opportunities to invest recurring costs in emerging technology, which in turn will improve the capabilities and accessibility of the 9-1-1 system.

There are some challenges associated with regionality. For instance, many of the design and deployment phases for regional projects involve a sizable time investment, which taxes the available administrative staff from each PSAP. Additionally, considerable effort is needed to overcome disparities in technology, operational policies and procedures. NECORE continues to work toward a common goal of service improvement with cost reduction through cooperation. This ongoing commitment to the regional vision will yield continued successes.

### **3.3.1. Carbon County**

#### **Overview**

Carbon County is a Sixth Class County with a population of 65,016. The County covers approximately 381 square miles, and has 11 townships and 12 boroughs within its boundaries, including the Borough of Jim Thorpe, which is the County seat.



The County's public safety answering point (PSAP) dispatches for 13 law enforcement agencies, 21 fire departments and 12 emergency medical services (EMS) agencies, and has 15 ringdown connections.

The PSAP handled an average of 90 9-1-1 calls each day in 2015. Of these, 32 percent were wireline and 68 percent were wireless. Last year, 9-1-1 calls were answered within 10 seconds 96 percent of the time.

## **Considerations**

Key factors affecting Carbon County and its PSAP include the following:

- The County is very picturesque and has numerous activities that attract tourists in large numbers; it is not unusual for the County's population to increase ten-fold on weekends. It starts in the spring with whitewater rafting and ends in autumn with the viewing of fall colors.
- Football legend and Olympian Jim Thorpe is buried in the County, and his former home is located there.
- The Lehigh River Gorge is considered the "whitewater capital" of the state, with rapids ranging from Class 2 (mild) to Class 5 (strong); the result is emergency calls involving swift-water rescues and drownings.
- The Pocono Raceway, located in western Monroe County, has a decided effect on Carbon County and its PSAP, as it hosts NASCAR events twice each year that attract more than 120,000 racing enthusiasts each time they are held.
- The County also is home to several ski resorts, which generate emergency calls involving skiing accidents.

## **Staffing**

The PSAP has two management positions, including a director and an information technology (IT) manager. There are four full-time supervisors. In addition, seven full-time telecommunicators handle both call-taking and dispatching; they are supplemented by 10 part-time telecommunicators, who equate to seven full-time equivalents (FTE).

## **Facility**

The PSAP is located in a single story building at 1264 Emergency Lane, Nesquehoning, PA 18240. The PSAP is located on the same property as the County's correctional facility. The PSAP has a small training room.

The 9-1-1 Center has 11 combined console positions (call-taker and dispatcher). The County does not have a backup facility.



## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Tyler Technologies (formerly New World Systems) Aegis solution that was installed in 1994. It is scheduled to be upgraded in 2016. The County would be interested in a regional CAD-sharing arrangement with neighboring counties.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus (formerly Cassidian) Pallas Vesta v2.70 that was installed in 2004. It is also scheduled to be replaced in 2016. The County would be interested in a regional CPE-sharing arrangement with neighboring counties.

## **Radio Systems**

The radio system is a hybrid system consisting primarily of Motorola equipment with some Tait equipment, and operating on VHF high-band frequencies. It originally was installed in 1993 and upgraded in 1996; it was upgraded a second time prior to 2012 to bring the system into compliance with the Federal Communications Commission (FCC) narrowbanding requirements.

## **Radio Console System**

Motorola Gold Elite consoles are used; they will have to be replaced because they are approaching end-of-life.

## **Facility Infrastructure**

The PSAP is served by a Verizon 100-pair copper feed that extends from the County's correctional facility. A fiber-optic cable runs between the PSAP and the correctional facility for the sole purpose of "live scan" electronic fingerprint capture. Cable television (CATV) and Internet service are provided by Blue Ridge Cable.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported with an Eaton 9170 UPS system, rated at 18 kilovolt amperes (kVA), which located in the equipment room; it was installed in 2007. This system supports the PSAP with 35 minutes of runtime at current load. The system is maintained under contract by Eaton.

### Backup Power

Backup power to the PSAP is provided by a 100 kilowatt (kW) Generac propane-fueled generator. The generator is located inside the building's generator room and is covered by a maintenance contract with Mechanical Services, Inc. The generator was installed in 2004.



## Equipment Room

The equipment room is large, with equipment surrounding the exterior walls. Additional file cabinets and equipment fill the center of the room. The cabling is run overhead above a dropped ceiling.

The room does not appear to have many available power connections; consequently, additional connections would be required should any equipment be added. Network infrastructure consists of a Dell Power Connect 5448; approximately eight 10/100/1000-Base-TX unshielded twisted pair (UTP) ports are available, as are four slots for small form-factor pluggable (SFP) optical inserts for connection to an additional external network. The room has adequate grounding that appears to comply with communications site grounding standards.

Table 16: Carbon County at a Glance

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>CARBON COUNTY</b>	6	65,016	381 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	No	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	10,359	22,519	0
<b>Number of Trunks</b>	4	6	2
<b>Primary Selective Routers</b>	Verizon (Bloomsburg/Scranton)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Pallas Vesta, v2.7 (Installed: 2004)		
<b>Computer-Aided Dispatch (CAD)</b>	Tyler Technologies Aegis, vAS/400 (Installed: 1994)		
<b>Logging Recording System</b>	Nice NiceLog, v9.01		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.1		
<b>Databases Maintained</b>	9IMS (Management Information System [MIS]), RSAN, Card Reader Access		
<b>Leased Equipment</b>	None		

### 3.3.2. City of Allentown

#### Overview

The City of Allentown is located in Lehigh County and is the state's third most populous city with 118,577 residents. The City covers approximately 18 square miles.

The public safety answering point (PSAP) dispatches for the City's police department, fire department and emergency medical services (EMS) agency, as well as the parking and animal-control departments. The PSAP has ringdown connections with three neighboring PSAPs, an emergency operations center (EOC), and the Lehigh County Prison.



The PSAP handled an average of 262 9-1-1 calls each day in 2015. Of these, 18 percent were wireline and 82 percent were wireless. Last year, 9-1-1 calls were answered within 10 seconds 94 percent of the time.

## **Considerations**

Key factors affecting the City of Allentown and its PSAP include the following:

- The City's police department operates a 170-camera fixed video surveillance system that provides telecommunicators with footage that enhances situation awareness.
- The City is the center of commerce for the Lehigh Valley, and as such has a large business and industrial base, including numerous chemical-processing facilities.
- Even though it has only one-third of the County's population, the PSAP handles more emergency calls than the rest of the County combined.
- The County's largest medical center and telephone central office are located in the City.
- The Pennsylvania Turnpike and Interstate 78 traverse the City, and both are heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- There also is significant commuter traffic, which generates many wireless 9-1-1 calls.
- The city is home to minor-league baseball (Lehigh Valley IronPigs) and hockey (Lehigh Valley Phantoms) teams.

## **Staffing**

The PSAP has three management positions: a superintendent, a communications center operations manager, and a technical operations manager. There are five full-time supervisors. In addition, 24 full-time telecommunicators handle both call-taking and dispatching.

## **Facility**

The PSAP is located at 1304 Fairview Street, Allentown, PA, 18102, in an old fire station. The facility is small and there is no room for expansion. Nevertheless, it has a break area, offices, and a conference room that doubles as a training room with one combined console position.

The 9-1-1 Center has nine combined console positions (call-taker and dispatcher). The City also has a backup facility with five positions.



## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Public Safety Systems, Inc. (PSSI) Response that originally was installed in 1998, and has since been upgraded to v9.4. It has no scheduled future upgrade date.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus (formerly Cassidian) Vesta v4.0 that was installed in 2013. The geo-diverse system is connected to Northampton County, which enables each to serve as the other's backup facility.

## **Radio Systems**

The radio system is a Harris EDACS digital radio system that was installed in 2000. An existing capital project is in progress to fund a future migration to a Project 25 (P25) digital radio system.

## **Radio Console System**

Harris Maestro consoles are used. They originally were installed in 2000, and subsequently upgraded in 2010. Plans exist to upgrade or replace the consoles when the City moves to a P25 radio system.

## **Facility Infrastructure**

The PSAP is served by the following:

- Underground fiber – geo-diverse network
- Aerial fiber – geo-diverse network
- Underground fiber – City network
- Underground copper – legacy telephone
- Aerial coaxial – cable television (CATV) service

The entrance facility lacks a master ground bus or interior perimeter ground bus. This space is not grounded in accordance with communications site grounding standards.

## **Power Systems**

### Uninterruptible Power Supply

The facility is equipped with a Liebert NX system, installed in 2008, rated at 20 kilovolt amperes (kVA) and located in the equipment room. The UPS load at the time of the technical survey was as follows:

- Phase A: 66 percent
- Phase B: 51 percent



- Phase C: 40 percent

Backup Power

Backup power for the PSAP is provided by an 80 kilowatt (kW) Generac diesel powered generator and was installed in 2015.

**Equipment Room**

The equipment room is located on the first floor, adjacent to the 9-1-1 Center. The equipment room houses the radio system, CPE, voice recorder, VHF backup radio system and network equipment. The room has no space for additional cabinets or racks. However, the existing VHF radio rack has some space for additional equipment in order to connect an external network. In addition, the City’s network cabinet is being fit-out and may have some space for additional equipment once the system build-out is complete. Meanwhile, the existing network core/distribution switch does not have an open backbone port for connection of an external network.

The equipment room has a master ground bus and an interior perimeter ground system. However, the interior perimeter ground bus extends only halfway around the room, nearest the adjoining wall to the PSAP. The equipment and supporting hardware at this end of the room appear to be bonded to ground; however, the equipment and supporting hardware at the opposite end of the room are not bonded. The room is not grounded in accordance with communications site grounding standards.

**Table 17: City of Allentown at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>CITY OF ALLENTOWN</b>	N/A	118,577	18 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	Yes	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	17,499	78,216	0
<b>Number of Trunks</b>	8	8	0
<b>Primary Selective Routers</b>	Allentown/Bethlehem		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta v4.0 (Installed: 2013)		
<b>Computer-Aided Dispatch (CAD)</b>	PSSI Response v9.4 (Installed: 1998)		
<b>Logging Recording System</b>	Eventide NexLog, v2.4.4		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.4		
<b>Databases Maintained</b>	Electronic Roladex®		
<b>Leased Equipment</b>	None		



### **3.3.3. City of Bethlehem**

#### **Overview**

The City of Bethlehem is located in both Lehigh and Northampton counties and is the state's seventh most populous city with 75,018 residents. The City covers approximately 19 square miles.

The public safety answering point (PSAP) dispatches for the City's police department, fire department and emergency medical services (EMS) agency. The PSAP has ringdown connections with Lehigh and Northampton counties, as well as the adjacent City of Allentown.

The PSAP handled an average of 124 9-1-1 calls each day in 2015. Of these, 30 percent were wireline, 68 percent were wireless, 1 percent was voice over Internet Protocol (VoIP) and 1 percent was multi-line telephone system (MLTS). Last year, 9-1-1 calls were answered within 10 seconds 98 percent of the time.

#### **Considerations**

Key factors affecting the City of Bethlehem and its PSAP include the following:

- The City hosts the 10-day Muzikfest, a music festival held each August that is held at 10 different venues; the festival attracts nationally known talent and draws more than a million attendees.
- Also popular is the annual SouthSide Film Festival.
- Interstate 78 crosses the City's southern section and is heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- The City is home to Lehigh University and Moravian College.
- The Sands Casino and Resort also is located in the City; it is the state's largest casino.
- The Lehigh Canal is popular with cyclists and hikers.
- Steel Stacks is a 10-acre campus built in the shadows of the former Bethlehem Steel blast furnaces; it offers art, films, music and educational events year round, and is a popular tourist attraction.

#### **Staffing**

The PSAP has three management positions: a public safety technical specialist, a communications supervisor, and a quality assurance (QA) supervisor. In addition, a police department captain serves as the 9-1-1 director. There are four full-time 9-1-1 Center supervisors. In addition, 24 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by six part-time telecommunicators who equate to four fulltime equivalents (FTEs).



## **Facility**

The PSAP is located at 10 East Church Street, Bethlehem, PA 18018, on the ground floor of the City's administration building. The facility has a break room, kitchen, conference and training rooms, and plentiful office space.

The 9-1-1 Center has seven combined console positions (call-taker and dispatcher). The City also has a backup facility with five positions.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Tyler Technologies (formerly New World Systems) Enterprise v11.4 that was installed in 2015 as part of a regional-sharing initiative with Carbon, Lackawanna, Wayne and Monroe counties.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus (formerly Cassidian) Vesta Pallas v4.0 that was installed in 2005. It is scheduled to be replaced in 2016. The County is in the process of joining a shared CPE solution with the City of Allentown and Northampton and Lehigh counties.

## **Radio Systems**

The radio system is a Motorola Astro Project 25 (P25) 800 MHz trunking system that was installed in 2014.

## **Radio Console System**

Motorola MCC 7500 consoles are used. They were installed in 2014.

## **Facility Infrastructure**

The PSAP is served by redundant connections and multiple services from Verizon, RCN, Service Electric and PennTeleData, as well as by redundant and diverse fiber connections in anticipation of connection to an Emergency Services Internet Protocol (IP) Network (ESInet).

The entrance facilities are located in the ground floor telephone/radio room. This room has a master ground bus and interior perimeter ground bus. Primary entrance protectors for the incoming telephone cables are grounded. There is no antenna tower associated with this facility, and no coaxial or waveguide entrance cables were noted.



## **Power Systems**

### Uninterruptible Power Supply

Each of the three equipment rooms has a UPS system, installed in 2008, that provides backup/transition power in addition to the facility generator. The UPS systems are:

- Computer Room
  - Eaton 9170+
  - Percent full load: 28 percent
  - Runtime: 29 minutes
- Telephone/Radio Room
  - Eaton 9170+
  - Percent full load: 23 percent
  - Runtime: 37 minutes
- PSAP Equipment Room
  - Eaton 9170+ (with additional battery cabinet)
  - Percent full load: 52 percent
  - Runtime: 42 minutes

### Backup Power

Backup power to the PSAP is provided by a 230 kilowatt (kW) Kohler diesel-powered generator. The installation date is unknown.

## **Equipment Room**

The facility has three equipment rooms: a computer room, a telephone/radio room, and a PSAP equipment room.

### Computer Room

The Computer room is located on the first floor, immediately above the 9-1-1 Center. It houses the PSAP network equipment, virtual servers, legacy servers and electronic surveillance equipment. There is space for additional cabinets or racks for additional equipment. There also is space in each of the existing cabinets for installation of the existing network core and distribution equipment (currently mounted on a storage shelf), as well as additional equipment for connection to an external network. However, there are no available ports to connect another external network.

There is no master ground bus or interior perimeter ground system. Equipment and supporting hardware in this room are not bonded to a technical ground system.

### Telephone / Radio Room

The telephone/radio room houses the legacy telephone facilities, CPE, voice recorder system, radio system equipment, and uninterruptible power supply (UPS) system, as well as network distribution and



redundant WAN connections. There is little space in this room for additional equipment cabinets or racks. While there is room in the voice recorder racks for adding equipment, there is no room for additional equipment in the wall-mount network rack, and no ports are available for the connection of an additional external network.

The equipment and cabinets in the room appear to be bonded to the grounding system. Grounding of the equipment and supporting hardware appears to meet communications site grounding standards.

PSAP Equipment Room

The PSAP equipment room houses radio, consolette, and radio signal cross-connect and distribution equipment. Neither the room nor the existing racks have room for additional equipment.

The equipment racks and cabinets are grounded; however, the grounding system does not appear to meet the requirements of communications site grounding standards.

**Table 18: City of Bethlehem at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>CITY OF BETHLEHEM</b>	N/A	75,018	19 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	Yes	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	13,655	30,456	406
<b>Number of Trunks</b>	6	6	2
<b>Primary Selective Routers</b>	Allentown/Bethlehem		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta Pallas, v4.0 (Installed: 2005)		
<b>Computer-Aided Dispatch (CAD)</b>	Tyler Technologies Enterprise, v11.4 (Installed: 2015)		
<b>Logging Recording System</b>	Nice Inform		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.4		
<b>Databases Maintained</b>	RSAN, 9IMS (Management Information System [MIS])		
<b>Leased Equipment</b>	None		

**3.3.4. Lackawanna County**

**Overview**

Lackawanna County is a Third Class County with a population of 214,437. The County covers approximately 465 square miles, and has 21 townships and 17 boroughs within its boundaries, including the cities of Carbondale and Scranton, which is the County seat.



The County's public safety answering point dispatches for 29 law enforcement agencies, 25 fire departments and 25 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police, neighboring PSAPs and three hospitals.

The PSAP handled an average of 431 calls each day in 2015. Of these, 22 percent were wireline, 71 percent were wireless and 7 percent were voice over Internet Protocol (VoIP). In addition, 269 text-to-9-1-1 calls were answered. Last year, 9-1-1 calls were answered within 10 seconds 84 percent of the time.

## **Considerations**

Key factors affecting Lackawanna County and its PSAP include the following:

- The County, particularly the City of Scranton has tourist activity (most notably Steamtown National Historic Site and Nay Aug Park) that generates a sizeable influx of visitors, particularly in the summer months.
- The County also is home to Montage Mountain, located nine miles from Scranton, which is a popular ski resort in the winter, and home to numerous concerts and festivals the rest of the year.
- In addition, Scranton, at PNC Field, is home to a minor league baseball team (Scranton/Wilkes-Barre RailRiders).
- The County also has two popular railroad and coal mining museums.
- Interstates 380, 81 and 84, the Northeast Extension of the Pennsylvania Turnpike (I-476) that terminates at Clark Summit, as well as state routes 11, 106, 107, 247, 307, 347, 502, 690, and U.S. 6, all traverse the County and are heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- In addition, there is freight rail traffic through the County, which creates situations similar to those created by commercial trucking.
- The County also shares a regional airport with Luzerne County.
- The County's PSAP serves as an after-hours answering center for the Pennsylvania Department of Transportation (PennDOT), primarily for weather-related events. They also monitor the rape hotline within the Lackawanna County Prison in accordance with the Prison Rape Elimination Act (PREA).

## **Staffing**

The facility has three management positions: a director of emergency services, a deputy director and a quality assurance (QA) manager. There are 12 full-time supervisors. In addition, 23 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by nine part-time telecommunicators, who equate to six full-time equivalents (FTE).



## **Facility**

The PSAP is located at 38 Valley View Business Park, Jessup, PA 18434. The PSAP shares the facility with the County's emergency management agency (EMA). The facility has two conference rooms, a kitchen/break room, a small exercise room, and a training room located adjacent to the 9-1-1 Center, with telecommunicator consoles that are used to handle overflow call volume.

The 9-1-1 Center has 24 combined console positions (call-taker and dispatcher), and the County currently is adding two more. The County also has a backup facility located in Scranton that needs upgrades in order to be serviceable.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Tyler Technologies (formerly New World Systems) Aegis/MSP installed in 1994, and upgraded to version 10.1 in 2008. The system is scheduled to be replaced in 2016. The County currently is considering a regional sharing initiative that would involve Carbon County and the City of Bethlehem—both of which are using Tyler Technologies (New World Systems) CAD systems—as well as Monroe, Lehigh and Northampton counties, and the City of Allentown.

## **Customer Premises Equipment**

The customer premises equipment (CPE) in the facility is a geo-diverse Intrado Viper system installed in late 2014 to replace a legacy system that had reached end-of-life. The system is capable of processing text-to-9-1-1 calls and the PSAP is handling such calls today. However, the County has identified concerns with the reports generated by the management information system (MIS) component of the platform; there historically have been statistical inaccuracies and it was reported that there is currently an inability to format the reports in the manner that the County requires for its operations.

## **Radio Systems**

The radio system is a Motorola VHF/UHF conventional system that has some simulcast capability. The 20 tower sites currently are being upgraded with new base stations. In addition, the County is moving away from leased T1 lines to a County-owned broadband network, or leased fiber-optic cables, for backhaul purposes.

There is a tower onsite, and the equipment room connects directly to the radio tower through a traditional antenna port.



## **Radio Console System**

The County is upgrading its legacy Zetron AcomEVO telecommunicator consoles to Motorola MCC 7500 consoles; the migration is expected to be complete by the end of the first quarter of 2016.

## **Facility Infrastructure**

The PSAP is served by geo-diverse fiber-optic cable feeds from Verizon and Frontier. In addition, a 300-pair copper backbone cable from Verizon terminates in the equipment room. Comcast provides Internet and cable television (CATV) service.

## **Power Systems**

The PSAP is supported with two uninterruptible power supply (UPS) systems. They are Eaton, model #9390, 160 kVA UPS with battery cabinets, located in an electrical room. This system was installed in 2007. This UPS system supports the equipment room's equipment and information technology (IT) loads, and those of the 9-1-1 Center. The UPS systems have a runtime of 1.5 hours at full load. The systems are maintained by Eaton under contract.

## **Backup Power**

Backup power to the PSAP is provided by two 650 kW Generac diesel generators, each with a 1,400-gallon fuel tank, and a shared 8,000-gallon fuel tank. The generators are covered by a maintenance contract with McClure/Modern Group, and were installed in 2007. It is estimated that the generator system can run for one week with the fuel on hand.

## **Equipment Room**

There is a raised floor in the equipment room and 9-1-1 Center, with a cable tray under the floor for distribution. The equipment room also has an overhead cable runway above the cabinets. There is ample space in the cable runway and tray for additional cabling.

Network infrastructure is supported by the County's IT department, and was installed in 2007. Core network equipment is a Cisco Catalyst 4510. There is a spare 10-Gbps fiber-optic port, and available small form-factor pluggable (SFP) ports. The Cisco 4510 also has significant additional (approximately 100) Layer 2 port capacity. There are available ports also on the CPE, CAD and audiovisual (A/V) networks.

There is space available in existing racks, and capacity available for several additional racks, with ample power connections. Additionally, the equipment room grounding appears to comply with communications site grounding standards, and has an ample overhead cable runway.



**Table 19: Lackawanna County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>LACKAWANNA COUNTY</b>	3	214,437	465 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	No	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	34,306	111,640	11,191
<b>Number of Trunks</b>	18	10	2
<b>Primary Selective Routers</b>	Verizon (Bloomsburg/Scranton)		
<b>Customer Premises Equipment (CPE)</b>	Intrado Viper (Installed: 2014)		
<b>Computer-Aided Dispatch (CAD)</b>	Tyler Technologies (formerly New World Systems) Aegis, v10.1 (Installed: 2008)		
<b>Logging Recording System</b>	Nice Inform, v7.1		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.1		
<b>Databases Maintained</b>	RSAN, IAR, building security		
<b>Leased Equipment</b>	CAD system; lease expires in 2016		

### 3.3.5. Lehigh County

#### Overview

Lehigh County is a Third Class County with a population of 354,746. The County covers approximately 345 square miles, and has 15 townships and 8 boroughs within its boundaries, plus the cities of Bethlehem and Allentown, which is the County seat.

The County’s public safety answering point (PSAP) dispatches for 17 law enforcement agencies, 37 fire departments and 10 emergency medical services (EMS) agencies. Although geographically within the County, the PSAP does not dispatch for Bethlehem or Allentown, which operate their own PSAPs.

The PSAP handled an average of 245 9-1-1 calls each day in 2015. Of these, 20 percent were wireline, 78 percent were wireless, 1 percent was voice over Internet Protocol (VoIP) and 1 percent was multi-line telephone system (MLTS). Last year, 9-1-1 calls were answered within 10 seconds 88.8 percent of the time.

#### Considerations

Key factors affecting Lehigh County and its PSAP include the following:

- The state’s third- and seventh-largest cities—Allentown and Bethlehem—are located in the County, which generates numerous mutual-aid response incidents.



- Telecommunicators are trained to provide dispatch services from the County's Special Weapons and Tactics (SWAT) mobile incident command unit.
- The PSAP is the secondary monitoring point for the Lehigh Valley Health Network; specifically, they monitor sensor systems that detect radiological leakage from the hospital's gamma knives, which are used during radiosurgery brain procedures.
- The County supports its telecommunicators by maintaining an incident stress debriefing team.
- Interstate 78 traverses the County, as does U.S. 22 and 222; all are heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.

## **Staffing**

The PSAP has three management positions: a 9-1-1 director, a training/operations coordinator, and a 9-1-1 radio/computer-aided dispatch (CAD) coordinator. There are five full-time supervisors. In addition, 26 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by six part-time telecommunicators, who equate to four full-time equivalents (FTE).

## **Facility**

The PSAP is located on the tenth floor of a County-owned building at 640 West Hamilton Street, Allentown, PA 18101.

The 9-1-1 Center has 16 combined console positions (call-taker and dispatcher). The County also has a backup facility with eight positions.

## **Computer-Aided Dispatch**

The CAD system is a Motorola Printrak Premier solution that was installed in 2003. It is scheduled to be upgraded in 2016.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Meridian solution that was installed in 2009. It is scheduled to be replaced in 2016.

## **Radio Systems**

The radio system is a hybrid Motorola/Tait VHF analog system that was upgraded prior 2012 to comply with the Federal Communications Commission (FCC) narrowbanding mandate.



Antennas are attached to the roof, and connect to the equipment room through an antenna port.

### **Radio Console System**

Zetron AcomEVO consoles were installed in 2009. Currently there are no upgrade plans.

### **Facility Infrastructure**

The PSAP is served by fiber-optic and copper cable feeds from Verizon, as well as a subscriber line interface circuit (SLIC). Service Electric provides cable television (CATV) service to the facility.

### **Power Systems**

#### Uninterruptible Power Supply

The UPS system is an Eaton model 9390-80 with battery cabinets, rated for 60 kilovolt amperes (kVA) and located in the equipment room. The system supports the 9-1-1 Center and the equipment room, and a circuit is extended to the basement to support the Verizon SLIC. This system was installed in 2009, and it has a runtime of 3.4 hours at current load. The system is maintained under contract by Core Power.

#### Backup Power

Backup power to the PSAP is provided from two 150 kilowatt (kW) Generac natural gas-fueled generators. There are redundant fuel feeds to the facility, to protect against a possible break in the delivery system. The generators are located in a sub-basement area inside the building. The generator, which was installed in 2009, is covered by a maintenance contract with Crowder Jr. Company.

### **Equipment Room**

The equipment room is on the west side of the building, on the ninth floor. The room has an ample overhead cable tray for distribution. Network infrastructure is supported by the County's information technology (IT) Department, and was installed in 2009; Tier II support is provided by TuWay Communications. Core network equipment is a series of Cisco Catalyst 2960G stacks. There are spare small form-factor pluggable (SFP) ports available for connection of an external network. The Catalyst 2960G stacks also have additional port capacity (approximately 20); however, they are set up in virtual local area networks (VLANs) by port ranges, and would need to be reconfigured to support different applications.

There is space available in existing racks, and capacity available for a few additional racks, with ample power connections.

The equipment room has a grounding system that appears to comply with communications site grounding standards.



**Table 20: Lehigh County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>LEHIGH COUNTY</b>	3	354,746	345 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	No	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	17,702	69,795	1,173
<b>Number of Trunks</b>	8	8	2
<b>Primary Selective Routers</b>	Verizon (Allentown/Bethlehem)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Meridian (Installed: 2009)		
<b>Computer-Aided Dispatch (CAD)</b>	Motorola Printrak Premier, v6.6.8.59.1 (Installed: 2003)		
<b>Logging Recording System</b>	Nice NL-2000, Scenario Replay		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v9.3		
<b>Databases Maintained</b>	Text Paging, Intranet for SOPs, PD, etc., Auto Card Access System, RSAN, 9IMS (Management Information System [MIS])		
<b>Leased Equipment</b>	None		

### 3.3.6. Monroe County

#### Overview

Monroe County is a Fourth Class County with a population of 168,436. The County covers approximately 608 square miles, and has 16 townships and 4 boroughs within its boundaries, including the Borough of Stroudsburg, which is the County seat.

The County’s public safety answering point (PSAP) dispatches for 12 law enforcement agencies, 22 fire departments and 10 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police and neighboring counties.

The PSAP handled an average of 250 9-1-1 calls each day in 2015. Of these, 18 percent were wireline, 78 percent were wireless and 2 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 97 percent of the time.

#### Considerations

Key factors affecting Monroe County and its PSAP include the following:

- The County does not operate its PSAP; rather, it is operated jointly by the boroughs of Stroudsburg and East Stroudsburg.



- The County is in the heart of the Pocono Mountains, which is a very popular tourist destination.
- The Pocono Raceway hosts two NASCAR events each year, with each attracting more than 100,000 racing fans.
- The County is home to numerous other tourist attractions, including the Mount Airy casino, three massive waterpark hotels, 20 ski resorts, and the Delaware Water Gap, which is a national recreational area that attracts enormous numbers of canoeing, rafting and fishing enthusiasts.
- Interstate 80 traverses the County, and it is heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.

## **Staffing**

The PSAP has nine management positions, including: a director, deputy director, 9-1-1 operations supervisor, information technology (IT) manager, fiscal administrator, training coordinator, quality assurance (QA) coordinator, addressing coordinator, and a project assistant. There are seven full-time supervisors. In addition, 23 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by one part-time telecommunicator.

## **Facility**

The PSAP is located at 100 Gypsum Road, Suite 201, Stroudsburg, PA 18360, on the second floor of a County-owned building on the grounds of the fire training center. The PSAP shares the facility with the County's emergency management agency (EMA). There are break and training rooms; the latter is adjacent to the 9-1-1 Center and is large enough to accommodate up to eight console positions.

The 9-1-1 Center has 18 combined console positions (call-taker and dispatcher). The County also has a backup facility with 10 positions.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Public Safety Systems, Inc. (PSSI) Response solution that was installed in 2007. It currently has no scheduled upgrade date. However, the County is interested in a regionally shared CAD system and has had discussions with neighboring counties.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Sentinel that was installed in 2015.



## **Radio Systems**

The radio system is a Tait/Motorola hybrid system that is approximately 10 years old; the County is considering replacement options. A radio tower is onsite.

## **Radio Console System**

Zetron AcomEVO consoles were installed in 2015.

## **Facility Infrastructure**

The PSAP is served by fiber-optic and copper feeds from Frontier. PennTeleData provides an additional dark fiber connection to its Stroudsburg site.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported with an American Power Conversion (a unit of Schneider Electric) UPS system with four expansion battery cabinets. It is rated for 40 kilovolt amperes (kVA) and was installed in 2001. The system provides a runtime of 2 hours, 19 minutes at current load. The system is maintained under contract by Schneider Electric.

### Backup Power

Backup power to the PSAP is provided from a 200 kilowatt (kW) Cummins diesel generator fueled by a 100-gallon fuel tank that is supplemented by a 5,000-gallon underground external fuel tank. The generator is located inside the building's mechanical room, was installed in 2000, and is covered by a maintenance contract.

## **Equipment Room**

The equipment room houses the PSAP's various infrastructure, as well as its microwave and radio equipment. It has an ample overhead cable runway. The network infrastructure is supported by Hewlett-Packard, with tier 2 support provided by Integra Business Systems. Cisco 2900 series switches are deployed with many available ports. A communications cabinet at the network core is empty and available for additional equipment with power and grounding.

The room has a grounding system that appears to comply with communications site grounding standards.



**Table 21: Monroe County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>MONROE COUNTY</b>	4	168,436	608 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	No	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	16,302	71,299	2,085
<b>Number of Trunks</b>	7	8	3
<b>Primary Selective Routers</b>	Verizon (Bloomsburg/Scranton)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Sentinel (Installed: 2015)		
<b>Computer-Aided Dispatch (CAD)</b>	PSSI Response, v2.79.0 (Installed: 2007)		
<b>Logging Recording System</b>	Eventide NexLog 840, v2.1.3		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.1		
<b>Databases Maintained</b>	RSAN, 9IMS (Management Information System [MIS]), Warrant Databases		
<b>Leased Equipment</b>	All IT Computers (HP); 4-year leases (10/16)		

### **3.3.7. Northampton County**

#### **Overview**

Northampton County is a Third Class County with a population of 299,371. The County covers approximately 370 square miles, and has 17 townships and 19 boroughs within its boundaries, plus the cities of Bethlehem and Easton, which is the County seat.

The County’s public safety answering point (PSAP) dispatches for 30 law enforcement agencies, 43 fire departments and 15 emergency medical services (EMS) agencies, and has four ringdown connections.

The PSAP handled an average of 270 9-1-1 calls each day in 2015. Of these, 35 percent were wireline, 64 percent were wireless and less than 1 percent was voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 97 percent of the time.

#### **Considerations**

Key factors affecting Northampton County and its PSAP include the following:

- The PSAP does not dispatch for the City of Bethlehem, which has its own PSAP.
- The County borders the State of New Jersey, which results in numerous interstate mutual-aid response incidents.
- Interstate 78 cuts across the southern portion of the county, while state route 33 is the main north-south highway that connects I-78 and I-80. Both I-78 and Rt. 33 are heavily traveled.



There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.

- The County is part of the Lehigh Valley, which has a large industrial base; Northampton County is known for its numerous cement manufacturing facilities.
- There also is considerable freight rail activity in the County, which generates challenges similar to those of commercial trucking.

## **Staffing**

The PSAP has six management positions: director, deputy 9-1-1 director, deputy director of systems management, operation/training manager, quality assurance (QA) manager and system management manager. There are six full-time supervisors. In addition, 44 full-time telecommunicators handle both call-taking and dispatching.

## **Facility**

The PSAP is located at 100 Gracedale Avenue, Nazareth, PA 18064, in a single-story County-owned facility. The PSAP shares the facility with the County's emergency management agency (EMA); the property is shared with a helicopter hangar/life-flight service associated with St. Luke's hospital. The facility has a breakroom/kitchen, a locker room and a training room that has computers and consoles.

The 9-1-1 Center has 14 combined console positions (call-taker and dispatcher). The County also has a backup facility with seven positions.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is an InterAct solution that was installed in 2003. It currently has no scheduled upgrade date.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v4.3 that was installed in 2015.

## **Radio Systems**

The radio system is a Harris Master III system. The installation date is unknown. It currently has no scheduled upgrade date.

A 140-foot antenna tower and a radio equipment shelter, which houses a backup radio system, also are onsite.



## **Radio Console System**

ModUcom v10 consoles are used. The installation date is unknown. It currently has no scheduled upgrade date.

## **Facility Infrastructure**

The PSAP is served by a 200-pair copper cable and multiple fiber-optic cables. Thirteen conduits exist in the telecommunications/data room; three of the conduits are empty, and space is available in several of the used conduits.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is served by an enterprise UPS system located in a separate electrical distribution room. The Eaton PowerWare 9315 system exhibited a 20 kilovolt amperes (kVA) load and 17 minute runtime during the technical survey.

### Backup Power

The facility has a 200 kilowatt (kW) backup generator located outside the facility. The County is planning to augment this generator with an external connection and a portable 135 kW generator.

## **Equipment Rooms**

The PSAP has three equipment rooms: a telecommunications/data room, a PSAP equipment room, and a radio equipment shelter.

### Telecommunications/Data Room

This room houses the service provider entrance facilities, primary radio equipment, audiovisual (A/V) equipment, 9-1-1 and service provider CPE, network distribution equipment, servers, two computer room air-handlers (CRAH) served by rooftop units, 28 equipment racks and cabinets, and overhead cable trays.

The telecommunications/data room has space for a few new equipment racks or cabinets in its current configuration. Additional space will be gained as the legacy CPE, telephone, network and radio systems equipment is decommissioned. The existing core and router rack has space for additional router equipment for connection of external networks. The existing network equipment does not have ports available for the connection of external networks.

This room has a master ground bus and an interior perimeter ground bus (IPGB). A majority of the equipment and supporting hardware for the radio system appears to be grounded; however, the radio equipment racks are bonded in series, which does not meet communications site grounding standards.



The service provider CPE equipment and racks are grounded; however, the network equipment and distribution racks are not all grounded.

PSAP Equipment Room

This room houses Verizon CPE, the legacy Nortel administrative and 9-1-1 CPE system (to be decommissioned), the shared services IP telephone and 9-1-1 CPE system (the Side B CPE server is located in Northampton County, with Side A located in the City of Allentown), a quality assurance (QA) server and voice recording system, phone and CAD system servers, network equipment, cable television (CATV) and Internet services, a network alarm system, and A/V equipment.

Radio Equipment Shelter

The room is a prefabricated concrete shelter that houses backup radio systems equipment for the facility. It has an overhead cable tray and a 12 port transmission line entry panel, three of which are open. The equipment and cabinets in the room appear to be bonded to the grounding system; however, the conduits and raceways are not bonded to the IPGB. Grounding in this room does not meet communications site grounding standards.

**Table 22: Northampton County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>NORTHAMPTON COUNTY</b>	3	299,371	370 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	No	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	34,588	63,606	426
<b>Number of Trunks</b>	12	12	0
<b>Primary Selective Routers</b>	Verizon (Allentown/Bethlehem)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta 4.3 (Installed: 2015)		
<b>Computer-Aided Dispatch (CAD)</b>	InterAct, v6.2.3.78C (Installed: 2003)		
<b>Logging Recording System</b>	Nice		
<b>Geographic Information System (GIS)</b>	InterAct (integrated with CAD)		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	CAD Equipment Lease Expires in 2016		

**3.3.8. Pike County**

**Overview**

Pike County is a Sixth Class County with a population of 56,782. The County covers approximately 545 square miles, and has 11 townships and two boroughs within its boundaries, including the Borough of Milford, which is the County seat.



The County's public safety answering point (PSAP) dispatches for 7 law enforcement agencies, 18 fire departments and 15 emergency medical services (EMS) agencies; it has no ringdown connections.

The PSAP handled an average of 67 9-1-1 calls each day in 2015. Of these, 19 percent were wireline, 78 percent were wireless and 3 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 98 percent of the time.

## **Considerations**

Key factors affecting Pike County and its PSAP include the following:

- The County borders New York State; because of the topology, several cellular towers that serve the County are located in New York, which cause challenges for telecommunicators in terms of locating emergency callers, because Automatic Number Identification (ANI) and Automatic Location Information (ALI) data cannot be transferred across the state boundary.
- The County borders New York and New Jersey, which results in frequent interstate mutual-aid emergency response incidents.
- A very high percentage of County residents commute to New York City for work; this creates challenges when emergency calls involve minors, because the parents are not always available.
- The County has numerous private communities that have their own police and fire/EMS agencies, which creates challenges in terms of coordinating emergency response.
- The County's population grows significantly on weekends because of the large influx of New Yorkers who own weekend homes.
- Lake Wallenpaupack forms part of the border with Wayne County and is very popular with recreational boaters and jet-skiers, which leads to numerous mutual-aid responses involving boating accidents and drownings.
- The County is very rural, and has numerous state parks, game lands, lakes and ski resorts that also are popular tourist destinations.
- Part of the Delaware Water Gap national recreational area and the Delaware State Forest are located in the County.
- Interstate 84 cuts across the center of the County, and is heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.

## **Staffing**

The PSAP has two management positions, a director and an administrative assistant. There are three full-time supervisors. In addition, 11 full-time telecommunicators handle both call-taking and dispatching.



## **Facility**

The PSAP is located at 135 Pike County Blvd., Lords Valley, PA 18428, on the third floor of a three-floor fire training facility located within a County-owned campus. The facility has a break room/kitchen, a large conference room and a training room.

The 9-1-1 Center has seven combined console positions (call-taker and dispatcher). The County also has a backup facility with three positions. In addition, the County is in the process of networking Wayne County as a remote PSAP; all 9-1-1 trunking will terminate at the Pike County courthouse or the PSAP.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is an EmergiTech (formerly Cimbrion) Forge CAD solution that was installed in 2009. It currently has no scheduled upgrade date.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is a geo-diverse Solacom Guardian v12.2 that was installed in 2012. It currently has no scheduled upgrade date.

## **Radio Systems**

The radio system is a Motorola Quantar system. The installation date is unknown. Currently, no upgrade or replacement plans exist. A 265-foot tower is located at the facility; it connects to the building via fiber-optic and copper feeds.

## **Radio Console System**

Motorola MCC 7500 consoles are used; they were installed in 2012. Currently, no upgrade or replacement plans exist.

## **Facility Infrastructure**

The PSAP is served by copper and fiber facilities. The latter consists of dual diverse-routed 1 Gbps fiber-optic cables from Blue Ridge, as well as a 100 Mbps fiber connection with Wayne County that is backed up by a 360 Mbps microwave connection. The facility's wiring is Category 6.

## **Power Systems**

The PSAP is supported by an Eaton 100 kilovolt amperes (kVA) uninterruptible power supply (UPS) system that was installed in 2012. The UPS output is through automatic transfer switches (ATS). The UPS system has ample growth potential, exhibiting 35 percent utilization the day of the technical



survey. The backup power to the PSAP is provided by two 350 kilowatt (kW) Cummins Onan diesel generators installed in 2012. The generators are fed by an 8,000-gallon fuel tank.

### Equipment Rooms

The PSAP has a computer and information technology (IT) room that is expandable by at least 6 cabinets. Several of the cabinets that are currently in use easily would support additional routers with fiber-optic ports for connection of additional external networks.

**Table 23: Pike County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>PIKE COUNTY</b>	6	56,782	545 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	No	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	4,631	19,008	711
<b>Number of Trunks</b>	6	8	0
<b>Primary Selective Routers</b>	Verizon (Bloomsburg/Scranton)		
<b>Customer Premises Equipment (CPE)</b>	Solacom Guardian, v12.2 (Installed: 2012)		
<b>Computer-Aided Dispatch (CAD)</b>	EmergiTech Forge CAD, v2012.1 (Installed: 2009)		
<b>Logging Recording System</b>	HigherGround Guardian		
<b>Geographic Information System (GIS)</b>	microDATA/Esri ArcGIS, v10.3		
<b>Databases Maintained</b>	RSAN, Alpha 4		
<b>Leased Equipment</b>	None		

### 3.3.9. Susquehanna County

#### Overview

Susquehanna County is a Sixth Class County with a population of 42,683. The County covers approximately 823 square miles, and has 27 townships and 13 boroughs within its boundaries, including the Borough of Montrose, which is the County seat.

The County's public safety answering point (PSAP) dispatches for 7 law enforcement agencies, 18 fire departments and 15 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police and surrounding counties.

The PSAP handled an average of 35 9-1-1 calls each day in 2015. Of these, 22 percent were wireline, 72 percent were wireless and 6 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 91 percent of the time.



## **Considerations**

Key factors affecting Susquehanna County and its PSAP include the following:

- The County is very rural, with a considerable amount of farmland; this leads to emergency calls related to barn fires, silo rescues and farm implement accidents.
- There is virtually no manufacturing or other industry in the County, nor is there any tourism; however, numerous natural-gas fracking operations exist and support the local economy.
- There have been numerous gas explosions; such emergency incidents require very specific training for telecommunicators; also, every fire department and EMS agency has to be trained for derrick fires.
- The fracking operations have attracted a large influx of transient workers, resulting in a spike in emergency calls and response.
- The fracking operations have resulted in a dramatic increase in housing values—they have quadrupled—which in turn have spiked property tax revenues.

## **Staffing**

The PSAP has three management positions: a director, an operations manager, and a training/quality assurance (QA) manager. There are no full-time supervisors. However, 13 full-time telecommunicators handle both call-taking and dispatching.

## **Facility**

The PSAP is located is located at 81 Public Avenue, Montrose, PA 18801, in a County-owned building located next to the courthouse. The PSAP shares the facility with various County offices.

The 9-1-1 Center has one call-taker-only console positions, and five combined console positions (call-taker and dispatcher). The County also has a mobile trailer with two positions that could be used as for backup.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is an InterAct solution that was installed in 2004. It currently is scheduled to be upgraded in 2017.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is a Plant CML (now part of Airbus) Sentinel that was installed in 2005. It is scheduled to be replaced in 2017.



## **Radio Systems**

The radio system is a Motorola Quantar system. The installation date is unknown. Currently, there are no plans to upgrade or replace the system. A 65-foot tower is located onsite.

## **Radio Console System**

Motorola MCC 5500 consoles were installed in 2012.

## **Facility Infrastructure**

The PSAP is served by telephony facilities (including T1 circuits) provided by Frontier, which also provides backup Internet service. Primary Internet service is provided by Time Warner. There is no interior perimeter ground bus. Other than grounded protectors and surge suppressors, the equipment and support hardware are not grounded in accordance with communications site grounding standards.

## **Power Systems**

### Uninterruptible Power Supply

There is a single Eaton PowerWare Ferrups UPS system and separate battery cabinet located in the radio room. The system displayed power output at 8.2 kilovolt amperes (kVA), with a runtime of 48 minutes, during the technical survey. This system provides backup power to the radio room and the PSAP equipment room.

### Backup Power

A 90 kilowatt (kW) Kohler propane-powered generator is installed in the building's mechanical room. The automatic transfer switch is located adjacent to the generator in the same room.

## **Equipment Rooms**

There are two equipment rooms, a PSAP equipment room and a radio room

### PSAP Equipment Room

The PSAP equipment room houses the telephony facilities (including T-1 circuits), primary and backup Internet service facilities, various servers (e.g., Automatic Location Identification [ALI], Geographic Information System [GIS] and CAD), the CPE, the voice recorder system, the Nortel private branch exchange (PBX) system, and County network equipment.

The room has space for additional racks or cabinets for additional equipment, and the existing equipment racks have space for additional equipment. However, there are no ports or slots available for connection of an additional external network



### Radio Room

The radio room houses the Motorola radio site equipment, statewide 800 MHz radio system consoles, microwave radio equipment, a direct current (DC) power plant and batteries, and time server equipment. This room has a master ground bus, but lacks an interior perimeter ground bus. Grounding in this room does not meet communications site grounding standards.

**Table 24: Susquehanna County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>SUSQUEHANNA COUNTY</b>	6	42,683	823 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	No	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	2,851	9,125	756
<b>Number of Trunks</b>	23	24	4
<b>Primary Selective Routers</b>	Direct Trunking		
<b>Customer Premises Equipment (CPE)</b>	Plant CML (now Airbus) Sentinel (Installed: 2005)		
<b>Computer-Aided Dispatch (CAD)</b>	Interact, v6.2.3.74 (Installed: 2004)		
<b>Logging Recording System</b>	Verint Audiolog Max 4000, 5.0.16V5 SP3		
<b>Geographic Information System (GIS)</b>	IPC Geo911/Esri ArcGIS, v10.0		
<b>Databases Maintained</b>	Master Street Address Guide (MSAG)		
<b>Leased Equipment</b>	Copier/Fax (Expires 2018)		

### **3.3.10. Wayne County**

#### **Overview**

Wayne County is a Sixth Class County with a population of 51,734. The County covers approximately 726 square miles, and has 22 townships and six boroughs within its boundaries, including the Borough of Honesdale, which is the County seat.

The County's public safety answering point (PSAP) dispatches for 8 law enforcement agencies, 19 fire departments and 16 emergency medical services (EMS) agencies, and has ringdown connections with surrounding counties.

The PSAP handled an average of 49 9-1-1 calls each day in 2015. Of these, 40 percent were wireline, 54 percent were wireless and 6 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 94 percent of the time.



## Considerations

Key factors affecting Wayne County and its PSAP include the following:

- The County's population triples in the summer months due to the large number of summer camps that exist in its footprint.
- Wireless coverage is spotty or non-existent in the County, in part because of the topography and foliage, but also because of the lack of interstate and state highways along which cellular towers typically are deployed.
- In addition, Global Positioning Satellite (GPS) signals also are blocked often by the aforementioned conditions, which makes locating emergency callers significantly more challenging.
- Lake Wallenpaupack forms part of the border with Wayne County and is very popular with recreational boaters and jet-skiers, which leads to numerous mutual-aid responses involving boating accidents and drownings.
- The County is home to a federal penitentiary in Canaan Township.
- The County borders New York State, which leads to interstate mutual-aid emergency response incidents. Both Wayne County and Sullivan County, New York, are predominantly rural.

## Staffing

The PSAP has four management positions: a director, deputy director, operations manager, and computer-aided dispatch (CAD) administrator. There are three full-time supervisors. In addition, 11 full-time telecommunicators handle both call-taking and dispatching. There are no part-time telecommunicators.

## Facility

The PSAP is located at 43 Volunteer Drive, Honesdale, PA 18431, in a two-story County-owned building. The PSAP shares the facility with the County's emergency management agency (EMA). The facility has a break room/kitchen, conference rooms, several offices, and a training room with two console positions.

The 9-1-1 Center has seven combined console positions (call-taker and dispatcher). The County has a mobile trailer with three console positions that could be used as a backup facility. In addition, the County is in the process of networking Pike County as a remote PSAP; all 9-1-1 trunking would terminate at the Pike County courthouse or the Pike County PSAP.

## Computer-Aided Dispatch

The computer-aided dispatch (CAD) system is a Cassidian (now Airbus) CADStar solution that was installed in 2005. It currently has a scheduled upgrade date in 2016.



## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v2.6 (SP2) that was installed in 2010. It is scheduled for replacement in 2016.

## **Radio Systems**

The radio system is a Motorola system that currently is being upgraded.

## **Radio Console System**

Motorola MCC 5500 consoles are being upgraded to MCC 7500 consoles.

## **Facility Infrastructure**

The PSAP is served by copper and fiber facilities, the latter of which is provided by Blue Ridge with 100 megabits per second (Mbps) bandwidth. The wireline entrance facility is non-diverse; however, a secondary route has been established via a point-to-point microwave connection to Pike County. Wiring in the facility is primarily Category 6 with some Category 5E.

## **Power Systems**

The PSAP is supported by an 80 kilovolt amperes (kVA) American Power Conversion (APC) uninterruptible power supply (UPS) system and was installed in 2010. Backup power to the PSAP is provided by a MTU 300-kilowatt (kW) diesel generator that was installed in 2011. The UPS output is through automatic transfer switches (ATS). The UPS system and generator have ample growth potential.

## **Equipment Room**

The PSAP has an equipment room that is located on the building's lower level. It also has a computer and information technology (IT) room that is expandable by at least two cabinets. Several of the cabinets that are currently in use easily would support additional routers with fiber-optic ports for connection of an external network.



**Table 25: Wayne County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>WAYNE COUNTY</b>	6	51,734	726 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	Yes	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	7,123	9,479	1,142
<b>Number of Trunks</b>	4	4	0
<b>Primary Selective Routers</b>	Verizon (Bloomsburg/Scranton)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta v2.60 (SP2) (Installed: 2010)		
<b>Computer-Aided Dispatch (CAD)</b>	Cassidian (now Airbus) CADStar, v4.0.57 (Installed: 2005)		
<b>Logging Recording System</b>	Nice 72-port analog, v8.90.04.03		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.3		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	None		

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### **3.4. NORTHWEST REGION**

#### **SUMMARY**

The Northwest region consists of Crawford, Erie, Forest, Venango, and Warren counties. Beginning in 2011, the Northwest Central Emergency Response Group began to explore the acquisition of a regional Next Generation 9-1-1 (NG9-1-1)-capable telephone system. During the exploratory phase, the group expanded to include counties from the Northwest Pennsylvania Region 2 Emergency Response Group. Initially, nine counties—Cameron, Clarion, Crawford, Clearfield, Elk, Forest, Jefferson, McKean, and Warren—elected to participate in what is commonly called the Northern Tier Regional Group (NTRG) of public safety answering points (PSAPs).

In 2014, Erie County joined the group, expanding its base to 10 member counties. The estimated population served by the NTRG counties is slightly more than 675,000. Geographically, the NTRG footprint encompasses more than 8,550 square miles of northwestern Pennsylvania.

In late 2015, Venango County, previously a member of the Northwest region, was approved for membership as part of the Southwestern Pennsylvania Emergency Response Group (SWPERG). This group serves a population of 2.95 million and includes the Pittsburgh Metropolitan Statistical Area (MSA). As a result, Venango County now is considered part of the Southwest region.

Information on the integration and Next Generation 9-1-1 (NG9-1-1) progression of the original Northwest region counties can be found in the summary reports for both the Southwest (SWPERG) and Northwest Central (NTRG) regions.

#### **3.4.1. Crawford County**

##### **Overview**

Crawford County is a Sixth Class County with a population of 87,687. The County covers approximately 1,012 square miles, and has 35 townships and 14 boroughs within its boundaries, plus the City of Meadville, which is the County seat.

The County's public safety answering point (PSAP) dispatches for 9 law enforcement agencies, 33 fire departments and 16 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police and the Meadville police department.

The PSAP handled an average of 188 9-1-1 calls each day in 2015. Of these, 75 percent were wireline, 24 percent were wireless and 1 percent was voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 97 percent of the time.



## Considerations

Key factors affecting Crawford County and its PSAP include the following:

- The County is part of the Northern Tier Emergency Services Internet Protocol (IP) Network (ESInet).
- Interstate 79 cuts through the County from North to South, and is heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general. The truck traffic is exacerbated by the County's close proximity to Erie, which is a significant Great Lakes port.
- For the same reason, considerable freight rail traffic moves through the County, which creates issues similar to those of commercial trucking.
- There also is considerable commuter vehicle traffic, as I-79 is the main route between Pittsburgh and Erie—which is home to the Presque Isle State Park, which attracts more than 4 million visitors annually—and because I-79 connects to I-90 just north of the County.
- Crawford County is home to several popular recreational areas, including lakes, state game lands and the Erie National Wildlife Refuge.

## Staffing

The PSAP has five management positions, including: a 9-1-1 director, 9-1-1 supervisor, an information technology (IT)/computer-aided dispatch (CAD) manager, a quality assurance (QA)/emergency medical dispatch (EMD) training manager (part-time), and an administrative assistant. There also are four shift supervisors. In addition, 11 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by part-time telecommunicators who equate to two full-time equivalents (FTE).

## Facility

The PSAP is located at 903 Diamond Park, Meadville, PA 16335, in the County Courthouse. The PSAP shares the facility with the County's emergency management agency (EMA). Although the facility is clean and organized, there is no room for expansion in either the 9-1-1 Center or the equipment room. The staff is in the preliminary phase of searching for a property to relocate the facility.

The 9-1-1 Center has five combined console positions (call-taker and dispatcher). The County also has a backup facility that maintains two positions.

## Computer-Aided Dispatch

The CAD system is an InterAct (now known as Caliber) CAD Classic v6.2.3.77 that was installed in 2002. It is scheduled to be upgraded in 2017.



## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v4.3 that was installed in 2013.

## **Radio Systems**

The radio system is a Motorola Quantar UHF analog conventional system. The installation date is unknown. There are no current plans to upgrade the system.

## **Radio Console System**

Motorola Gold Elite consoles are used. The installation date is unknown. There are no current plans to replace the system; however, the system is approaching end-of-life.

## **Facility Infrastructure**

The PSAP is served by 9-1-1 trunks that connect via fiber-optic cables to the Northern Tier ESInet server in Elk County. The fiber is provided by Zito Media; it has diversity, entering and leaving the facility from the north and south. Verizon provides the 9-1-1 selective router on the Northern Tier Network.

Radio communication to the radio towers is provided by directional radio frequency (RF) antennas located on the roof of the courthouse.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported with a Liebert NX three-phase input and three-phase output UPS system rated at 20 kilovolt amperes (kVA). The system was installed in 2008. Runtime is not known at this time.

### Backup Power

Backup power to the PSAP is provided from a 20 kilowatt (kW) Onan 55 GenSet generator, installed in 2004, that is powered by natural gas with propane backup.

## **Equipment Room**

The PSAP has a single equipment room that houses the CPE, as well as the RF, networking and UPS equipment. Fiber-optic cables feed diversely to the room. The room cannot accommodate additional server or network equipment.

Specifically, this space hosts:

- Liebert NX UPS



- Radio cards and controllers
- Network switches and routers
- Punch-down board for radio, telephone and reverse 9-1-1 circuits
- County network switches

The time source, CAD and records management (RMS) related servers are housed in two standalone racks in the northeast section of the 9-1-1 Center.

All wireline, wireless and VoIP trunks terminate into a Cassidian control switch at the main Windstream office in Meadville. The Cassidian switch has five trunks, with terminals at the five telecommunicator console positions in the 9-1-1 Center.

**Table 26: Crawford County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>CRAWFORD COUNTY</b>	6	87,687	1,012 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	Yes	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	51,618	16,751	360
<b>Number of Trunks</b>	4	4	0
<b>Primary Selective Routers</b>	Verizon (Erie/Oil City)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta, v4.3 (Installed: 2013)		
<b>Computer-Aided Dispatch (CAD)</b>	Caliber CAD Classic, v6.2.3.77 (Installed: 2002)		
<b>Logging Recording System</b>	Voice Print VPI Capture, v4.6.0.100		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.3		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	None		

### 3.4.2. Erie County

#### Overview

Erie County is a Third Class County with a population of 280,823. The County covers approximately 799 square miles, and has 22 townships and 14 boroughs within its boundaries, plus the cities of Cory and Erie, the latter of which being the County seat.

The County's public safety answering point (PSAP) dispatches for 7 law enforcement agencies, 28 fire departments and 24 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police, East County Dispatch, and Millcreek Police Department.



The PSAP handled an average of 488 9-1-1 calls each day in 2015. Of these, 29 percent were wireline, 63 percent were wireless, 7 percent were voice over Internet Protocol (VoIP), and 1 percent were from other sources. Last year, 9-1-1 calls were answered within 10 seconds 96 percent of the time.

## **Considerations**

Key factors affecting Erie County and its PSAP include the following:

- The County is part of the Northern Tier Emergency Services Internet Protocol (IP) Network (ESInet).
- The County is home to the Presque Isle State Park, which attracts 4 million visitors annually.
- The County is home to a minor-league baseball team (Erie SeaWolves).
- The County is on the shores of Lake Erie; as a result, the PSAP receives wireless 9-1-1 calls from recreational and commercial vessels.
- The County is adjacent to Chautauqua, New York, resulting in interstate mutual-aid responses.
- The County receives a considerable amount of snow—fueled by “lake effect” snow—that causes numerous traffic accidents and other weather-related problems.
- Interstate 90 traverses the County from west to east, and is heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- There also is considerable freight and commuter (Amtrak) rail traffic, which creates challenges similar to those of commercial trucking.
- The County has a considerable amount of industry within its footprint, and is home to several major hospitals, and numerous colleges and universities.

## **Staffing**

The PSAP has 14 management positions, including:

- A director of public safety
- A computer-aided dispatch (CAD) administrator
- A training administrator
- A 9-1-1 coordinator
- An assistant 9-1-1 coordinator
- An IT chief
- Two information technology (IT) technicians
- Two Geographic Information System (GIS) technicians
- A quality assurance (QA) manager
- Two radio technicians
- An administrative assistant



There also are three full-time supervisors. In addition, 46 full-time telecommunicators handle both call-taking and dispatching.

## **Facility**

The PSAP is in a single-story building located at 2880 Flower Road, Erie, PA 16509. The PSAP shares the facility with the County's emergency management agency (EMA). The facility has a break room, two training classrooms, plus another room adjacent to the 9-1-1 Center that has four combined console positions; this room is used for training and for overflow situations.

The 9-1-1 Center has four call-taker-only console positions, two dispatch-only positions, and seven combined console positions (call-taker and dispatcher). The County also has a backup facility that maintains eight positions.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Caliber (formerly InterAct) Classic v6.2.3.78C that was installed in 2008. It has no scheduled upgrade date.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v4.3 that was installed in 2014. It has a scheduled replacement date of 2023.

## **Radio Systems**

The radio system is an analog convention system that operates in multiple frequency bands: VHF low band and high band; UHF, and 800 MHz. Backhaul is provided by a County-owned microwave system. The installation date of the radio and microwave systems is unknown.

All antennas are attached to a 300-foot tower to the west of the building. A radio equipment shelter with three separate units is located at the base of the tower. Coaxial and network cables connect the radio shelter to the equipment room.

## **Radio Console System**

Catalyst Desk Top Dispatch consoles were installed in the 2007 to 2008 timeframe.



## Facility Infrastructure

The PSAP is served by fiber-optic cable feeds from Zito Communications, for the ESInet, and Verizon for 9-1-1 trunks, administrative telephone lines and various circuits required to support the center. The Zito fiber has last-mile diversity.

Verizon also serves the facility with copper cable (200 pair). Both fiber and copper cables enter the compound from diverse directions. Verizon uses two fiber systems to support the center: a Lite Stream fiber system and a Flashwave fiber system. In addition, Velocity Networks and Zito Media provide Internet service to the facility.

The Northern Tier ESInet hardware consists of two Juniper EX4200 switches with diverse fiber feeds. The two switches have 21 copper 10/100/1000 ports available. Two Cisco 2960 switches are used for the CPE; 25 copper 10/100 ports are available on these switches.

## Power Systems

### Uninterruptible Power Supply

The PSAP is supported with an Eaton UPS system, rated for 80 kilovolt amperes (kVA), which is located in the equipment room; this unit is supplemented by an additional 80-kVA redundant unit. This system was installed in 2007 and supports the equipment room and the 9-1-1 Center. The UPS system is running at 20-percent load, and are covered by a maintenance contract with Eaton.

### Backup Power

Backup power to the PSAP is provided from two 400-kilowatt (kW), three-phase Kohler diesel generators. The generators are located inside shelters to the west of the building, and are covered by a maintenance contract with Cleveland Brothers. The generators were installed in 2007.

## Equipment Room

The equipment room is on the south side of the building. Cables are run under the raised floor in trays between this room and the 9-1-1 Center, and throughout the building for network connectivity. There is adequate space in the cable trays for additional cabling.

County network infrastructure is supported by the County's IT department. Core network equipment includes Cisco routers and Hewlett-Packard ProCurve switches. There are very few ports available on these switches.

The equipment room is large and could support 8-10 additional equipment racks. Existing racks are mostly full. The room has an interior perimeter ground bus system.



Table 27: Erie County at a Glance

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
ERIE COUNTY	3	280,823	799 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	Yes	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
9-1-1 Calls (2015)	51,809	110,903	13,123
Number of Trunks	12	12	0
Primary Selective Routers	Verizon (East Erie/Oil City)		
Customer Premises Equipment (CPE)	Airbus Vesta, v4.3 (Installed: 2014)		
Computer-Aided Dispatch (CAD)	Caliber Classic, v6.2.3.78C (Installed: 2008)		
Logging Recording System	Exacom Hindsight G2 Timegate, v2.0.0.5		
Geographic Information System (GIS)	Esri ArcGIS, v10.2.2		
Databases Maintained	None		
Leased Equipment	Towers are leased		

### 3.4.3. Forest County

#### Overview

Forest County is an Eighth Class County with a population of 7,659, which includes about 2,400 in state correctional facilities. The County covers approximately 427 square miles, and has eight townships and one borough within its boundaries, the Borough of Tionesta is the County seat.

The County does not have its own public safety answering point (PSAP). The County contracts with Clarion County on the east, and Venango County on the west, for 9-1-1 call-taking and dispatch services.

The County generated an average of six 9-1-1 calls each day in 2015. Of these, 46 percent were wireline and 54 percent were wireless.

#### Considerations

Key factors affecting Forest County include the following:

- The County is very rural and heavily forested; most of the County’s area is taken up by the Allegheny Forest—this results in emergency calls involving lost hikers.
- The Allegheny River and Tionesta Lake are heavily used by recreational boaters in the summer, which generates emergency calls related to boating accidents.
- The County has numerous camps and campgrounds; the tourist influx in the summer months causes the population to more than double, and more than triple on the weekends.



- The County has a state game land that attracts a large influx of hunters in the fall, resulting in emergency calls involving hunting accidents.

### Staffing

The County has a 9-1-1 coordinator who also is the Geographic Information System (GIS) assessment office director; as such, this individual spends approximately one-third of their time on 9-1-1 matters.

### Facility Infrastructure

As noted above, the County does not have its own PSAP. The County contracts with Clarion County on the east, and Venango County on the west, for 9-1-1 call-taking and dispatch services.

**Table 28: Forest County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>FOREST COUNTY</b>	8	7,659	427 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	No	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	1,011	1,195	0
<b>Number of Trunks</b>	4	0	0
<b>Primary Selective Routers</b>	N/A		
<b>Customer Premises Equipment (CPE)</b>	N/A		
<b>Computer-Aided Dispatch (CAD)</b>	N/A		
<b>Logging Recording System</b>	N/A		
<b>Geographic Information System (GIS)</b>	N/A		
<b>Databases Maintained</b>	N/A		
<b>Leased Equipment</b>	N/A		

### 3.4.4. Venango County

#### Overview

Venango County is a Sixth Class County with a population of 54,283. The County covers approximately 674 square miles, and has 20 townships and nine boroughs within its boundaries, plus the cities of Oil City and Franklin, which is the County seat.

The County’s public safety answering point (PSAP) dispatches for 6 law enforcement agencies, 26 fire departments and 8 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police.



The PSAP handled an average of 69 9-1-1 calls each day in 2015. Of these, 34 percent were wireline and 66 percent were wireless. Last year, 9-1-1 calls were answered within 10 seconds 90 percent of the time.

## **Considerations**

Key factors affecting Venango County and its PSAP include the following:

- The County is in the process of connecting its PSAP to the Southwestern Pennsylvania Regional Task Force (Region 13) Emergency Services Internet Protocol (IP) Network (ESInet).
- The County's PSAP dispatches for the western portion of adjacent Forest County.
- There are several forest areas and game lands in the County, which lead to numerous emergency calls involving lost hikers and hunters, as well as hunting accidents.
- The rugged terrain makes wireless communications of all kinds challenging.
- The Allegheny River flows through the County and is popular with boating and fishing enthusiasts; numerous camps exist along the river, and throughout the County.
- Oil City Creek is prone to flooding in the early spring, due to ice floe jams.
- The County is largely rural, but two population centers host about half of the County's residents.
- The County is home to petroleum refineries.
- A swath of Interstate 80 cuts across the County's southern border, and is heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations, impacting the community in general.
- There is freight rail activity in the County, which creates challenges similar to those of commercial trucking.

## **Staffing**

The PSAP has one management position, a 9-1-1 coordinator. There are four full-time supervisors. In addition, six full-time telecommunicators handle both call-taking and dispatching; they are supplemented by part-time telecommunicators who equate to two full-time equivalents (FTE).

## **Facility**

The PSAP is located at 1052 Grandview Road, Oil City, PA 16301, in a single-story standalone facility that is shared with the County's emergency management agency (EMA). The facility does not have much expansion space available.



The 9-1-1 Center has five combined console positions (call-taker and dispatcher). The County does not have a backup facility.

### **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Caliber (formerly InterAct) CAD Classic solution that was installed in 2007. It has no scheduled upgrade date. The County is interested in exploring a regional CAD solution, and has had preliminary discussions with neighboring Butler and Mercer counties on this topic.

### **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus ECS-1000 that was installed in 2007. It is scheduled to be replaced in 2016.

### **Radio Systems**

The radio system is a VHF analog conventional system. Base stations range in age from two to ten years. Currently there are no upgrade plans.

### **Radio Console System**

ModUcom Ultracom v11.6.1 consoles are used. They were installed in 2007 and software upgraded in 2014.

### **Facility Infrastructure**

The PSAP is served by fiber provided by Zito Communications; Zito's access fibers support a ring topology. The County's contract with Zito also includes six fiber strands on the Sunesys/Keystone Initiative for Network Based Education and Research (KINBER) fiber route north of the PSAP near Pleasantville, as well as 1 gigabyte (GB) of fiber bandwidth to the Region 13 ESInet via Mercer County. (If any other Region 13 members subscriber to the Zito service, Zito will provide a second port to the Region 13 ESInet as part of the original contract.)

### **Power Systems**

#### Uninterruptible Power Supply

The PSAP is supported by a Liebert uninterruptible power supply (UPS) system, installed in 2007, that can be expanded to support additional loads if required. Currently, the UPS system is under 75-percent load and provides a runtime of 26 minutes.



Backup Power

Backup power is provided by a Kohler 125 kilowatt (kW) natural-gas generator and was installed in 2010.

**Equipment Room**

The equipment room can support additional cabinets and/or small amounts of additional equipment in existing racks. Several racks of decommissioned equipment have not been removed, but plans are underway to have the equipment removed in the near future.

The facility also has a Computer and IT room that uses overhead cable trays; limited rack space is available. Several of the cabinets that are currently in use would easily support additional routers with fiber-optic ports for connection of an external network.

Facility wiring is primarily Category 6 with some Category 5E; it appears that wiring is installed for each application.

**Table 29: Venango County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>VENANGO COUNTY</b>	6	54,283	674 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	Yes	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	8,459	16,740	0
<b>Number of Trunks</b>	6	6	0
<b>Primary Selective Routers</b>	Verizon (East Erie/Oil City)		
<b>Customer Premises Equipment (CPE)</b>	Airbus ECS (Installed: 2007)		
<b>Computer-Aided Dispatch (CAD)</b>	Caliber (formerly InterAct) CAD Classic, v6.2.77 (Installed: 2007)		
<b>Logging Recording System</b>	Verint Audiolog, v5 (SP2)		
<b>Geographic Information System (GIS)</b>	Esri ArcView, v9.0		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	None		

**3.4.5. Warren County**

**Overview**

Warren County is a Sixth Class County with a population of 41,815. The County covers approximately 884 square miles, and has 21 townships and five boroughs within its boundaries, plus the City of Warren, which is the County seat.



The County's public safety answering point (PSAP) dispatches for 10 law enforcement agencies, 21 fire departments and 22 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police.

The PSAP handled an average of 43 9-1-1 calls each day in 2015. Of these, 41 percent were wireline, 54 percent were wireless and 5 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 96 percent of the time.

## **Considerations**

Key factors affecting Warren County and its PSAP include the following:

- The County is part of the Northern Tier Emergency Services Internet Protocol (IP) Network (ESInet).
- The County is very rural and heavily forested, with numerous camps and campgrounds. It is popular with hunters and fishing enthusiasts, which leads to emergency calls involving lost hunters and hunting accidents.
- The Kinzua Dam and Reservoir is located on the Allegheny River in the Allegheny National Forest. The area is popular with campers, hikers, boaters and snowmobilers, and attracts visitors year round, which leads to emergency calls involving search and rescue, and snowmobile accidents.
- The County attracts numerous archaeological digs, as it once was heavily populated by Native American tribes.
- The County is home to a large petroleum refinery that creates much truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.

## **Staffing**

The PSAP has no 9-1-1-funded management positions or full-time supervisors. However, eight full-time telecommunicators handle both call-taking and dispatching; they are supplemented by part-time telecommunicators who equate to one full-time equivalent (FTE).

## **Facility**

The PSAP is located at 100 Dillon Drive, Suite 203, Warren, PA 16371, on the second floor of a two-story building. The PSAP shares the facility with the County's emergency management agency (EMA).

The 9-1-1 Center has three combined console positions (call-taker and dispatcher). The County has an agreement with Elk County, which has six positions, to serve as a backup facility.



### **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Cisco/Caliber Cisco solution (v14) that was installed in 1999. It has a scheduled upgrade date of 2016. The County is interested in a regional CAD sharing arrangement and is seeking partners, but discussions have been very preliminary to this point.

### **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v4.3 that was installed in 2012. It has a replacement date of 2023. The CPE is shared regionally by the members of the Northern Tier initiative, and is hosted at Clearfield and Elk counties.

### **Radio Systems**

The radio system is a hybrid analog conventional system consisting of Motorola and Daniels equipment. The system operates on multiple radio frequency bands: VHF low band (fire), VHF high band (law enforcement) and UHF (EMS and emergency management). The installation dates for these systems are 1988, 2007 and 2010, respectively; there are no plans currently to upgrade or replace it.

### **Radio Console System**

Motorola MCC 5500 consoles are used. They were installed in February 2007. There are no plans currently to replace the system.

### **Facility Infrastructure**

The PSAP is served by landline circuits from Verizon, and by fiber that appears to be provisioned by Zito Communications. Wiring is primarily Category 6 with some Category 5E; it appears that wiring is installed for each application.

### **Power Systems**

The PSAP is supported by an American Power Conversion (APC) uninterruptible power supply (UPS) and was installed in 2013. Backup power is provided by a Kohler 125 kilowatt (kW) natural-gas emergency generator which was installed in 2007. The UPS output is through automatic transfer switches (ATS). Both systems have capacity for additional equipment support should that be necessary.



## Equipment Room

The facility has a computer and information technology room that uses overhead cable trays. Limited rack space is available. Several of the cabinets that are currently in use would easily support additional routers with fiber-optic ports for connection of external networks.

Table 30: Warren County at a Glance

WARREN COUNTY	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
	6	41,815	884 sq. mi.
	Backup PSAP?	ESInet?	Text-to-911?
	Yes	Yes	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
9-1-1 Calls (2015)	6,373	8,538	764
Number of Trunks	4	4	0
Primary Selective Routers	Verizon (State College/Altoona)		
Customer Premises Equipment (CPE)	Airbus Vesta 4.3 (Installed: 2012)		
Computer-Aided Dispatch (CAD)	Cisco/Caliber, v14 (Installed: 1999)		
Logging Recording System	Verint Audiolog, v5		
Geographic Information System (GIS)	Digital Data Technologies AccuGlobe		
Databases Maintained	None		
Leased Equipment	None		

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### 3.5. NORTHWEST CENTRAL REGION

#### SUMMARY

The Northwest Central region consists of Cameron, Clarion, Clearfield, Elk, Jefferson, and McKean counties. Beginning in 2011, the Northwest Central Emergency Response Group began working to explore the acquisition of a regional Next Generation 9-1-1 (NG9-1-1) telephone system. During the exploratory phase, the group expanded to include counties from the Northwest Pennsylvania Region 2 Emergency Response Group. Initially, nine counties—Cameron, Clarion, Crawford, Clearfield, Elk, Forest, Jefferson, McKean, and Warren—elected to participate in what is commonly called the Northern Tier Regional Group (NTRG) of public safety answering points (PSAPs).

In 2014, Erie County joined the group, expanding its base to 10 member counties. The estimated population served by the NTRG counties is slightly more than 675,000. Geographically, the NTRG footprint encompasses more than 8,550 square miles of northwestern Pennsylvania.

Eight primary PSAPs operate within this 10-county region. While Cameron County hosts a remote answering position and maintains conventional dispatch capabilities, it does not operate as a PSAP. Rather, the County contracts for 9-1-1 services from neighboring Elk County. Similarly, Forest County contracts with two neighboring counties—Clarion on the East and Venango on the west—for 9-1-1 call-taking and dispatch services. Collectively, the eight PSAPs of the NTRG reported a 9-1-1 call volume of 385,037 in 2015.

The NTRG has an existing written administrative memorandum of understanding (MOU) that establishes a governance model of equal representation from each participating county. The MOU also outlines a cost-sharing methodology that distributes costs related to shared system components based on the resources used by each member counties. County-specific costs continue to be handled individually by the respective county. The group also has established standard operating procedures (SOPs) that outline system operations, including PSAP disaster recovery and busy hour overflow.

During 2012, in preparation for NG9-1-1, the NTRG installed an NG9-1-1-capable telephone system. The system connects 55 remote 9-1-1 answering positions from the eight PSAP locations to redundant customer premises equipment (CPE) cores physically located in two of the PSAPs in the region. The two CPE core sites of the NTRG system are referred to as Side A, located in the Elk County PSAP, and Side B, located in the Clearfield County PSAP. An Emergency Services Internet Protocol (IP) Network (ESInet) has been designed using leased fiber to configure redundant paths between the two CPE core sites. The ESInet also connects each PSAP within the region to both core sites of the CPE, creating a second layer of system redundancy and providing a PSAP network access through either Side A or Side B.

Operational and administrative benefits realized in the 9-1-1 services provided by the NTRG members include:



- Procurement practices that allow operational cost sharing across the ten counties.
- 9-1-1 call transferring between the region's counties, with accompanying Automatic Number Identification (ANI) and Automatic Location Identification (ALI) information.
- Automatic 9-1-1 call rerouting to other counties in the event of an emergency that renders the PSAP inoperable or inaccessible, or during an unexpected busy-hour overflow event. Specifically, the system enables personnel from any county to relocate to any available PSAP and continue to answer and process emergency calls for their home PSAP.

The NTRG has capitalized on available opportunities as a result of its shared vision for NG9-1-1 in the region. Predominately, the NTRG counties are sparsely populated, with seven of the ten possessing a population base of less than 50,000. The NTRG joint effort has enabled member counties to provide advanced 9-1-1 technology across the region.

### **3.5.1. Cameron County**

#### **Overview**

Cameron County is an Eighth Class County with a population of 4,948. The County covers approximately 396 square miles, and has five townships and two boroughs within its boundaries, plus the Borough of Emporium, which is the County seat.

The County's 9-1-1 calls are answered and dispatched by Elk County; consequently, the County only maintain one 9-1-1 console position in its emergency operations center (EOC) as a backup in the event that the Elk County public safety answering point (PSAP) is rendered inoperable or inaccessible.

#### **Considerations**

Key factors affecting Cameron County and its PSAP include the following:

- The County is part of the Northern Tier Emergency Services Internet Protocol (IP) Network (ESInet).
- The County is heavily forested; state forests include the Elk State Forest and the Quehanna Wild area, which is popular with hikers who often get lost, resulting in search-and-rescue operations.
- The County also is popular with hunters, resulting in emergency calls involving accidents and lost hunters.

#### **Staffing**

The County has one management position, a 9-1-1 coordinator, who would answer emergency calls if the EOC position was activated; such calls would be dispatched using the EOC's radio system, as the County does not have its own computer-aided dispatch (CAD) system.



## **Facility**

The County's emergency management agency (EMA) is located at 20 East Fifth St., Emporium, PA 15834, in a single-story building. The EOC has one call-taker-only console position.

## **Computer-Aided Dispatch**

No CAD system exists at this facility.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v4.3 that was installed in 2012; it is scheduled for replacement in 2023. The CPE actually is located at the PSAPs in Elk and Clearfield counties. If the Cameron County EOC is required to answer 9-1-1 calls on a temporary basis, the console position would connect to the remote hosted CPE via the Northern Tier ESInet.

## **Radio Systems**

The radio system is a hybrid consisting of Motorola and Kenwood equipment that was installed in 2004. Currently there are no upgrade plans.

In addition, a Canopy point-to-point microwave system provides Internet service from the North Central Regional Planning Commission (RPC).

## **Radio Console System**

The EOC uses a Motorola CommandStar Lite desktop console that were installed in 2005. Currently are no replacement plans.

## **Facility Infrastructure**

The PSAP is served by fiber-optic cable feeds from Zito Communications (to support the Northern Tier ESInet) and Windstream Communications (for administrative phone lines and other circuits that support the 9-1-1 Center). Windstream also provides a six-pair copper cable. In addition, the North Central Regional Planning Commission (RPC) provides Internet service with 10 Mbps of bandwidth.

Other infrastructure that supports the Northern Tier ESInet includes a Juniper router with diverse fiber backbone and two Juniper Ethernet switches; twenty 10/100 copper ports are available on each Juniper switch. A Cisco 2960 switch is used for the Airbus Vesta 9-1-1 CPE; 20 ports are available on this switch.



## Power Systems

### Uninterruptible Power Supply

The PSAP is supported with a custom UPS system provided and maintained by Centre Communications. It is rated for 6 kilovolt amperes (kVA) and located in the basement. This system, which was installed in 2015, supports the equipment room and 9-1-1 Center.

### Backup Power

Backup power to the PSAP is provided by a Millbank natural-gas generator rated at 17 kilowatts (kW). The generator is located inside an enclosure to the north of the building, and is covered by a maintenance contract with Bridgeway Power. The generator was installed in 2015.

## Equipment Cabinet

The PSAP does not have an equipment room, but rather an equipment cabinet that is located in the 9-1-1 Center. Network infrastructure is supported by the County's information technology (IT) department. Core network equipment includes Cisco switches.

The combined 9-1-1 Center/equipment cabinet is small and could not support additional equipment.

**Table 31: Cameron County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>CAMERON COUNTY</b>	8	4,948	396 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	Yes	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	N/A	N/A	N/A
<b>Number of Trunks</b>	2	2	0
<b>Primary Selective Routers</b>	Verizon (State College/Altoona)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta (Installed: 2012)		
<b>Computer-Aided Dispatch (CAD)</b>	N/A		
<b>Logging Recording System</b>	Nice MR 2402, v15N		
<b>Geographic Information System (GIS)</b>	Esri, ArcGIS, v10.1		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	None		



### **3.5.2. Clarion County**

#### **Overview**

Clarion County is a Sixth Class County with a population of 39,459. The County covers approximately 601 square miles, and has 22 townships and 12 boroughs within its boundaries, including the Borough of Clarion, which is the County seat.

The County's public safety answering point (PSAP) dispatches for 8 law enforcement agencies, 19 fire departments and 6 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police.

The PSAP handled an average of 94 9-1-1 calls each day in 2015. Of these, 74 percent were wireline, 25 percent were wireless and 1 percent was voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 97 percent of the time.

#### **Considerations**

Key factors affecting Clarion County and its PSAP include the following:

- The County is part of the Northern Tier Emergency Services Internet Protocol (IP) Network (ESInet).
- The PSAP dispatches for Forest County.
- The County is home to Clarion State University.
- Interstate 80 cuts across the center of the County and is a heavily traveled route between the Midwest and New York City metropolitan area. Large numbers of commuter and commercial truck traffic travel I-80 daily. When vehicular accidents occur that close the highway, traffic diverts to local routes, compounding issues for the PSAP.
- There are numerous camps along the Clarion River, which is popular with boating enthusiasts. The Cook Forest State Park also is located in the County.
- The County is largely rural, with 159,000 acres of forest and 155,000 acres of farmland. The latter leads to emergency calls involving barn fires, silo rescues and farm implement accidents.

#### **Staffing**

The PSAP has three management positions: a director of emergency services/9-1-1 coordinator, a computer-aided dispatch (CAD)/quality assurance (QA)/public relations (PR) administrator, and a 9-1-1 architect. There are three full-time supervisors. In addition, six full-time telecommunicators handle both call-taking and dispatching; they are supplemented by four part-time telecommunicators, who equate to two full-time equivalents (FTE).



## **Facility**

The PSAP is in a three-story building located at 421 Madison Road, Clarion, PA 16214, which is the former Clarion County Prison.

The 9-1-1 Center has four combined console positions (call-taker and dispatcher). A fifth combined position, used for backup and training, is located in the administrative office. There is no room for additional positions. The County also has a backup facility with two positions.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Caliber (formerly Interact) solution (v10.3.4.1B458) that was installed in 2007 and then upgraded in 2012. It is scheduled for another upgrade in 2016.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v4.3 that was installed in 2012. The system is Next Generation 9-1-1 (NG9-1-1) capable, and is scheduled for an upgrade in 2023.

## **Radio Systems**

The radio system is a Motorola Quantar analog conventional system that is less than a decade old. Currently there are no upgrade plans. All antennas are mounted on the roof of the building.

## **Radio Console System**

Zetron Max Solutions v3.1.0.53 consoles are used. The installation date is unknown. Currently there are no upgrade plans

## **Facility Infrastructure**

The PSAP is served by fiber-optic cable feeds from Zito Communications (for the ESInet) and Verizon (for administrative telephone lines). The Zito fiber has last-mile diversity. In addition, Verizon is providing a 200-pair copper cable (150 pair is spliced through, 50 pair is dead), Comcast provides Internet service at 50 megabits per second (Mbps) over traditional coaxial cable, and Sting Communication also provides Internet service, at 2 Mbps over fiber.

## **Power Systems**

### Uninterruptible Power System

The PSAP is supported with an Eaton Powerware UPS system, rated for 35 kilovolt amperes (kVA) and located in the radio equipment room. This system was installed in 2004, and supports the network



equipment room, the radio equipment room and the 9-1-1 Center. It has a runtime of two hours at full load, and is maintained under contract by Eaton.

### Backup Power

Backup power to the facility is provided by a 230-kilowatt (kW), three-phase Onan diesel generator that has a 600-gallon fuel tank. The generator is located inside a shelter to the west of the building, and is maintained under contract by Bridgeway Power. The generator was installed in 2004. It is estimated that the system can run for 69 hours with a 50-percent load, and 38 hours at 100-percent load, with the fuel on hand.

### **Equipment Rooms**

The network equipment room is in the southeast corner of the basement. There is a cable tray between this room and the radio equipment room, but there is limited space for additional cabling. The County's network hardware consists primarily of Cisco Ethernet switches maintained by the County's information technology (IT) department. There is limited space available in existing racks, and very little space available for additional racks.

The radio equipment room has a grounding system with a busbar, but there is limited grounding in the network equipment room.

The Northern Tier ESInet hardware consists of a Juniper router with diverse fiber backbone and two Cisco Ethernet switches. Eighteen 10/100 copper ports are available on each Juniper switch. Two Cisco 2960 switches are used for the 9-1-1 CPE. Sixteen 10/100 copper ports are available on these switches.

**Table 32: Clarion County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>CLARION COUNTY</b>	6	39,459	601 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	Yes	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	25,252	8,458	491
<b>Number of Trunks</b>	4	4	0
<b>Primary Selective Routers</b>	Verizon (State College/Altoona)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta, v4.3 (Installed: 2012)		
<b>Computer-Aided Dispatch (CAD)</b>	Caliber NG, v10.3.4.1B458 (Installed: 2014)		
<b>Logging Recording System</b>	Verint Audiolog, v5		
<b>Geographic Information System (GIS)</b>	Esri, ArcView, v13		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	None		



### **3.5.3. Clearfield County**

#### **Overview**

Clearfield County is a Sixth Class County with a population of 81,494. The County covers approximately 1,145 square miles, and has 30 townships and 20 boroughs within its boundaries, including the Borough of Clearfield, which is the County seat.

The County's public safety answering point (PSAP) dispatches for 8 law enforcement agencies, 38 fire departments and 14 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police.

The PSAP handled an average of 73 9-1-1 calls each day in 2015. Of these, 32 percent were wireline, 62 percent were wireless and 6 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 99 percent of the time.

#### **Considerations**

Key factors affecting Clearfield County and its PSAP include the following:

- The County is part of the Northern Tier Emergency Services Internet Protocol (IP) Network (ESInet).
- Interstate 80 cuts across the center of the County and is a heavily traveled route between the Midwest and New York City metropolitan area. Large numbers of commuter and commercial truck traffic travel I-80 daily. When vehicular accidents occur that close the highway, traffic diverts to local routes, compounding issues for the PSAP.
- U.S. 322 also is becoming a major truck route through the County, as it connects to the Pennsylvania Turnpike at Harrisburg.
- Wal-Mart maintains a distribution center in the County, which generates a great deal of commercial truck traffic.
- The County is home to many camps and summer homes, and is popular with hunters who use the County's multiple state game lands, which leads to emergency calls involving accidents and lost hunters.
- The County has two state parks—Parker Dam State Park (960 acres) and Samuel B Elliot State Park (318 acres)—as well as the Moshannon State Forest.
- The County is very rural with considerable farm land, which leads to emergency calls involving barn fires, silo rescues and farm implement accidents.

#### **Staffing**

The PSAP has two management positions: a 9-1-1 coordinator and a quality assurance (QA) coordinator. There are no full-time supervisors. However, 16 full-time telecommunicators handle both



call-taking and dispatching. They are supplemented by part-time telecommunicators who equate to four fulltime equivalents (FTEs).

### **Facility**

The PSAP is located at 911 Leonard Street, Clearfield, PA 16830, within a single-story building. The PSAP shares the facility with the County's emergency operations center (EOC).

The 9-1-1 Center has two call-taker-only console positions, and seven combined console positions (call-taker and dispatcher). The County has a backup facility with two positions.

### **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a LogiSYS Northstar v4.4.0.31 that was installed in 2000 and upgraded in 2007. No additional upgrades are currently planned.

### **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v4.3 that was installed in 2012. It has a scheduled replacement date of 2023. Clearfield County serves as one of two host locations for the Northern Tier shared CPE solution.

### **Radio Systems**

The radio system is a hybrid UHF analog conventional system consisting of Motorola and Kenwood devices. The installation date is unknown, but it has been in service for numerous years. It will need to be replaced if the County ever migrates to Next Generation 9-1-1 (NG9-1-1), because the system is incapable of carrying data.

### **Radio Console System**

Zetron Max Dispatch consoles were installed recently, and are NG9-1-1 capable.

### **Facility Infrastructure**

Clearfield County, as well as five other counties in the region, are leasing bandwidth from Zito Communications, which in turn is leasing fiber, under an indefeasible rights of use (IRU) agreement, from Sunesys. Zito has constructed access fiber from the Sunesys fiber—which is just south of the PSAP—and has located fiber routers within the County's entrance facilities. The Zito access fiber supports a ring topology that provides diverse connections to the facility.



The County is one of the host locations for the regional CPE solution; as a result, the 9-1-1 trunks provided by Verizon are divided equally between this location and Elk County.

Most of the wiring is Category 6, with some Category 5E; it appears that wiring is installed for each application. Wiring runs to the 9-1-1 Center are a bit congested due to the lack of raised flooring or an in-floor raceway system.

Clearfield County embraces the recording of analog Centralized Automatic Message Accounting (CAMA) trunks, as well as at the console position. In the present arrangement, to maintain this level of recording, Elk County is recording 50 percent of Clearfield County's trunks. This presents operational issues that can be remedied by several means that Clearfield County is considering.

### **Power Systems**

The alternating current (AC) power to the facility is three-phase; the PSAP has installed transformers to convert the power to single phase, which allows for an uninterrupted transfer of AC power should a power failure occur or the uninterruptible power supply (UPS) system needs to be bypassed for maintenance. The PSAP receives backup power from an Onan 60 kilowatt propane generator and was installed in 1994.

### **Equipment Rooms**

The main equipment room can support additional cabinets and/or small amounts of additional equipment in existing racks. The facility also has a computer/information technology (IT) room that uses overhead cable trays; limited rack space is available. Several of the cabinets that are currently in use easily would support additional routers with fiber-optic ports for connection of external networks.



**Table 33: Clearfield County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>CLEARFIELD COUNTY</b>	6	81,494	1,145 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	Yes	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	8,486	16,494	1,718
<b>Number of Trunks</b>	5	5	0
<b>Primary Selective Routers</b>	Verizon (State College/Altoona)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta, v4.3 (Installed: 2012)		
<b>Computer-Aided Dispatch (CAD)</b>	LogiSYS Northstar, v4.4.0.31 (Installed: 2000)		
<b>Logging Recording System</b>	Verint Audiolog, v4		
<b>Geographic Information System (GIS)</b>	Esri, ArcGIS, v10.3		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	None		

### 3.5.4. Elk County

Elk County is a Sixth Class County with a population of 31,648. The County covers approximately 827 square miles, and has nine townships and two boroughs within its boundaries, including the Borough of Ridgway, which is the County seat.

The County’s public safety answering point (PSAP) dispatches for 6 law enforcement agencies, 10 fire departments and 8 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police and surrounding counties.

The PSAP handled an average of 30 9-1-1 calls each day in 2015. Of these, 42 percent were wireline, 52 percent were wireless and 6 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 97 percent of the time.

### Considerations

Key factors affecting Elk County and its PSAP include the following:

- The County is part of the Northern Tier Emergency Services Internet Protocol (IP) Network (ESInet).
- The PSAP staff is very seasoned, with the longest-tenured member having served 23 years.
- U.S. 219 receives some commercial truck traffic because it is the connector route between the refineries in Warren County and Interstate 80. This increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.



- The County is heavily forested and mountainous, and there are many camps, campgrounds and hunting areas.
- The County has a portable antenna/base station that can be used in rugged terrain for rescue operations.
- There also are numerous recreational areas and state parks, a portion of the Allegheny National Forest is located in the County.
- Tourists flock to the Elk County Visitor Center in Benezette to view the free-roaming elk herd; the annual Elk Expo is held in the summer.

### **Staffing**

The PSAP has three management positions: a 9-1-1 coordinator, a quality assurance (QA) coordinator, and a computer-aided dispatch (CAD)/records management system (RMS) administrator. There are no full-time supervisors. However, 11 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by part-time telecommunicators who equate to two full-time equivalents (FTE).

### **Facility**

The PSAP is located in a single-story building located at 131 Ridgmont Drive, Ridgway, PA 15853. The PSAP shares the facility with the County's emergency management agency (EMA). The facility has a large conference room, a training room and a break room

The 9-1-1 Center has one call-taker-only console positions, and six combined console positions (call-taker and dispatcher). The County has a backup facility with seven positions. The 9-1-1 Center is spacious and was designed for expansion. Two combined or 10 call-taker-only positions could be added.

### **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a LogiSYS Northstar v4.4 that was installed in 2000. It is scheduled to be upgraded in 2020.

### **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v4.3 that was installed in 2012. It is scheduled to be replaced in 2023.

### **Radio Systems**

The radio system is a Motorola MTR 2000/3000 hybrid UHF simulcast system. The installation date is unknown. Currently there are no upgrade plans.



## **Radio Console System**

Zetron Max Central consoles were installed in 2012. Currently there are no upgrade plans.

## **Facility Infrastructure**

The PSAP is served by fiber-optic cable feeds from Zito Communications for the ESInet and Windstream for administrative telephone lines. The Zito fiber has last-mile diversity. Windstream provides a 200-pair copper cable, while the North Central Regional Planning Commission (RPC) provides Internet service over fiber.

In addition, Northern Tier ESInet hardware consists of a Juniper router with a diverse fiber backbone and two Juniper Ethernet switches. Twenty 10/100 copper ports are available on each Juniper switch. A Cisco 2960 switch is used for the CPE; 20 ports are available on this switch.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported with a Liebert UPS system, rated for 60 kilovolt amperes (kVA), located in the equipment room. This system was installed in 2012 and supports all critical equipment. The system is maintained under contract by Emerson Electric.

### Backup Power

Backup power to the PSAP is provided by one 300-kilowatt (kW) Onan diesel generator with a 1,700-gallon fuel tank. The generator was installed in 2004 and is located inside a shelter to the west of the building; it is covered by a maintenance contract with Bridgeway Power.

## **Equipment Room**

The equipment room is located north of the 9-1-1 Center. There are overhead cable trays above the one row of equipment racks, and there is available space in the cable trays for additional cabling. Cables also are run under the raised floor to support the 9-1-1 Center and the network connections for the building.

Approximately 10 percent of the space in one row of 15 racks is available. The room will support an additional row of 15 racks.



**Table 34: Elk County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>ELK COUNTY</b>	6	31,648	827 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	Yes	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	4,578	5,681	661
<b>Number of Trunks</b>	4	4	0
<b>Primary Selective Routers</b>	Verizon (State College/Altoona)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta v4.3 (Installed: 2012)		
<b>Computer-Aided Dispatch (CAD)</b>	LogiSYS Northstar v4.4 (Installed: 2000)		
<b>Logging Recording System</b>	Verint, Audiolog, v5 (SP2)		
<b>Geographic Information System (GIS)</b>	Esri, ArcGIS, v10.1		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	None		

### 3.5.5. Jefferson County

#### Overview

Jefferson County is a Sixth Class County with a population of 44,857. The County covers approximately 652 square miles, and has 23 townships and 11 boroughs within its boundaries, plus the City of Brookville, which is the County seat.

The County’s public safety answering point (PSAP) dispatches for 6 law enforcement agencies, 20 fire departments and 19 emergency medical services (EMS) agencies; it has no ringdown connections.

The PSAP handled an average of 47 9-1-1 calls each day in 2015. Of these, 43 percent were wireline, 50 percent were wireless and 7 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 98 percent of the time.

#### Considerations

Key factors affecting Jefferson County and its PSAP include the following:

- The County is part of the Northern Tier Emergency Services Internet Protocol (IP) Network (ESInet).
- The nation’s most famous Groundhog Day celebration occurs in Punxsutawney; it attracts more than 40,000, which is nearly equal to the County’s population.
- Interstate 80 cuts across the center of the County and is a heavily traveled route between the Midwest and New York City metropolitan area. Large numbers of commuter and



commercial truck traffic travel I-80 daily. When vehicular accidents occur that close the highway, traffic diverts to local routes, compounding issues for the PSAP.

- State routes 322, 36, 28 all converge in Brookville, along with two truck stops. This further compounds commercial traffic throughout the county, and along the I-80 interchange in Brookville.
- The County has extensive freight rail activity; four different railways traverse the County. This creates situations that are similar to those created by commercial trucking.
- There are 180 miles of gasoline and natural gas lines in the County.
- Brookville and Brockway are historic towns that attract a great many tourists.
- There are two state parks in the County, Clear Creek and Cook Forest.
- The Jefferson County Fair is held every July, while the Sykesville Ag and Youth Fair, which is equal in size to the county fair, is held every August.
- The County hosts the annual ABATE motorcycle rally in June, which brings thousands of bikers to the Hazen area.
- The Hazen Flea Market is held the first weekend of May through October, and brings up to 25,000 shoppers to the county on those weekends, increasing tourist activity.
- Two hospitals are located within the County: Penn Highlands Brookville and the Punxsutawney Area Hospital.

## **Staffing**

The PSAP has one management positions, a 9-1-1 coordinator. There are three full-time supervisors. In addition, 12 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by part-time telecommunicators who equate to three full-time equivalents (FTE).

## **Facility**

The PSAP is in a two-story facility located at 560 Service Center Road, Brookville, PA 15825. The PSAP shares the facility with the County's emergency management agency (EMA).

The 9-1-1 Center has five combined console positions (call-taker and dispatcher). There is space in the center to add two additional console positions. The County also has a backup facility with six positions.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a New World Systems (now Tyler Technologies) Aegis MSP CAD solution (v9) that was installed in 2011. It is scheduled to be upgraded in 2016.



## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v4.3 that was installed in 2016. It is Next Generation 9-1-1 (NG9-1-1) capable. The solution is scheduled to be replaced in 2023.

## **Radio Systems**

The radio system is a hybrid UHF simulcast systems consisting of Kenwood and Motorola equipment. The installation date is unknown; there are no current upgrade plans. All antennas are mounted on a tower adjacent to the building on the west side. Coaxial and fiber cables connect the tower to the equipment room.

## **Radio Console System**

The PSAP utilizes Orbacom IPC v6.1.9 consoles that were installed in 2006; there are no current upgrade plans.

## **Facility Infrastructure**

The PSAP is served by fiber-optic cable feeds from Zito Communications for the ESInet, and Windstream for administrative telephone lines and various circuits required to support the center. The Zito fiber has last-mile diversity. Windstream also serves the facility with a 200-pair copper cable, while Atlantic Broadband is providing Internet service via Windstream.

Northern Tier ESInet hardware consists of a Juniper router with a diverse fiber backbone and two Juniper Ethernet switches. Twenty-one 10/100/1000 small form-factor pluggable (SFP) ports are available on each Juniper switch. Two Cisco 2960 switches are used for the CPE; thirty-two 10/100 copper ports are available on these switches.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported with individual UPS units at each position and equipment rack. The runtime of these units varies, but averages 10 minutes. The units are maintained by the County's information technology (IT) department.

### Backup Power

Backup power to the PSAP is provided by a 100-kilowatt (kW) Generac propane generator with a 500-gallon tank. The generator is located inside a shelter to the west of the building and was installed in 2013. It is maintained by the County's maintenance department.



## Equipment Rooms

There are three equipment rooms in the building. A small equipment closet off the 9-1-1 Center houses the logging recorder and radio console personal computers (PCs), as well as the keyboard-video-mouse (KVM) extenders. The main equipment room on the first floor has radio equipment, the Northern Tier ESInet hardware, CAD servers, and PCs with KVM extenders. The basement equipment has CPE switches, PA Commonwealth Law Enforcement Assistance Network (CLEAN) network hardware and the Avaya administrative telephone system. Power panels also are in this room. Cables are run under the raised floor in trays on the first floor and above the ceiling tile in the basement equipment room. There is limited space in the cable trays for additional cabling. All equipment racks are full and there is no space for additional racks.

**Table 35: Jefferson County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>JEFFERSON COUNTY</b>	6	44,857	652 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	Yes	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	7,422	8,625	1,176
<b>Number of Trunks</b>	4	4	0
<b>Primary Selective Routers</b>	Windstream (State College/Altoona)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta, v4.3 (Installed: 2016)		
<b>Computer-Aided Dispatch (CAD)</b>	New World Systems (Tyler Technologies) Aegis MSP CAD, v9 (Installed: 2011)		
<b>Logging Recording System</b>	Verint Audiolog, v4		
<b>Geographic Information System (GIS)</b>	Esri, ArcMAP, v9.3.1		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	None		

### 3.5.6. McKean County

#### Overview

McKean County is a Sixth Class County with a population of 43,254. The County covers approximately 979 square miles, and has 15 townships and 6 boroughs within its boundaries, including the Borough of Smethport, which is the County seat.

The County's public safety answering point (PSAP) dispatches for 9 law enforcement agencies, 21 fire departments and 8 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police.



The PSAP handled an average of 57 9-1-1 calls each day in 2015. Of these, 33 percent were wireline, 55 percent were wireless and 5 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 98 percent of the time.

## **Considerations**

Key factors affecting McKean County and its PSAP include the following:

- The County is part of the Northern Tier Emergency Services Internet Protocol (IP) Network (ESInet).
- A portion the Allegheny Natural Forest is located in the County, as is the Kinzua Bridge State Park, which was designated by the state's Department of Conservation and Natural Resources as one of the "20 must-see" state parks in Pennsylvania.
- The County is very rural; it is very popular with fishing and hunting enthusiasts. The large influx of hunters that occurs seasonally leads to emergency calls involving accidents and lost hunters.
- The County is home to two hospitals, as well as the University of Pittsburgh at Bradford.

## **Staffing**

The PSAP has three management positions: a director, a deputy director, and a computer-aided dispatch (CAD)/quality assurance (QA) coordinator. There are no full-time supervisors. However, 10 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by part-time telecommunicators who equate to one full-time equivalent (FTE).

## **Facility**

The PSAP is in a single-story building located at 17175 State Route 6, Smethport, PA 16749. The PSAP shares the facility with the County's emergency operations center (EOC).

The 9-1-1 Center has five combined console positions (call-taker and dispatcher). Two additional positions are located in the EOC and are used for backup and training. The County utilizes Elk County's PSAP as its backup facility.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is an Airbus Orion CAD Star solution (v4) that was installed in 2008. It is scheduled to be upgraded in 2017.



## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v4.3 that was installed in 2012. It is scheduled to be upgraded in 2018.

## **Radio Systems**

The radio system is a hybrid of Motorola equipment (MTR 2000/3000 and Quantar radio base stations, plus Nucleus paging base stations). The installation date is unknown. The County utilizes three remote tower sites and a 124-foot tower adjacent to the building on the east side. Coaxial cables connect the tower to the equipment room.

## **Radio Console System**

The PSAP utilizes Zetron Max Dispatch consoles; the installation date is unknown. The system is Next Generation 9-1-1 (NG9-1-1) capable.

## **Facility Infrastructure**

The PSAP is served by fiber-optic cable feeds from Zito Communications, for the ESInet, and Verizon for administrative telephone lines. The Zito fiber has last-mile diversity. In addition, Zito Media and Comcast both provide Internet service to the facility.

Also, Northern Tier ESInet hardware consists of a Juniper router with a diverse fiber backbone and two Juniper Ethernet switches. No ports are available on the Juniper switches. Two Cisco 2960 switches are used for the CPE. Twelve 10/100 copper ports are available on these switches.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported with a Liebert UPS system, rated for 10 kilovolt amperes (kVA), which is located in the equipment room. This system supports the equipment room and the 9-1-1 Center. The system was installed in 2009 and there is no maintenance contract for this system.

### Backup Power

Backup power to the PSAP is provided by one 67 kilowatt (kW) Cummins natural gas generator with propane backup. The generator is located to the east of the building. The generator was installed in 2004 and is covered by a maintenance contract with Cleveland Brothers.



## Equipment Room

The equipment room is on the east side of the building. There is a cable tray over the row of equipment racks that extends to the west wall of the room where the telecommunications and radio terminations are located. There is limited space in the cable trays for additional cabling.

There is one vacant equipment rack at this time. There will be space available in two existing racks in the near future, but the room has very little capacity for additional racks.

The equipment room has an interior perimeter grounding system.

**Table 36: McKean County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>MCKEAN COUNTY</b>	6	43,254	979 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	Yes	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	6,873	11,444	1,063
<b>Number of Trunks</b>	4	4	0
<b>Primary Selective Routers</b>	Verizon (State College/Altoona)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta, v4.3 (Installed: 2012)		
<b>Computer-Aided Dispatch (CAD)</b>	Airbus Orion CAD Star, v4 (Installed: 2008)		
<b>Logging Recording System</b>	Verint, Audiolog, v3.3		
<b>Geographic Information System (GIS)</b>	Esri, ArcGIS, v10.2		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	None		

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### **3.6. SOUTH CENTRAL REGION**

#### **SUMMARY**

The South Central region consists of eight counties: Adams, Cumberland, Dauphin, Franklin, Lancaster, Lebanon, Perry and York. This region has a static residential population of 1.9 million and an even greater amount of transient population due to employment and tourism factors.

These same counties also are part of the South Central Task Force (formerly Terrorism Task Force) and meet on a regular basis. (The name change was warranted because task forces in general are dealing with an all-hazards approach to everyday events.) The South Central region also has a technical committee that meets every other month. The members of the technical committee are communications directors, managers and radio technicians from each of the counties. In addition, the State radio project office attends on a regular basis, as does some neighboring counties at times, including bordering Maryland counties. The meetings are held so that each county can update the other attendees on current issues. However, the main purpose for the meetings is to discuss regional cooperation and potential initiatives that could be deployed to make everyday events easier to manage.

Each County maintains a single consolidated public safety answering point (PSAP) that manages emergency call-taking (i.e., 9-1-1), non-emergency call-taking and comprehensive radio dispatch functions. Law enforcement, fire service and emergency medical services (EMS) personnel and apparatus are dispatched from each county's single site. In addition, each PSAP handles a variety of ancillary tasks. Most handle the dispatch or phone answering for their own County-based departments such as the coroner's office, detectives, probation and parole, and sheriff's department, to name just a few. Also, some counties handle call-taking for non-County agencies, such as "crime stoppers."

The total 9-1-1 call volume for the South Central region was 1,523,983 in 2015. In addition to handling 9-1-1 calls, each PSAP answers 10-digit and "800" service calls for non-emergency incidents. This added 850,000 more phone calls to the region's total in 2015.

The region is responsible for managing emergency incidents for 155 law enforcement agencies, 296 fire departments and 128 EMS companies. Combined, the region managed 1,712,451 calls for service in 2015; an average of 4,692 incidents per day. Even though the number of agencies served decreases every year as a result of consolidation and regionalization, the call volume historically increases a percentage point or two. The reason for the agency loss usually is driven by financial or volunteer staffing considerations.

The region has established a microwave network that is used for interoperability between counties and for data sharing. This network has been tied successfully to the State of Pennsylvania's microwave network. Future opportunities may allow for a tie-in to the State of Maryland's network, which would improve daily interoperability with public safety agencies across state lines.



For the future, the regional vision and cooperation will lead to significant ability to improve the delivery of emergency services and decrease the financial investment toward overly redundant hardware and facilities. Currently, the region's monthly recurring costs for system sustainment exceed \$215,000, excluding maintenance contracts and personnel costs. Continued deployment of Next Generation 9-1-1 (NG9-1-1) services will provide many opportunities to invest some of these recurring costs in emerging technology, which in turn will improve the capabilities and accessibility of the 9-1-1 system.

There are some challenges associated with regionality. For instance, many of the design and deployment phases of regional projects involve a sizable time investment, which taxes the available administrative staff from each PSAP. Consequently, contracted services have been engaged to shift the majority of the project deliverable burden. Further, considerable front-end effort will be needed to mitigate disparities in technology, operational policies and procedures, as well as possible political differences. The regional technical committee members are aware of these potential hurdles in the mission, and continue to enter into healthy discussions and focused collaboration toward issue resolution. Their commitment to the regional vision has been a key to their continued success.

### **3.6.1. Adams County**

#### **Overview**

Adams County is a Fifth Class County with a population of 101,610. The County covers approximately 519 square miles, and has 23 townships and 13 boroughs within its boundaries, plus the Borough of Gettysburg, which is the County seat.

The County's public safety answering point (PSAP) dispatches for 22 law enforcement agencies, 19 fire departments and 8 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police, and neighboring counties.

The PSAP handled an average of 151 9-1-1 calls each day in 2015. Of these, 62 percent were wireline, 34 percent were wireless and 4 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 99.8 percent of the time.

#### **Considerations**

Key factors affecting Adams County and its PSAP include the following:

- The eight-county South Central region has a 155 Mbps microwave system that connects all of the counties. Presently it is being used for radio traffic and interoperability between counties. Future plans are for connections to the other Pennsylvania regions and the State of Maryland.
- Gettysburg is home to an 11,000 acre historical district visited by millions of tourists annually, particularly in the summer months. Visitors to Gettysburg flock to the famous Civil



War battleground and the numerous reenactments that are held; the July 4 reenactments alone draw more than 100,000 visitors into the County.

- The County also is home to numerous fruit orchards, vineyards and antiques markets that also attract a large influx of tourists.
- U.S. Route 15 (US 15) runs through the County and is heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- US 15 interconnects with state route 30 in Gettysburg, which also is heavily traveled.

### **Staffing**

The PSAP has two management positions: a director and a deputy director. There are four full-time supervisors. In addition, 18 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by 10 part-time telecommunicators, who equate to three full-time equivalents (FTE).

### **Facility**

The PSAP is located at 230 Greenamyer Lane, Gettysburg, PA 17325. It is housed on the second floor of the Department of Emergency Services building. The PSAP shares the facility with the County's emergency management agency (EMA) and hazmat unit. The first floor of the facility consists primarily of meeting and training rooms.

The 9-1-1 Center has 10 full-time combined positions (call-taker and dispatcher). The County also has a backup facility that maintains three positions.

### **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is an Alert Public Safety Solutions Responder CAD that was installed in 2012.

### **Customer Premises Equipment**

The customer premises equipment (CPE) is a Plant CML (now part of Airbus) Sentinel Patriot v3 that was installed in 2011. The system will be replaced or software upgraded in 2016.

### **Radio Systems**

The radio system is a Motorola Astro v7.13 Project 25 simulcast trunking system that was installed in late 2015.



Two 140-foot towers are located at the facility, one that supports antennas for the legacy radio systems and a second that supports antennas for the new radio system. The legacy tower will remain after the legacy antennas are removed and may be repurposed for less critical communications systems.

### **Radio Console System**

Motorola MCC 7500 v7.14 consoles were installed in 2014.

### **Facility Infrastructure**

The entrance facilities are located in two separate storage rooms on opposite sides of the facility. One facility houses CenturyLink's 100-pair copper demarcation point and fiber entrance, and is collocated with the main electrical distribution panel and generator automatic transfer switch.

### **Power Systems**

#### Uninterruptible Power Supply

The legacy radio and telephone room has a single PowerWare 18 kilovolt amperes (kVA) Ferrups UPS system and was installed in 2004. Load and percent utilization data were not available at the front panel. The UPS system has an external automatic transfer and AC line disconnect switch on the wall above the system.

The radio room has redundant Eaton 9170 15 kVA UPS systems, each with an additional battery cabinet. One of the systems has a 16-percent load rating, while the other has a 17-percent load rating.

The computer room does not have its own UPS system. The County's network cabinet has two TrippLite rack-mount UPS systems for backup to the servers in that rack.

#### Backup Power

The facility has a single Generac 300 kilowatt (kW) diesel generator with a belly tank that was installed in 2004. The generator is located in the rear of the building. The automatic transfer switch is located in the electrical/storage room in the north east corner of the building. The PSAP staff indicated that the generator is at 60-percent capacity under full load.

### **Equipment Rooms**

The facility has three equipment rooms: legacy radio and telephone; radio; and computer.

The computer room houses the following:

- Administrative local area network (LAN) equipment
- Administrative telephone system
- 9-1-1 servers



- County LAN equipment
- Administrative servers
- Hughes/Sevan network equipment
- ComLabs EMNet equipment
- Facility closed-circuit television (CCTV) system recorder
- Facility environmental controls system panel

There does not appear to be any ports available for external network connections, but there is space in the computer room for the addition of cabinets or racks for additional equipment.

#### Legacy Radio and Telephone

The legacy radio and telephone room houses the following:

- Microwave system equipment
- Motorola radio system equipment
- Orbacom paging system equipment
- Internet Protocol (IP) phone system
- 9-1-1 CPE phone system equipment
- CenturyLink CPE equipment
- Voice recorder system equipment

There is space in the radio room to accommodate one or two additional cabinets or racks for additional equipment. There are two existing empty cabinets that could be put into service for additional equipment. Some of the equipment and supporting hardware in this room are grounded.

#### Radio Room

The radio room houses the following:

- Radio systems equipment (new tower)
- Microwave systems equipment (new tower)

The radio room, which is adjacent to the PSAP, has space available for additional racks and cabinets for additional equipment. The equipment and supporting hardware in this room appear to be grounded in accordance with communications site grounding standards.



**Table 37: Adams County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>ADAMS COUNTY</b>	5	101,610	519 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	Yes	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	34,429	18,454	2,333
<b>Number of Trunks</b>	8	4	0
<b>Primary Selective Routers</b>	Carlisle/Chambersburg		
<b>Customer Premises Equipment (CPE)</b>	Plant CML Sentinel Patriot (Installed: 2011)		
<b>Computer-Aided Dispatch (CAD)</b>	Alert Public Safety Solutions, Responder CAD, v4.5.801 (Installed: 2012)		
<b>Logging Recording System</b>	Nice NiceCall Focus III, v5.1.2600		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS Desktop and Server, v10.2.2		
<b>Databases Maintained</b>	Warrants, public safety, special needs, special needs facilities, address database		
<b>Leased Equipment</b>	Plant CML		

### 3.6.2. Cumberland County

#### Overview

Cumberland County is a Third Class County with a population of 239,164. The County covers approximately 545 square miles, and has 22 townships, 11 boroughs and two military installations within its boundaries, including the Borough of Carlisle, which is the County seat.

The County’s public safety answering point (PSAP) dispatches for 38 law enforcement agencies, 38 fire departments and 19 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police, neighboring counties, the Carlisle Barracks, and the State Correctional Institution (SCI)–Camp Hill.

The PSAP handled an average of 281 9-1-1 calls each day in 2015. Of these, 33 percent were wireline, 61 percent were wireless and 6 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 94.4 percent of the time.

#### Considerations

Key factors affecting Cumberland County and its PSAP include the following:

- The eight-county South Central region has a 155 Mbps microwave system that connects all of the counties. Presently it is being used for radio traffic and interoperability between



counties. Future plans are for connections to the other Pennsylvania regions and the State of Maryland.

- The County is one of the fastest growing in the state; however, 70 percent of the population lives in one-third of the land mass.
- Interstates 81 and 83, as well as the Pennsylvania Turnpike, all have significant stretches in the County, and are heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- Numerous warehouses are emerging along these highways, increasing truck traffic.
- Cumberland County's PSAP also dispatches for Fulton County. Fulton County is a small county (population of approximately 15,000) and has no police departments and just three fire departments. Interstate 70 does traverse Fulton County; I-70 also is heavily traveled with considerable commercial truck traffic.

## **Staffing**

The PSAP has four management positions: a director and three managers. There are four full-time supervisors. In addition, 34 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by six part-time telecommunicators, who equate to four fulltime equivalents (FTE).

## **Facility**

The PSAP is located at 1 Public Safety Drive, Carlisle, PA 17013. The facility is relatively new, as the PSAP moved into it in October 2011. The single-story facility houses the PSAP, emergency operations center (EOC) and emergency management agency (EMA) administrative offices. The PSAP and EOC operations are unified.

There is expansion potential in the facility, and it meets the Federal Emergency Management Agency (FEMA) requirements for resiliency. The facility has a break, conference and training rooms, as well as a strong audiovisual (A/V) capability that improves situational awareness.

The 9-1-1 Center has four call-taker-only console positions and 12 combined console positions (call-taker and dispatcher). The County also has a mobile command vehicle that serves as a backup facility with eight positions.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is an Archonix (now Securus Technologies) ccCAD that was installed in 2003. An upgrade to Securus XCAD version is expected to be completed by July 2016.



## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Sentinel Call Manager v3.0 that was installed in 2011. The County anticipates replacing the system in 2016.

## **Radio Systems**

The radio system is a 17-site Harris OpenSky SR9 system that was installed in 1999. An upgrade to P25 functionality is scheduled for the 2017-2018 timeframe, but progress has been slowed by funding challenges.

## **Radio Console System**

Harris Maestro consoles were installed in 2011.

## **Facility Infrastructure**

The PSAP is served by fiber-optic and copper cable feeds run diversely from CenturyLink Communications. Comcast provides cable television (CATV) and Internet access to the building.

All facilities are terminated in the equipment room. Both the entrance facilities and the equipment room—which supports all radio and microwave equipment—are shared by the other building occupants.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported by an Eaton 9395 UPS system, with two Vycon Direct Connect flywheel kinetic storage units (spinning at 35,000 RPM) and was installed in 2011. Each can support the building's critical loads for up to 60 seconds at current loads, or up to 19 seconds at maximum designed loads. Both systems, located in an electrical room adjacent to the equipment room, are supported by Eaton under a maintenance contract.

### Backup Power

The UPS is fed with normal/emergency power from three 500 kilowatt (kW) Generac diesel generators, each with a 1,800-gallon fuel tank. The generators are covered by a maintenance contract with Modern Power Equipment, and were installed in 2011. These generators are not paralleled, and provide 2N+1 redundancy. It is estimated that the fuel would run the facility for one week.



## Equipment Room

The equipment room is on the East side of the building, on a raised floor. The room has adequate a grounding that appears to be communications site grounding standards compliant. Cabling is run overhead and below the floor. There is cable tray both above and below the raised floor. The room has ample overhead and under-floor cable runways. This space is shared and supports other occupants in the building.

Network infrastructure is supported by the County's information technology (IT) department. At the network core there are two Cisco 2900 routers, and a Cisco 2600 router connecting the PSAP to service providers.

Multiple Cisco Catalyst switches provide connectivity at the distribution edge of the data network, with a small amount of additional ports (approximately 10). The CAD network has many additional L2 ports available.

There is some existing rack capacity available in the equipment cabinets that support the PSAP. There are also empty racks available for power and grounding, as they were vacated by the consolidation of equipment.

**Table 38: Cumberland County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>CUMBERLAND COUNTY</b>	3	239,164	545 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	Yes	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	33,682	63,074	5,935
<b>Number of Trunks</b>	12	6	0
<b>Primary Selective Routers</b>	Century Link: Chambersburg/Carlisle; Verizon: Paxtang/Harrisburg		
<b>Customer Premises Equipment (CPE)</b>	Airbus Sentinel Call Manager (Installed: 2011)		
<b>Computer-Aided Dispatch (CAD)</b>	Archonix (now Securus) ccCAD, v2.9 (Installed: 2003)		
<b>Logging Recording System</b>	Verint Audiolog, v5sp2hfr2		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.1		
<b>Databases Maintained</b>	Notification and Resource Manual, Public Safety Database		
<b>Leased Equipment</b>	None		



### **3.6.3. Dauphin County**

#### **Overview**

Dauphin County is a Third Class County with a population of 269,797. The County covers approximately 525 square miles, and has 23 townships and 16 boroughs within its boundaries, plus the cities of Hershey and Harrisburg, with the latter of which being the State capital.

The County's public safety answering point (PSAP) dispatches for 18 law enforcement agencies, 43 fire departments and 11 emergency medical services (EMS) agencies, and has ringdown connections with the Derry Township police department, and the Three Mile Island Nuclear Generating Station.

The PSAP handled an average of 440 9-1-1 calls each day in 2015. Of these, 6 percent were wireline, 86 percent were wireless and 8 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 92.1 percent of the time.

#### **Considerations**

Key factors affecting Dauphin County and its PSAP include the following:

- The eight-county South Central region has a 155 Mbps microwave system that connects all of the counties. Presently it is being used for radio traffic and interoperability between counties. Future plans are for connections to the other Pennsylvania regions and the State of Maryland.
- In addition to the state capitol building, the County has numerous entertainment attractions that attract tens of thousands of visitors year round.
- The City of Harrisburg hosts a minor league baseball team (Harrisburg Senators), while the City of Hershey hosts a minor-league hockey team (Hershey Bears). The Hershey Bears are the most successful team in the American Hockey League and regularly draw crowds in excess of 10,000.
- The Hershey amusement complex, which includes the Hersheypark family theme park and adjacent ZooAmerica wildlife park, regularly attracts thousands of visitors. In addition, the complex consistently draws thousands of additional visitors with scheduled indoor and outdoor concerts and events that are very popular in the summer months.
- The County hosts numerous festivals throughout the year.
- Most of the population is clustered around Harrisburg and to a lesser extent, Hershey. The rest of the County is rural and forested.

#### **Staffing**

The PSAP has four management positions: a director, and administration, communications/operations and technical systems managers. There are four full-time supervisors. In addition, 50 full-time



telecommunicators handle both call-taking and dispatching; they are supplemented by five part-time telecommunicators, who equate to three fulltime equivalents (FTE).

## **Facility**

The PSAP is located on the basement level of a County-owned building at 911 Gibson Blvd., Steelton, PA 17113. The building is next to a juvenile detention facility. The facility has a public area, a training room, a kitchen and a locker room with shower facilities.

The 9-1-1 Center has 17 full-time combined positions (call-taker and dispatcher). The County also has a backup facility that maintains four positions; however, it is located within the PSAP.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Hexagon (formerly Intergraph) I/CAD that was installed in 1995. The County would like to upgrade the system in 2016, and is considering replacement in approximately three years.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v2.2 that was installed in 2009. It will be replaced in May 2016.

## **Radio Systems**

The radio system is a Motorola Astro v7.14 Project 25 trunking system that was installed in 2012.

There is a tower onsite at the PSAP, and the equipment room connects to the radio shelter with fiber-optic and copper cables. The shelter houses the PSAP's microwave and radio equipment.

## **Radio Console System**

Motorola MCC 7500 consoles were installed in 2012.

## **Facility Infrastructure**

The PSAP is served by fiber-optic cable feeds from Verizon and Comcast.

Verizon has multiple racks to de-multiplex the service down for handoff in the PSAP. The Verizon services are routed diversely to the facility.



Comcast is only providing Business Ethernet service over fiber-optic cable and has no coaxial cable in the facility. The Comcast service is not routed diversely to the facility.

The copper cables terminate on the wall for private branch exchange (PBX) cross connection and distribution to other tenants.

## **Power Systems**

### Uninterruptible Power System

The PSAP is supported with two UPS systems. The first is an Eaton model 9390, 80 kilovolt amperes (kVA) UPS system with battery cabinets, located in an electrical room. This system was installed in 2007. It supports the equipment room's servers and information technology (IT) loads, in a shared power arrangement with the other UPS, and solely supports the PSAP's radio systems and 9-1-1 Center. This UPS has a runtime of four hours at full load. The system is maintained under contract by Eaton.

The second UPS is an Eaton model 9355, 30 kVA system with battery cabinets, located in an electrical room. This system was installed in 2015. It supports the equipment room's servers and IT loads, in a shared power arrangement with the other UPS, for a runtime of 1.75 hours at full load. The system is maintained under contract by Eaton.

### Backup Power

The UPS is fed with normal/emergency power from a 500-kilowatt (kW) Onan diesel generator with an 8,000-gallon fuel tank. The generator is covered by a maintenance contract with Tom Stephenson Generator Services, located in Duncannon, and was installed in 1992.

## **Equipment Room**

The equipment room is in the basement of the building; it has ample overhead cable runways and an adequate grounding system that appears to comply with communications site grounding standards.

Network infrastructure is Hewlett-Packard and is supported by the County's IT department. An HP A7510 switch is the core of the data network. The switch has capacity for multiple (approximately 22) small form-factor (SFF) ports, at 10/100/1000-Base-X at L2/L3. The switch also has additional port capacity (approximately 100) at L2 ports. The County plans to flatten the network to all L2 for higher throughput and reduced complexity.

There is a great deal of existing rack capacity available; however, this is used as transition space during system migrations of the County's leased IT and 9-1-1 infrastructure.



**Table 39: Dauphin County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>DAUPHIN COUNTY</b>	3	269,797	525 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	Yes	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	10,027	137,188	13,168
<b>Number of Trunks</b>	8	0	0
<b>Primary Selective Routers</b>	Harrisburg/Paxtang		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta v2.2 (Installed: 2009)		
<b>Computer-Aided Dispatch (CAD)</b>	Hexagon (formerly Intergraph), I/CAD, v9.1.1 (Installed: 1995)		
<b>Logging Recording System</b>	Nice NRX		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS/ArcInfo		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	CPE, CAD, GIS, Printers, Network Equipment		

### **3.6.4. Franklin County**

#### **Overview**

Franklin County is a Fourth Class County with a population of 151,372. The County covers approximately 772 square miles, and has 15 townships and 7 boroughs within its boundaries, including the Borough of Chambersburg, which is the County seat.

The County’s public safety answering point (PSAP) dispatches for 7 law enforcement agencies, 18 fire departments and 18 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police and neighboring counties.

The PSAP handled an average of 280 9-1-1 calls each day in 2015. Of these, 58 percent were wireline, 38 percent were wireless and 4 percent were voice over Internet Protocol (VoIP). The PSAP also answered three text-to-9-1-1 calls in 2015. Last year, 9-1-1 calls were answered within 10 seconds 95 percent of the time.

#### **Considerations**

Key factors affecting Franklin County and its PSAP include the following:

- The eight-county South Central region has a 155 Mbps microwave system that connects all of the counties. Presently it is being used for radio traffic and interoperability between



counties. Future plans are for connections to the other Pennsylvania regions and the State of Maryland.

- The County is one of the fastest growing in the state, and is becoming a bedroom community of Washington, D.C. which is only an hour away by automobile.
- Interstate 81 runs through the county and is heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- There is considerable activity along the I-81 corridor, including multiple shopping and eating establishments, car dealerships and fruit orchards.
- The fruit orchards draw a sizeable influx of migrant workers seasonally.
- Because I-81 connects to I-70 just 12 miles away, numerous commercial trucking terminals and warehouses have emerged in the County.
- The County is 25 miles from Gettysburg, which is a highly popular tourist attraction; as a result, the County's population greatly increases in the summer months.
- Chambersburg, the County seat, which was burned by the Confederate army after the Battle of Gettysburg, also is a popular tourist destination.
- The Whitetail ski resort is very popular and attracts a sizeable influx of tourists in the winter months.

## **Staffing**

The PSAP has three management positions: emergency service director, assistant emergency service director, and 9-1-1 communications coordinator. There also are four full-time supervisors, and a Geographic Information System (GIS) coordinator. In addition, 24 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by eight part-time telecommunicators, who equate to four fulltime equivalents (FTE).

## **Facility**

The PSAP is located at 390 New York Avenue, Chambersburg, PA 17201. It is in an industrial complex that is adjacent the Letterkenny Army Depot. This is a single-story facility that also houses the County's emergency operations Center (EOC), emergency management agency (EMA) and administrative offices.

The 9-1-1 Center has two call-taker-only console positions, and seven combined console positions (call-taker and dispatcher). The County also has a backup facility that maintains four combined positions.



## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a TriTech VisionCAD v4.3 that was installed in 1999. The system will be replaced in the third quarter of 2016.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v3.2 that was installed in 2014.

## **Radio Systems**

The radio system is a Motorola UHF trunking system. There is a tower onsite, and the facility's equipment room supports all radios and microwave equipment.

The PSAP is connected to the South Central regional microwave system that connects seven additional counties.

## **Radio Console System**

The PSAP utilizes Motorola MCC 7500 consoles.

## **Facility Infrastructure**

The PSAP is served by fiber-optic cable feeds run diversely from CenturyLink; however, the diversity is only for the last mile to the PSAP. A dedicated conduit with 96 strands of fiber-optic cable runs to the jail to provide it with Internet access. There also are copper facilities from CenturyLink. Comcast provides cable television (CATV) and Internet access to the building.

All facilities are terminated in the equipment room. The entrance facilities and equipment room are shared by the other building entities.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported by two UPS systems. Each can support the building's critical loads. Both systems, located in an electrical room adjacent to the electrical room, are supported by Emerson under a maintenance contract.

The first is a Liebert model APM, 90 kilovolt amperes (kVA) UPS with battery cabinets, installed in 2015. This UPS system is the primary support for all equipment room information technology (IT) loads, the 9-1-1 Center, and any single-feed-powered systems. This system has a manual bypass for maintenance. Runtime at full load was designed for three hours.



The second is a Liebert model N-Power, 50 kVA UPS with battery cabinets, installed in 2010. This UPS system supports all equipment room IT loads and the 9-1-1 Center on the equipment redundant power connection. Runtime at full load was designed for 45 minutes. This system does not have a manual bypass, so when service takes place, the equipment has only the primary power connection to support continued service.

#### Backup Power

The UPS is fed with normal/emergency power from a 600 kW Caterpillar diesel generator with a 1,000-gallon fuel tank. The generator is located outside of the building on the north side, adjacent to the radio tower. The generator is covered by a maintenance contract with Cleveland Brothers, and was installed in 2009.

#### **Equipment Room**

The equipment room is on the east side of the building; it is shared by and supports other occupants in the building. The room has ample overhead cable runways and an adequate grounding system that appears to comply with communications site grounding standards.

Network infrastructure is supported by the County's IT department. A Cisco Catalyst 6510 switch is the core of the data network. The switch has the capacity for multiple (approximately 12) small-form-factor (SFF) ports, at 10/100/1000-Base-X at L2/L3. The switch also has significant additional port capacity (approximately 100) at L2 ports. Additionally there are two Cisco 3825 routers connecting the PSAP to service providers.

There is some existing rack capacity available in the equipment cabinets supporting the PSAP. There may be enough space for additional racks, if equipment were to be consolidated.



**Table 40: Franklin County at a Glance**

FRANKLIN COUNTY	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
	4	151,372	772 sq. mi.
	Backup PSAP?	ESInet?	Text-to-911?
	Yes	Yes	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	59,169	38,394	4,586
<b>Number of Trunks</b>	7	6	0
<b>Primary Selective Routers</b>	Carlisle/Chambersburg		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta (Installed: 2014)		
<b>Computer-Aided Dispatch (CAD)</b>	TriTech, Vision Cad, v3.7 (Installed: 1999)		
<b>Logging Recording System</b>	Eventide NexLog/Nice		
<b>Geographic Information System (GIS)</b>	GeoComm GeoLynx, v8.1.1.3		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	CPE expires June 2019		

### 3.6.5. Lancaster County

#### Overview

Lancaster County is a Third Class County with a population of 526,436. The County covers approximately 944 square miles, and has 41 townships and 18 boroughs within its boundaries, plus the City of Lancaster, which is the County seat.

The County’s public safety answering point (PSAP) dispatches for 30 law enforcement agencies, 69 fire departments and 23 emergency medical services (EMS) agencies, and has a ringdown connection with the Pennsylvania State Police.

The PSAP handled an average of 668 9-1-1 calls each day in 2015. Of these, 51 percent were wireline, 44 percent were wireless and 5 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 98.5 percent of the time.

#### Considerations

Key factors affecting Lancaster County and its PSAP include the following:

- The eight-county South Central region has a 155 Mbps microwave system that connects all of the counties. Presently it is being used for radio traffic and interoperability between counties. Future plans are for connections to the other Pennsylvania regions and the State of Maryland.



- The County has a large Amish community that attracts a large influx of tourists, particularly in the summer months.
- In addition to the Amish community, there is a plethora of theaters—including the very popular Sight and Sound Theatre—and shopping opportunities—notably large outlet malls—that attract a sizeable influx of tourists year round.
- The Pennsylvania Renaissance Faire is held weekends August through October, and attracts up to 50,000 visitors each time it is held. Also on the grounds is the Mount Hope Estate and Winery.
- The County also is home to a minor-league baseball team (Lancaster Barnstormers).
- Also in the County is the Lancaster Country Club, which hosted the United States Women's Open golf tournament, which drew more than 130,000 spectators over the four-day event.
- The Susquehanna River flows through the county, which draws a great many boaters/water skiers and fishing enthusiasts. The Conestoga River is a tributary of the Susquehanna River and attracts many canoeists and kayakers. Both waterways generate numerous rescue operations.
- There is a considerable amount of industry in the County, including numerous bulk-storage facilities and underground pipelines, the latter of which have experienced fires on several occasions.
- There is considerable freight rail activity in the County. Trains that are more than a mile long travel through Lancaster County on their way to delivering crude oil to refineries in Wilmington, Delaware. The Norfolk and Southern railroad maintains a switching center in the County. There is one spur line near the PSAP, but the trains are short and typically do not carry hazmat cargo, mostly feed and food products.

## **Staffing**

The PSAP has four management positions: a director, deputy director, and two operations managers. There are 10 full-time supervisors. In addition, 85 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by six part-time telecommunicators, who equate to three full-time equivalents (FTE).

## **Facility**

The PSAP is located at 28 South Charlotte Street, Manheim, PA 17545. It is collocated on the first floor of a two-story building that also houses a central office switch for Windstream; the County's emergency management agency occupies part of the second floor, with the PSAP's data division taking up the rest of the space. The County leases the space; the lease runs through 2019 and the County wants to extend it.

The facility has a break room, kitchen with seating and a training room.



The 9-1-1 Center has 26 combined console positions (call-taker and dispatcher). The County also has a backup facility that maintains 13 positions.

### **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is an Emergitech Forge that was installed in 2008. Currently there are no upgrade or replacement plans.

### **Customer Premises Equipment**

The customer premises equipment (CPE) is a Meridian 5212 that was installed in 1991. There are no current plans to replace the system. However, though Windstream has stocked up and there is no problem for the foreseeable future, handsets for this system are becoming less plentiful and eventually will be impossible to replace; also Windstream is planning a migration to Internet Protocol (IP); both circumstances eventually might force the County to execute a replacement.

### **Radio Systems**

The radio system is an Airbus P-25 v2.06 Project 25 simulcast trunking system that was installed in 2015. The system operates in the UHF T-Band, which must be vacated per Federal Communications Commission (FCC) mandate by 2022.

There is a tower at the back of the building and the network equipment room connects to the tower with fiber-optic cables. Lancaster PSAP connects to the regional eight county 155 Mbps microwave ring.

### **Radio Console System**

Zetron ACOM consoles were installed in 2015. The system is Next Generation 9-1-1 (NG9-1-1) capable.

### **Facility Infrastructure**

The PSAP is served by redundant fiber-optic rings (SONET), as well as redundant copper lines of the Windstream central office that is collocated in the building. This entrance facility is the main demarcation point for the entire building. Cabling is run overhead with a cable tray and the room is properly grounded.

Windstream is providing multiple Ethernet services over fiber-optic cable. The services are routed diversely to the facility, one coming from Ephrata (12 megabits per second [Mbps]) and one coming from East Petersburg (50 Mbps). In addition, backup Internet access is provided by a 10 Mbps connection to the County's offices at 150 North Queen St., which also provides a connection to the



statewide radio system and CLEAN/JNET. The PSAP also is connected to its backup site in Brownstown (10 Mbps connection).

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported by two UPS systems that provide power to two independent buses. One is an Eaton model 9390 120 kilovolt amperes (kVA) system installed in 2013 that is connected to one bus. The other UPS system is a Liebert AP301 120 kVA system installed in 2000 that is connected to a separate bus. Currently they are working at less than 25 percent capacity. If one UPS fails, the other supports the load on a separate bus. This UPS system supports all of the information technology (IT), PSAP and EOC load. The UPS systems have a runtime of approximately 15 minutes at full load. The systems are maintained under contract by Eaton and Liebert.

### Backup Power

The UPS systems are fed with normal/emergency power from a 250 kilowatt (kW) NX50 Cummins Onan diesel generator installed in 2008 with a 500-gallon underground fuel tank (four-day supply). The generator is located outside in a separate brick shelter and is covered by a maintenance contract with Cummins.

## **Equipment Rooms**

There are two equipment rooms located on the first floor. Both rooms are conditioned by Liebert redundant/dual HVAC systems.

One room houses the network infrastructure, which includes a redundant dual-core Cisco 6509 switch with dual Checkpoint firewalls. The new radio system, the microwave core, and the computer servers are located in this equipment room. The other room houses the call recording system, the legacy radio system, and the radio recording system. In addition, the Commonwealth Law Enforcement Assistance Network (CLEAN) connection terminates in this room. The PSAP also has a T1 connection—to the Lancaster Safety Coalition for access to the City's cameras—that terminates in this room.

Both rooms have expansion capacity for at least six racks given the current configuration. In addition, most racks have space to add systems. The grounding in both rooms includes a halo and appears to comply with communications site grounding standards.



**Table 41: Lancaster County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>LANCASTER COUNTY</b>	3	526,436	944 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	Yes	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	125,009	106,975	11,743
<b>Number of Trunks</b>	53	15	0
<b>Primary Selective Routers</b>	Windstream – Lititz Central Office and Ephrata Central Office		
<b>Customer Premises Equipment (CPE)</b>	Meridian Digital Sets, Meridian 5212 workstation sets, Nortel DMS-100/200 switch with Version SN0009 (Installed: 1991)		
<b>Computer-Aided Dispatch (CAD)</b>	Emergitech, Forge, v2015.1 (Installed: 2008)		
<b>Logging Recording System</b>	Exacom, Hindsight-G2, v2.0.0.22		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.0		
<b>Databases Maintained</b>	PA Premise Alert, Crime Stoppers		
<b>Leased Equipment</b>	Facility lease runs through 2019		

### 3.6.6. Lebanon County

#### Overview

Lebanon County is a Fifth Class County with a population of 135,406. The County covers approximately 362 square miles, and has 18 townships and seven boroughs within its boundaries, plus the City of Lebanon, which is the County seat.

The County’s public safety answering point (PSAP) dispatches for 16 law enforcement agencies, 36 fire departments and 7 emergency medical services (EMS) agencies, but has no ringdown connections.

The PSAP handled an average of 144 9-1-1 calls each day in 2015. Of these, 38 percent were wireline and 62 percent were wireless. Last year, 9-1-1 calls were answered within 10 seconds 99.6 percent of the time.

#### Considerations

Key factors affecting Lebanon County and its PSAP include the following:

- The eight-county South Central region has a 155 Mbps microwave system that connects all of the counties. Presently it is being used for radio traffic and interoperability between



counties. Future plans are for connections to the other Pennsylvania regions and the State of Maryland.

- The County's population is growing, and because it sits between the cities of Reading and Harrisburg, it is becoming a bedroom community.
- Interstate 78 and the Pennsylvania Turnpike traverse the County, and both are heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- A significant amount of warehouse operations is emerging along the I-78 corridor, further increasing commercial vehicle traffic.
- A busy freight rail line connecting Harrisburg and Philadelphia runs through the County; this creates situations that are similar to those created by commercial trucking.
- The City of Hershey—which has numerous tourist attractions—is in Dauphin County on the western edge of Lebanon County, and causes significant traffic to flow through the latter.
- The County is home to several tourist attractions, including a large Amish community and the Cornwall Iron Furnace, which is National Historic Landmark and state historical site.

## **Staffing**

The PSAP has four management positions: a director, a deputy director, a center supervisor, and an information technology (IT) manager. There are 12 full-time supervisors. In addition, 16 full-time telecommunicators handle both call-taking and dispatching

## **Facility**

The PSAP is located at 400 S. 8<sup>th</sup> St., Lebanon, PA 17042, on the basement level of the County Courthouse. There is secure access at the external doors. The PSAP shares the five-story facility with the Courthouse, other County offices, and the emergency operations center (EOC); the facility also doubles as the City's municipal building. The PSAP and the EOC have limited space for expansion. The County has had very preliminary discussions about moving to a new facility.

The 9-1-1 Center has four call-taker-only console positions, and eight combined positions (call-taker and dispatcher). The County does not have a backup facility.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Tyler Technologies (formerly New World Systems) Aegis that was installed in 2005. An upgrade is expected to be complete in 2016.



## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Sentinel Patriot v3.3 that was installed in 2011.

## **Radio Systems**

The radio system is a Harris EDACS Project 25 system that was installed within the last decade.

There is a tower on the roof, and the equipment room connects to the radio shelter with fiber-optic and copper cables. The shelter houses the PSAP's microwave and land mobile radio (LMR) equipment.

## **Radio Console System**

Harris Maestro consoles were installed within the last decade.

## **Facility Infrastructure**

The PSAP is served by fiber-optic feeds from Comcast and copper cable feeds from Verizon. This entrance facility is the main demarcation point for the entire building, so the both the entrance facility and the equipment room are shared by other entities.

Verizon has multiple racks to de-multiplex the service down for handoff in the PSAP. The Verizon services are not routed diversely to the facility. The copper cables terminate on the wall for private branch exchange (PBX) cross connection, T1 connection to the statewide radio system and to CLEAN/JNET at the PSP, and for distribution to other tenants.

Comcast is providing 100 megabits per second (Mbps) Business Ethernet service. The services are routed diversely to the facility, with one feed coming from Elizabethtown and another coming from Lebanon. In addition, Evenlink provides backup Internet access of 5 Mbps. If both connections fail, the PSAP can connect manually to the County Courthouse Internet connection.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported with three UPS systems that work in line. Each system is an Eaton model 9155, and they collectively provide 45 kilowatt amperes (kVA) of output power. Currently they are working at 46 percent load. If one UPS fails, the other two support the load on one bus. This collective system was installed in 2011, and it supports the full IT, PSAP, and EOC load. The system has a runtime of approximately 15 minutes at full load, and is maintained under contract by Eaton.



### Backup Power

The UPS is fed with normal/emergency power from a 125 kilowatt (kW) Onan diesel generator with a 1,000-gallon underground fuel tank and was installed in 2001. The generator is located inside the shelter outside the building's mechanical room. The generator is covered by a maintenance contract with Cummins.

### **Equipment Room**

The equipment room is in the facility basement. Network infrastructure is a combination of Dell, Hewlett-Packard and Cisco equipment that is supported by the PSAP's IT technician. Dell high-availability switching represents the core of the data network. Two Dell switches are daisy-chained via small-form-factor (SFF) ports, at 10/100/1000-Base-X at L2/L3, creating one logical core switch.

The room has ample underfloor space and expansion capacity for a few racks in its current configuration; there is approximately 1½ rack space available and two more racks could be installed. Once the radio system is upgraded, there will be a great deal of existing rack capacity available.

All of the racks are grounded back to one bus bar on the wall near the entrance door; however, the grounding does not appear to comply with communications site grounding standards.

**Table 42: Lebanon County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>LEBANON COUNTY</b>	5	135,406	362 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	Yes	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	20,166	32,459	0
<b>Number of Trunks</b>	8	8	0
<b>Primary Selective Routers</b>	Harrisburg/Paxtang		
<b>Customer Premises Equipment (CPE)</b>	Airbus Sentinel Patriot (Installed: 2011)		
<b>Computer-Aided Dispatch (CAD)</b>	Tyler Technologies Aegis, v9.x (Installed: 2005)		
<b>Logging Recording System</b>	Nice NiceLog, v8.9		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.1		
<b>Databases Maintained</b>	Public Safety Resource, CAD backup files		
<b>Leased Equipment</b>	None		



### **3.6.7. Perry County**

#### **Overview**

Perry County is a Sixth Class County with a population of 45,724. The County covers approximately 551 square miles, and has 21 townships and 9 boroughs within its boundaries, including the Borough of New Bloomfield, which is the County seat.

The County's public safety answering point (PSAP) dispatches for 2 law enforcement agencies, 12 fire departments and 7 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police and neighboring counties.

The PSAP handled an average of 39 9-1-1 calls each day in 2015. Of these, 27 percent were wireline, 69 percent were wireless and 4 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 99 percent of the time.

#### **Considerations**

Key factors affecting Perry County and its PSAP include the following:

- The eight-county South Central region has a 155 Mbps microwave system that connects all of the counties. Presently it is being used for radio traffic and interoperability between counties. Future plans are for connections to the other Pennsylvania regions and the State of Maryland.
- The County is largely rural, but the population is growing rapidly, as the area is fast becoming a bedroom community of nearby Harrisburg. The population growth is creating some challenges for the PSAP in terms of service delivery.
- The County has several state parks and is a popular hunting destination. In addition, the Susquehanna River flows through the County, and is popular with recreational boaters, fishing enthusiasts, all of which generates numerous rescue operations.

#### **Staffing**

The PSAP has two management positions: director and deputy director. There are six full-time telecommunicators who handle both call-taking and dispatching; they are supplemented by six part-time telecommunicators, who equate to three full-time equivalents (FTE).

#### **Facility**

The PSAP is located at 2 E. Main St., New Bloomfield, PA 17068. The PSAP is located in the basement of an historic courthouse; the PSAP is somewhat limited in what it can do with the space due to preservation issues. The PSAP shares the facility with the County's emergency operations center (EOC).



The 9-1-1 Center has one call-taker-only console position, and four combined console positions (call-taker and dispatcher). The County does not have a backup facility.

### **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is an Archonix (now Securus Technologies) ccCAD v 2.9.0 that was installed in 2005. An upgrade is expected to be completed in 2017.

### **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Sentinel Patriot v3.0sr4 that was installed in 2007. It is scheduled for replacement in 2016.

### **Radio Systems**

The radio system is a hybrid of equipment from multiple vendors, with parts that are more than 40 years old. The system is scheduled for replacement in 2016 to a digital Project 25 (P25) conventional VHF system.

The microwave system is in a hub-and-spoke configuration with New Bloomfield tower serving as the hub. The dish is on the roof of the courthouse, as is a Geographic Information System (GIS) antenna for synchronous clocking system, and low-band land mobile radio (LMR) antennas.

### **Radio Console System**

The Zetron Integrator consoles have been in place since 2007. They are scheduled for replacement in 2016 as part of the new radio system.

### **Facility Infrastructure**

The PSAP is served by a single copper path from CenturyLink. Nittany Media provides a fiber-optic feed that is used to provision cable television (CATV) service. Internet service is provided by the County's network, which has fiber connecting the County buildings that are in the immediate area.

### **Power Systems**

#### Uninterruptible Power Supply

The PSAP is supported with a 50 kilovolt amperes (kVA) UPS system located in the equipment room of the building and was installed in 2007. The system controls and batteries are self-contained within the unit.



### Backup Power

The UPS system is fed with normal/emergency power from a 100 kilowatt (kW) diesel generator with a belly fuel tank and was installed in 2007. The generator is located outside on the northern end of the building.

### **Equipment Room**

The equipment room provides direct connections to the PSAP, i.e., there is no intermediate telecommunications room between them. The room is clean and dry, but has no grounding system.

The majority of the existing cabinets and racks in the room are full and do not provide available power connections; racks are wired with normal 110-volt plugs that just plug into receptacles along the wall and on power stripping along the wall. The room has little room for additional racks for new terminations and network equipment—at best maybe one additional rack, but would require enhancements to power distribution. However, there is spare capacity in the core network equipment that would allow for a future Emergency Service Internet Protocol (IP) Network (ESInet) deployment.

**Table 43: Perry County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>PERRY COUNTY</b>	6	45,724	551 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	No	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	3,863	9,843	548
<b>Number of Trunks</b>	4	2	0
<b>Primary Selective Routers</b>	CenturyLink – Carlisle & Chambersburg		
<b>Customer Premises Equipment (CPE)</b>	Airbus Sentinel Patriot (Installed: 2007)		
<b>Computer-Aided Dispatch (CAD)</b>	Securus, ccCAD, v2.9.0 (Installed: 2005)		
<b>Logging Recording System</b>	Eventide Nexlog, v2.5.6		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	None		

### **3.6.8. York County**

#### **Overview**

York County is a Third Class County with a population of 437,411. The County covers approximately 904 square miles, and has 36 townships and 35 boroughs within its boundaries, plus the City of York, which is the County seat.



The County's public safety answering point (PSAP) dispatches for 22 law enforcement agencies, 61 fire departments and 35 emergency medical services (EMS) agencies and has ringdown connections with the Pennsylvania State Police, neighboring counties, and the York Prison and Detention center.

The PSAP handled an average of 1,255 9-1-1 calls each day in 2015. Of these, 45 percent were wireline, 50 percent were wireless and 5 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 100 percent of the time.

## **Considerations**

Key factors affecting York County and its PSAP include the following:

- The eight-county South Central region has a 155 Mbps microwave system that connects all of the counties. Presently it is being used for radio traffic and interoperability between counties. Future plans are for connections to the other Pennsylvania regions and the State of Maryland.
- The County is geographically diverse, with both urban and rural areas.
- The County has a large industrial base, primarily centered in the City of York and immediate suburbs.
- The County's population is growing rapidly, as it is becoming a bedroom community of Baltimore, Maryland, which is less than an hour away by car; population growth is having an effect on PSAP call volume.
- The County has numerous state parks, ski resorts and game lands; all generate numerous emergency calls for service due to accidents and rescues.
- The Susquehanna River flows through adjacent Lancaster County. As a result, York County's PSAP handles numerous mutual-aid calls related to boating accidents and drownings.
- In addition, the Long Level Marina, located in Wrightsville, is popular with recreational boating enthusiasts.
- The annual York Fair, which is held every September, attracts thousands of tourists to the County.

## **Staffing**

The PSAP has 31 management positions, including: an executive director, director of 9-1-1, director of 9-1-1 administration, deputy director of administration, deputy director of resources, and deputy director of technical resources. There are 10 full-time supervisors. In addition, 56 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by two part-time telecommunicators, who equate to one full-time equivalent (FTE).



## **Facility**

The PSAP is located at 120 Davies Drive, York, PA 17402, in the York County Department of Emergency Services. The facility is a single-story building housing the PSAP and the County's emergency management agency (EMA). The utilities and communications to the facility are diverse and redundant providing primary and back-up power, and communications services to the PSAP.

The 9-1-1 Center has seven call-taker-only console positions, and 29 combined console positions (call-taker and dispatcher). The County also has a backup facility that maintains 12 positions.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Tyler Technologies (formerly New World Systems) Aegis ECAD enterprise solution that was installed in 2006. It currently is being upgraded.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta/Sentinel v4.3.2 that was installed in 2014.

## **Radio Systems**

The radio system is a Harris Project 25 (P25) Phase 1 simulcast trunking system that was installed in 2012. A 180-foot, self-supporting tower is located adjacent to the facility.

## **Radio Console System**

Harris Maestro consoles were installed in 2012.

## **Facility Infrastructure**

The telephone and data entrance facility is collocated in the telephony room, which appears to have a grounding system compliant with communications site grounding standards. Verizon and Comcast provide fiber connectivity through underground conduits, and Verizon provides one 100-pair copper cable. In addition, the facility also has fiber connectivity provided by Frontier.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP and its three equipment rooms are served by two redundant enterprise UPS systems that were installed in 2007:



1. UPS 1 – Leibert 610 225 kilovolt amperes (kVA) exhibited a 20-percent utilization and 15 minutes runtime availability.
2. UPS 2 – Emerson N Power 100 kVA exhibited a 15-percent utilization (runtime was not displayed).

These systems are located in a separate room outside the main electrical room. An Emerson UPS power transfer and bypass switch is located in the UPS room. UPS distribution panels are located in each of the three equipment rooms. The UPS power is distributed and available at each rack and/or cabinet location at receptacles mounted beneath the overhead cable tray system.

### Backup Power

The facility is equipped with three 300-kilowatt (kW) Generac generators, two of which are used to provide backup power to the PSAP and equipment rooms and were installed in 2007. The transfer switches for the generators are located in the main electrical room.

### **Equipment Rooms**

Three equipment rooms exist: the CAD/IT room, the radio room and the telephony room. Each equipment room has an interior perimeter ground bus (IPGB), subsystem ground bus (SSGB), and appears to be grounded in accordance with communications site grounding standards. Each equipment room has UPS and normal power distribution panels located in the room, and a clean-agent fire-protection system both above and below the raised floor.

### CAD/IT Room

The CAD/IT Room houses the PSAP's core network communications, CAD servers and virtual machine servers. The CAD/IT room, which is adjacent to the radio room, houses the following:

- Network core switches (plans are in place for upgrading to redundant/diverse network core)
- CAD servers
- Virtual machine servers
- Comcast Internet connections
- Network main distribution frame
- Five equipment cabinets—with 30 percent space available—and six open bay equipment racks

### Radio Room

The radio room—which is located between the CAD/IT and telephony rooms—houses the PSAP's radio, microwave and similar wireless transmission equipment, including the following:

- 700 MHz and 800 MHz radio equipment
- Dispatch and EOC control stations
- Training room control stations
- 14-channel radio transmitter site
- Global Positioning Satellite (GPS) receivers



- System control points
- Microwave radios
- Harris OpenSky statewide 800 MHz radio equipment
- 28 equipment racks/cabinets

The racks are relatively full and there is little room for additional equipment in the room until space is opened through the decommissioning or combining systems. However, one space is open for the addition of a rack or cabinet, and several cabinets are scheduled for removal after the decommissioning of some legacy radio equipment.

### Telephony Room

The Telephony Room—which is located adjacent to the radio room—houses the PSAP’s telephone systems equipment, fiber and copper entrance facilities, and service provider equipment, including the following:

- Telephone copper and fiber demarcation points (Verizon, Comcast, Frontier)
- Redundant fiber demarcation points (Verizon, Comcast)
- Primary Verizon telephone equipment
- Building fiber equipment (Comcast)
- Airbus Vesta CPE equipment
- Administration Cisco Call Manager equipment
- Voice recorder systems
- Three open equipment racks and five equipment cabinets

**Table 44: York County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>YORK COUNTY</b>	3	437,411	904 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	Yes	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	204,071	231,237	22,843
<b>Number of Trunks</b>	24	24	0
<b>Primary Selective Routers</b>	Harrisburg and Paxtang tandems		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta (Installed: 2014)		
<b>Computer-Aided Dispatch (CAD)</b>	Tyler Technologies Aegis ECAD enterprise, v4.2.091 (Installed: 2006)		
<b>Logging Recording System</b>	Verint Audiology, v5		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v9.3		
<b>Databases Maintained</b>	Public Safety Data, Contacts, York Info, Street, Missile, Smart911		
<b>Leased Equipment</b>	None		



### **3.7. SOUTH CENTRAL MOUNTAINS REGION**

#### **SUMMARY**

The South Central Mountains (SCM) region of Pennsylvania includes the counties of Bedford, Blair, Centre, Fulton, Huntingdon, Juniata, Mifflin and Snyder. The region is bordered by the Southwest region (Region 13) to the west, the South Central region to the east, the North Central region to the north and the State of Maryland to the south. The SCM region has a total population of 502,619; its counties are quite diverse in terms of population size, ranging from Centre County (a Fourth Class county) to Fulton County (an Eighth Class county).

There are multiple technology resource sharing agreements within the region, but none that cover the entire region today. Four of the counties—Bedford, Blair, Fulton and Huntingdon, aka the Southern Alleghenies Cooperative—executed a technology-sharing agreement in 2015. Meanwhile, Juniata has a sharing agreement with Perry County and Centre County has one with the Pennsylvania State University.

The Southern Alleghenies Cooperative decided to start small in order to ensure a solid, workable understanding of the changes that will come with the sharing of technologies, including those related to policy and financial equality for each of the counties. However, the current group firmly believes that the intergovernmental agreement eventually will be expanded to other counties that are interested in a similar arrangement.

All but one of the counties is operating a microwave radio system for public-safety radio communications that includes multiple tower sites throughout the region. All of the counties individually are operating 9-1-1 phone systems, answering 307,481 emergency calls in 2015. The Southern Alleghenies Cooperative will be leveraging the Blair County phone switch installed in 2014 for a regional telephone solution. The majority of the remaining counties are either operating end-of-life (EOL) equipment or are past due for hardware and software upgrades to their existing telephone solutions. In addition to the telephone EOL notices, Bedford, Centre and Huntingdon counties all were issued EOL notices regarding their current computer-aided dispatch (CAD) solutions.

Through a shared-services assessment, the SCM counties were able to determine that current network connections and associated facilities could be used to establish an inter-county or regional Emergency Services Internet Protocol (IP) Network (ESInet) for the entire region that would become the backbone for the counties to share additional technologies and services. With the establishment of a regional ESInet, there will be immediate and long-term benefits realized by the counties, first responders, the state and ultimately the citizens.

Some of the benefits will include the ability to share vital technology components, such as telephone, computer-aided dispatch (CAD), mapping, automatic location identification (ALI), radio systems, and



recorders. The eventual sharing of this technology will increase the operational efficiencies of public safety answering points (PSAPs) across the entire region by providing the following capabilities:

- Seamless transfer of misdirected 9-1-1 callers.
- Immediate access to shared first-responder assets.
- Leveraging immediate call-overflow capabilities and disaster-recovery options if a center becomes inoperable or inaccessible.

Additionally, it was determined that this solution would enable the region to interface with neighboring regions through diverse and redundant connections. The diversity and redundancy of the deployed connections would improve the network's stability and availability as the system's reach increases. The result would be a network that connects more than half of the Commonwealth's PSAPs.

All of these efficiencies reduce the length of time currently required to have first responders arrive on the scene of a citizen's emergency. There also are some financial windfalls from sharing technology and services. Some of the immediate estimates indicate that by sharing telephone and CAD technology across the region, a significant capital cost savings can be realized because resource sharing results in a decrease in the amount of duplicate technology and equipment. The counties are committed to providing the best possible, most reliable 9-1-1 system to all of the citizens of the SCM region and beyond.

### **3.7.1. Bedford County**

#### **Overview**

Bedford County is a Sixth Class County with a population of 49,354. The County covers approximately 1,012 square miles, and has 25 townships and 13 boroughs within its boundaries, including the Borough of Bedford, which is the County seat.

The County's public safety answering point (PSAP) dispatches for five law enforcement agencies, 13 fire departments and 9 emergency medical services (EMS) agencies, and has ringdown connections with Fulton County.

The PSAP handled an average of 45 9-1-1 calls each day in 2015. Of these, 36 percent were wireline and 64 percent were wireless. Last year, 9-1-1 calls were answered within 10 seconds 99 percent of the time.

#### **Considerations**

Key factors affecting Bedford County and its PSAP include the following:



- The majority of the PSAP staff also serves as law enforcement officers, firefighters and/or emergency medical technicians (EMTs), which provides insights that the typical telecommunicator may not possess.
- The staff possesses longevity that is unusual for a 9-1-1 Center—the most-senior member has served 33 years.
- The County has an intergovernmental agreement with neighboring Blair, Huntingdon and Fulton counties that establishes a regional sharing agreement called the Southern Alleghenies Cooperative of the South Central Mountains Region. The short-term plan is to establish a microwave Emergency Services Internet Protocol (IP) Network (ESInet), which will enable seamless 9-1-1 call transfers with data, and the sharing of computer-aided dispatch (CAD) system data between Counties; the long-term plan is to implement a robust ESInet that includes fiber-optic cabling, which will provide the technological foundation for Next Generation 9-1-1 (NG9-1-1) service.
- Interstate 99 and the Pennsylvania Turnpike traverse the County and both are heavily traveled; they intersect in the City of Bedford. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- Colonial Days is an annual event held in the County that features numerous Revolutionary War reenactments that attract a sizeable tourist influx.
- The County borders the State of Maryland, which results in numerous interstate mutual-aid responses throughout the year.
- The County is quite rural and has numerous working farms, which generate emergency calls related to barn fires, silo rescues and farm implement accidents.

## **Staffing**

The PSAP has two management positions: a 9-1-1 coordinator and a Geographic Information System (GIS)/addressing administrator. There is one full-time supervisor. In addition, nine full-time telecommunicators handle both call-taking and dispatching; they are supplemented by 10 part-time telecommunicators, who equate to four full-time equivalents (FTE).

## **Facility**

The PSAP is located at 200 South Juliana Street, Bedford, PA 15522, on the second floor of the County Courthouse. Since 2008, the PSAP has been located in a modern addition to the historic portion of this building.

The 9-1-1 Center has five combined console positions (call-taker and dispatcher). The County does not have a backup facility.



## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Cassidian (now part of Airbus) Orion Aries v4.0.63 that was installed in 2006; the vendor has issued an end-of-life notice that takes effect at the end of 2016. It will be replaced with a Tyler Technologies Aegis Enterprise CAD system that will be part of the Southern Alleghenies Cooperative of the South Central Mountains Region shared CAD system initiative.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v2.6 that was installed in 2006. An upgrade is expected to be complete in 2016, as part of the Southern Alleghenies Cooperative of the South Central Mountains Region shared CPE initiative.

## **Radio Systems**

The radio system is a Motorola UHF Project 25 (P25) system that was installed in 2012; the implementation included the addition of six tower sites.

A microwave dish—which is used to provide backhaul for the radio system—a Global Positioning Satellite (GPS) antenna—for the synchronous clocking system—and several Yagi antennas are attached to the second-floor roof, outside the main equipment room.

## **Radio Console System**

Motorola MCC 5500 consoles were installed in 2008.

## **Facility Infrastructure**

The PSAP is served by redundant fiber-optic feeds from CenturyLink that are routed diversely; each connection provides 32 strands of single-mode fiber. Telecommunications (copper) and cable television (CATV) cables also serve the facility. The entrance facilities are located in the main distribution frame room in the basement of the building. This room is clean and dry, appears to have adequate grounding and an ample overhead cable tray.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported with an Emerson 50 kilovolt amperes (kVA) UPS system located in the basement of the building and was installed in 2008. The UPS output has both an automatic transfer switch (ATS) and a manual transfer switch. The UPS feeds to a power distribution unit (PDU) in the



equipment room for distribution to the equipment, and to a main panel box that runs to the second floor PSAP. Once there, it feeds another panel box from which the circuits are distributed to the PSAP.

### Backup Power

Backup power to the facility is provided by an Ingersol Rand 280-kilowatt (kW) diesel generator with a belly fuel tank and was installed in 2008. The generator is located on the west side of the building.

### **Equipment Room**

The equipment room is located on the same floor as the PSAP. The room provides direct connections to the PSAP, i.e., no intermediate telecommunications room exists between them.

The existing cabinets/racks in the room are full and do not provide available power connections; however, this room has ample space for placement of additional racks for new terminations and network equipment. Other noteworthy items include the following:

- This room contains the radio and microwave equipment and supporting equipment, including a dehydrator, a 48 VDC power plant, and a grounding system.
- There is adequate overhead cable tray for cable routing.
- There is adequate UPS-backed normal/emergency power available for future plug strips.
- The room has a grounding system.
- The room is protected with a clean agent fire-suppression system with two tanks.
- All cable entries are fire-stopped.
- There is no spare capacity in the core network equipment; this would need to be addressed to accommodate future interfaces.
- There are two existing racks/cabinets of equipment and space directly next to them; this would allow for patch cord lengths of approximately 10 feet to 15 feet to the existing systems.



**Table 45: Bedford County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>BEDFORD COUNTY</b>	6	49,354	1,012 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	No	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	5,887	10,377	0
<b>Number of Trunks</b>	4	3	0
<b>Primary Selective Routers</b>	Verizon (State College/Altoona)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta (Installed: 2008)		
<b>Computer-Aided Dispatch (CAD)</b>	Cassidian, Orion Aries, v4.0.63 (Installed: 2008)		
<b>Logging Recording System</b>	Verint Almax-64		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS v10.3.1		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	None		

### 3.7.2. Blair County

#### Overview

Blair County is a Fifth Class County with a population of 127,004. The County covers approximately 526 square miles, and has 15 townships and 8 boroughs within its boundaries, plus the city of Altoona. The Borough of Hollidaysburg is the County seat.

The County’s public safety answering point (PSAP) dispatches for 15 law enforcement agencies, 23 fire departments and four emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police and neighboring counties.

The PSAP answered an average of 353 9-1-1 and emergency calls each day in 2015. Of these, 67 percent were wireline (including 10-digit emergency lines), 32 percent were wireless and 1 percent was voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 99 percent of the time.

#### Considerations

Key factors affecting Blair County and its PSAP include the following:

- Outside the city of Altoona and Hollidaysburg, the County is quite rural with a considerable amount of farmland; as a result the PSAP often has to field calls involving barn fires, silo rescues and farm implement accidents.
- There is significant freight rail activity—it is the County’s largest industry—and derailments have occurred, including one that occurred within three blocks of the PSAP. One stretch of



rail, known as Horseshoe Curve, is particularly harrowing; the curve is so tight, the engineer can typically look back and see the end of the train.

- The County is home to minor-league baseball (Altoona Curve), as well as two small amusement parks which are popular tourist attractions.
- Pennsylvania State University operates a satellite campus in Altoona.

## **Staffing**

The PSAP has four management positions: a director, a 9-1-1 coordinator, an information technology (IT) coordinator, and an administrative assistant. There are four full-time supervisors. In addition, 20 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by six part-time telecommunicators, who equate to two full-time equivalents (FTE).

## **Facility**

The PSAP is located is located at 615 4<sup>th</sup> St., Altoona, PA 16602, on the main floor of a County-owned building. The PSAP, an equipment room and administrative offices occupy half of the main floor, while the other half is shared with County court offices; the main equipment room is in the basement.

The 9-1-1 Center has 10 combined console positions (call-taker and dispatcher). The County also has a mobile backup that maintains seven positions.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Tyler Technologies (formerly New World Systems) Aegis v10.0 that was installed in 2013. The system is in need of an upgrade, which will be done in 2016; this will allow the County to participate in a regional CAD initiative with the Southern Alleghenies Cooperative in South Central Mountains.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v4.3.0.331 that was installed in 2015. The County has offered this as the regional CPE system for the Southern Alleghenies Cooperative in South Central Mountains, which is planned for completion later this year.

## **Radio Systems**

The radio system is a Motorola UHF Project 25 (P25) system that was installed in the 2011-2012 timeframe.



A microwave dish, Global Positioning Satellite (GPS) antenna (for the synchronous clocking system), and several other antennas are on the tower located at the facility, and on the west wall of the building. The radio and microwave equipment include a dehydrator, 48 VDC power plant, and grounding.

### **Radio Console System**

Motorola MCC 7500 consoles were installed in at the same time the radio system was installed.

### **Facility Infrastructure**

The PSAP is served by a single copper path from Verizon, while cable television (CATV) and Internet service is provisioned by Atlantic Broadband. It also appears that Zito Media has run fiber available from the railroad right of way.

### **Power Systems**

#### Uninterruptible Power Supply

The PSAP is supported with a MGE 50 kilowatt amperes (kVA) uninterruptible powers supply (UPS) system located in the basement of the building and was installed in 2015. The UPS output has an automatic transfer switch (ATS), and a manual transfer switch.

#### Backup Power

Backup power to the facility is provided by a Kohler 125 kilowatt (kW) diesel generator with an in-ground fuel tank and was installed in 1996. The generator is located in a separate garage-type building down an alley, approximately 200 feet to the west of the building.

### **Equipment Room**

Connectivity from the equipment room to the PSAP runs through the ceiling of the basement into the PSAP directly—i.e., there is no telephony room between them—and to the CPE equipment room on the first floor. Other noteworthy items include the following:

- The majority of existing cabinets/racks in the equipment room are full and do not provide available power connections.
- The main equipment room has ample room for placement of additional racks for new terminations and network equipment. Meanwhile, the CPE equipment room has limited space availability, unless the corner desk is removed.
- There is adequate overhead cable tray for cable routing.
- There is adequate UPS-backed normal/emergency power available to feed additional outlets.
- The main equipment room has an adequate grounding system, while the CPE equipment room would require some grounding upgrades.



- The main equipment room is clean, dry, and secure with key access; the CPE equipment room access is via a key card access.
- There is no spare capacity in the core network equipment; additional capacity would need to be provided to accommodate future interfaces.

**Table 46: Blair County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>BLAIR COUNTY</b>	5	127,004	526 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	No	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	86,479	40,517	1,779
<b>Number of Trunks</b>	6	6	2
<b>Primary Selective Routers</b>	Verizon (Altoona/State College)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta (Installed: 2015)		
<b>Computer-Aided Dispatch (CAD)</b>	Tyler Technologies, Aegis, v10 (Installed: 2015)		
<b>Logging Recording System</b>	Verint Audiolog, v835		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.2		
<b>Databases Maintained</b>	People with Disabilities Registry		
<b>Leased Equipment</b>	None		

### 3.7.3. Centre County

#### Overview

Centre County is a Fourth Class County with a population of 155,100. The County covers approximately 1,110 square miles, and has 25 townships and 11 boroughs within its boundaries, including the borough of State College, which is home to Pennsylvania State University (PSU), and Bellefonte, which is the County seat.

The County's public safety answering point (PSAP) dispatches for 6 law enforcement agencies, 21 fire departments and 12 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police, neighboring counties, and PSU Police Services.

The PSAP handled an average of 198 9-1-1 calls each day in 2015. Of these, 32 percent were wireline, 63 percent were wireless and 5 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 95 percent of the time.



## **Considerations**

Key factors affecting Centre County and its PSAP include the following:

- The County is home to Pennsylvania State University's main campus, located in State College. The university attracts a large transient population during the school year, which sometimes presents challenges in terms of locating emergency callers.
- Numerous sports events—basketball, baseball and hockey—and other cultural activities draw a large influx of visitors into the County. But that activity is overshadowed by that of the PSU football team, which turns State College into the third-largest city in the state on game days.
- The County is largely rural and mountainous; the latter condition creates radio coverage challenges that requires a larger number of tower sites to mitigate.

## **Staffing**

The PSAP has five management positions: a director, a deputy director, a support services manager, a communications operations manager, a technical services manager, and a training/education manager. There are six full-time supervisors. In addition, 17 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by two part-time telecommunicators, who equate to one full-time equivalent (FTE).

## **Facility**

The PSAP is located at 420 Holmes St, Bellefonte, PA 16823, on the ground floor of a County-owned building. The PSAP shares the facility with multiple other County agencies, including the County's emergency management agency (EMA), which operates an emergency operations center (EOC), adjacent to the PSAP.

The 9-1-1 Center has two call-taker-only console positions, and nine combined console positions (call-taker and dispatcher). The County also has a backup facility that maintains one position, located at the Penn State Police Services Dispatch Center.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Tiburon IQ CAD v3.7 that was installed in 2009. The manufacturer provided an end-of-life notice for the product that actually ended in 2015, but will continue to support the product through the summer of 2016, when a new CAD system will be installed. Centre County will explore a regional CAD solution with surrounding counties that will be on the same CAD platform.



## **Customer Premises Equipment**

The customer premises equipment (CPE) is a Cassidian Patriot v4.2 (now Airbus Vesta v4.2) that was installed in 2013.

## **Radio Systems**

The radio system is a Motorola 800 MHz Project 25 (P25) simulcast trunking system that was installed in 2014.

A microwave dish, a Global Positioning Satellite (GPS) antenna (for the synchronous clocking system) and several antennas are attached to an onsite tower.

## **Radio Console System**

Motorola MCC 7500 consoles were installed in 2014.

## **Facility Infrastructure**

The PSAP is served by a single copper path from Verizon, as well as cable television (CATV) and microwave feeds. Internet service is provided by the County's network. There also appears to be fiber on a pole located just outside the facility, but the identity of the owner is unclear. Fiber also exists in the equipment room, but it is not certain whether this fiber is the County interconnection between buildings, or if it runs to the State College Borough police department servers, where the regional police department records management system (RMS) package is stored.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported with a Liebert model 80 kilowatt amperes (kVA) UPS system located along the south wall of the equipment room and was installed in 2012. All transfers are controlled internally to the UPS unit.

### Backup Power

Backup power to the facility is provided by a Kohler 200-kilowatt (kW) diesel generator with a belly fuel tank and was installed in 2013. The generator is located in the parking lot in the northwest corner of the building.



## Equipment Room

Connectivity from the equipment room to the PSAP runs through the raised floor directly to the PSAP positions. The majority of existing cabinets/racks in the room are full and do not provide available power connections. Other noteworthy items include the following:

- The radio and microwave equipment consume a row of racks in the room, and are supported by a 48 VDC power plant and grounding system.
- The room could accommodate the placement of an additional rack or two for new terminations and network equipment.
- There is adequate overhead cable tray for cable routing.
- There is adequate UPS-backed normal/emergency power available for future plug strips.
- The room has an adequate grounding system.
- There is limited spare capacity in the core network equipment, and an expansion would be needed to accommodate future interfaces.

**Table 47: Centre County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>CENTRE COUNTY</b>	4	155,100	1,110 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	No	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	16,018	30,971	2,617
<b>Number of Trunks</b>	8	6	2
<b>Primary Selective Routers</b>	Verizon (State College/Altoona)		
<b>Customer Premises Equipment (CPE)</b>	Cassidian Patriot (Installed: 2013)		
<b>Computer-Aided Dispatch (CAD)</b>	Tiburon, IQ CAD, v3.7 (Installed: 2009)		
<b>Logging Recording System</b>	Verint, Audiolog 5K Series		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.3		
<b>Databases maintained</b>	Residential Response Notification Database		
<b>Leased Equipment</b>	None		

### 3.7.4. Fulton County

#### Overview

Fulton County is an Eighth Class County with a population of 14,748. The County covers approximately 438 square miles, and has 11 townships and 2 boroughs within its boundaries, including the Borough of McConnellsburg, which is the County seat.



The County contracts its public safety answering point (PSAP) responsibility to another 9-1-1 Center, including all call-taking and dispatching for three fire departments and four emergency medical services (EMS) agencies. The current contract is with Cumberland County; it requires the County to maintain a backup facility that includes ringdown connections with the Pennsylvania State Police and neighboring Bedford County.

The contracted PSAP handled an average of 14 9-1-1 calls each day in 2015 for Fulton County. Of these, 20 percent were wireline and 80 percent were wireless. Last year, 9-1-1 calls were answered within 10 seconds 95.2 percent of the time.

## Considerations

Key factors affecting Fulton County and its PSAP include the following:

- The County has received 9-1-1 dispatch services from Cumberland County since 1999, and the County has been pleased with the quality of those services. However, when the current contract expires, the County plans to enter into a similar arrangement with neighboring Bedford County, in part because it is the less expensive option, but also because the proximity is advantageous in that Bedford County telecommunicators are more familiar with the area.
- The County has an intergovernmental agreement with neighboring Blair, Huntingdon and Fulton counties that establishes a regional sharing agreement called the Southern Alleghenies Cooperative of the South Central Mountains Region. The short-term plan is to establish a microwave Emergency Services Internet Protocol (IP) Network (ESInet), which will enable seamless 9-1-1 call transfers with data, and the sharing of computer-aided dispatch (CAD) system data between Counties; the long-term plan is to implement a robust ESInet that includes fiber-optic cabling, which will provide the technological foundation for Next Generation 9-1-1 (NG9-1-1) service.
- Interstate 70 and the Pennsylvania Turnpike traverse the County, and both are heavily traveled. I-70 interconnects with I-76 about seven miles outside the County limits. There is significant commercial truck traffic on these highways, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- Fulton County is a small rural community with just two traffic lights, two grocery stores and one McDonald's restaurant.
- State route 30 is part of the Lincoln Highway Heritage Program, and tourists flock to the County for an annual event that includes a parade of vintage automobiles.
- The County has a large state forest area that attracts significant numbers of visitors in the summer and fall, particularly the latter during hunting season; there also are two large popular manmade lakes and a number of public camping areas.



- The County has some abandoned highway tunnels that are prone to teenager activities such as parties. Two of those tunnels are found along a 20-mile-long abandoned stretch of the Turnpike; the County may turn this stretch into a bike trail.

## **Staffing**

The PSAP has one management position: its director doubles as the emergency management agency director. There is one part-time supervisor and three on-call telecommunicators.

## **Facility**

The backup facility is located at 219 North Second St., McConnellsburg, PA 17233, in the basement of the County Courthouse annex.

The 9-1-1 Center has two combined console positions (call-taker and dispatcher).

## **Computer-Aided Dispatch**

The CAD system is a Securus (formerly Archonix) ccCAD v2.9 that was installed in 2007. The manufacturer has informed the County that it will continue to support this platform, but will make no further enhancements to it, essentially issuing an end-of-life notice. An upgrade will be completed when the primary PSAP contract changes.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is a Cassidian (now part of Airbus) ECS 1000 v24.0.2.0 that was installed in 2007. An upgrade is expected to be complete in 2016 as part of the South Alleghenies Cooperative of the South Central Mountains Region shared CPE initiative.

## **Radio Systems**

The radio system is a Motorola VHF low-band system that was installed in the late 1990s. An upgrade to a UHF Project 25 (P25) system is planned for early 2017.

A small tower on the west side of the building has an antenna for the statewide 800 MHz radio system, as well as some EOC satellite dishes, attached to it. In addition, the tower has a Global Positioning System (GPS) antenna (for the synchronous clocking system) and a backup VHF low-band antenna mounted to it.

## **Radio Console System**

ModUcom v8.0 consoles were installed in 2007.



## Facility Infrastructure

The PSAP is served by a single copper path from CenturyLink. It receives cable television (CATV) and Internet service; the latter of which is provided via the County's network, which has fiber that connects all County buildings on the campus. That cable is overhead and enters and terminates in the oil tank storage room. A leased T1 line from CenturyLink connects radio and telephone circuits from this facility to the contracted primary center, which is Cumberland County.

The main electrical distribution panels, as well as the transfer switch, are located in the utility/furnace room.

## Power Systems

### Uninterruptible Power Supply

The PSAP is supported by two Best 18 kilovolt amperes (kVA) UPS systems located in the equipment room and were installed in 2010. The UPS output has manual transfer switches for each unit mounted on the north wall of the equipment room.

### Backup Power

Backup power to the facility is provided by a Cummins model 250-kilowatt (kW) diesel generator with a belly fuel tank and was installed in 2010. The generator is located outside in the northwest area of the building.

## Equipment Room

The equipment room is accessed through the backup PSAP, and provides direct connections to the primary PSAP. There is one row of racks down the middle of the room, and the computer room air-conditioning unit takes up the entire middle of the east wall. There is one rack against the south wall, and the building oil tank storage room is accessed off the southwest corner of this room. The southeast corner is used as storage space.

The majority of existing cabinets/racks in the equipment room are full and do not provide available power connections; racks are hardwired into junction boxes on the ceiling. Other noteworthy items include the following:

- The room has ample space for the placement of additional racks for new terminations and network equipment, once the current end-of-life equipment is taken out of service and removed.
- There is one overhead cable tray for cable routing that could support some additional cabling.
- There is adequate UPS-backed normal/emergency power available for future use.



- The room has no grounding system.
- The room generally is clean and dry, though the south wall shows indications of water infiltration or paint mismatch, as evidenced by the paint bubbling along that entire wall.
- There is no spare capacity in the core network equipment, and upgrades would be needed to accommodate future interfaces.

**Table 48: Fulton County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>FULTON COUNTY</b>	8	14,748	438 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	No	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	1,064	4,213	0
<b>Number of Trunks</b>	3	3	0
<b>Primary Selective Routers</b>	Carlisle/Chambersburg (CenturyLink)		
<b>Customer Premises Equipment (CPE)</b>	Cassidian (Airbus) ECS 1000 (Installed: 2007)		
<b>Computer-Aided Dispatch (CAD)</b>	Securus ccCAD v2.9 (Installed: 2007)		
<b>Logging Recording System</b>	Nice Call Focus 3, v9.6		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.3		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	None		

### 3.7.5. *Huntingdon County*

#### Overview

Huntingdon County is a Sixth Class County with a population of 45,888. The County covers approximately 875 square miles, and has 30 townships and 18 boroughs within its boundaries, including the Borough of Huntingdon, which is the County seat.

The County’s public safety answering point (PSAP) dispatches for 3 law enforcement agencies, 16 fire departments and 8 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police, neighboring counties, State Correctional Institution (SCI)–Smithfield and SCI–Huntingdon. The County is responsible for all the costs of the PSAP, but actually contracts with Huntingdon Borough Police Department for staff and day-to-day management activities.

The PSAP handled an average of 36 9-1-1 calls each day in 2015. Of these, 33 percent were wireline and 67 percent were wireless. Last year, 9-1-1 calls were answered within 10 seconds 96.1 percent of the time.



## Considerations

Key factors affecting Huntingdon County and its PSAP include the following:

- The County has an intergovernmental agreement with neighboring Blair, Bedford and Fulton counties that establishes a regional sharing agreement called the Southern Alleghenies Cooperative of the South Central Mountains Region. The short-term plan is to establish a microwave Emergency Services Internet Protocol (IP) Network (ESInet), which will enable seamless 9-1-1 call transfers with data, and the sharing of computer-aided dispatch (CAD) system data between Counties; the long-term plan is to implement a robust ESInet that includes fiber-optic cabling, which will provide the technological foundation for Next Generation 9-1-1 (NG9-1-1) service.
- Raystown Lake is a popular destination for boaters, campers and hikers, and attracts more than 1,000,000 visitors every summer. The 8,300 acre manmade lake is the largest lake entirely within Pennsylvania; it actually is a reservoir that was created when the Army Corps of Engineers dammed the Juniata River to relieve flooding problems.
- The County is the only one with two state correctional facilities within its boundaries.
- There is considerable freight and commuter rail traffic through the County, with the Conrail main line running along part of the Juniata River.
- The PSAP has an ambulance availability system, which can identify for telecommunicators the closest-available unit.
- The County has a 9-1-1 simulator that it takes to schools in order to educate children about public safety and the 9-1-1 system.

## Staffing

The PSAP has two part-time management positions, a 9-1-1 director and a 9-1-1 coordinator. There are no full-time supervisors. Eight full-time telecommunicators handle both call-taking and dispatching; they are supplemented by two part-time telecommunicators, who equate to one-half full-time equivalent (FTE).

## Facility

The PSAP is located at 530 Washington St, Huntingdon, PA 16652, on the first floor of a Borough-owned building. The PSAP shares the first floor with other Borough departments, including the police department and administrative offices.

The 9-1-1 Center has one call-taker-only console positions, and three combined positions (call-taker and dispatcher). The County does not have a backup facility.



## **Computer-Aided Dispatch**

The CAD system is a Cassidian (now part of Airbus) Orion Aries v.3.1.39 that was installed in 2006; the vendor has issued an end-of-life notice that takes effect the end of 2016. It will be replaced with a Tyler Technologies (formerly New World Systems) Aegis Enterprise CAD system that will be part of the Southern Alleghenies Cooperative of the South Central Mountains Region shared CAD system initiative.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v2.6 that was installed in 2006. An upgrade is expected to be complete in 2016, as a part of the Southern Alleghenies Cooperative of the South Central Mountains Region shared CPE initiative.

## **Radio Systems**

The radio system is a Motorola hybrid system that was installed in the 1980s with upgrades as individual pieces fail and cannot be repaired. It operates in multiple frequency bands: VHF low band for the fire departments; VHF high band for the law enforcement agencies; and UHF MEDS for the EMS agencies. The system has reached end of life and needs to be replaced. Many of the base stations no longer are manufactured by Motorola; others are not base stations at all, but rather mobile radios attached to power amplifiers. The County hopes to eventually replace the systems with a UHF Project 25 (P25) system; if this occurs, the UHF MEDS frequencies would be retained as backup.

Two microwave dishes are attached to a tower located at the facility: one connects to the Jacks Mountain site and serves as a hub; the other connects to the Loop Mountain site. In addition, a Global Positioning Satellite (GPS) antenna—for the synchronous clocking system—and several other antennas are attached to the tower.

## **Radio Console System**

Motorola MCC 5500 consoles were installed in 2007.

## **Facility Infrastructure**

The PSAP is served by a single copper path from Verizon. There also is cable television, fiber and microwave cabling; the latter is connected to the radio system. Internet service is provided by Comcast (cable) and Verizon (digital subscriber line, or DSL). In addition, County-owned fiber-optic cable connects the PSAP to the County office building that houses the County's Geographic Information Services (GIS) department, to enable the sharing of GIS data.



## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported with multiple independent UPS systems located in close proximity to the devices/racks they are supporting. All transfers are controlled internally to the UPS units. However, the UPS units all were installed in 2006, and are at the end of their life expectancy. A new single UPS system is planned for 2016.

### Backup Power

Backup power to the facility is provided by a Kohler 35 kilowatt (kW) diesel generator with a belly fuel tank and was installed in 2010.

## **Equipment Room**

The radio and microwave equipment consume the north end of the equipment room; this equipment is supported by a 48 VDC power plant and a grounding system. Connectivity from the equipment room to the PSAP is direct, i.e., no intermediate telecommunications room exists between them, albeit at the extreme cabling limits. The majority of existing cabinets/racks in the equipment room are full and do not provide available power connections. Other noteworthy items include the following:

- The room has space for the placement of an additional rack or two for new terminations and network equipment, if an old, non-functional console that exists in the middle of the room is removed.
- There is limited space in the overhead cable tray for cable routing.
- The room's only grounding system is on the radio equipment.
- There is limited spare capacity in the core network equipment, and upgrades would be needed to accommodate future interfaces.
- A new equipment room to house the CPE and CAD upgrades is planned for a room adjacent to the PSAP in 2016.



**Table 49: Huntingdon County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>HUNTINGDON COUNTY</b>	6	45,888	875 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	No	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	4,333	8,722	0
<b>Number of Trunks</b>	4	4	0
<b>Primary Selective Routers</b>	Verizon (State College/Altoona)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta (Installed: 2006)		
<b>Computer-Aided Dispatch (CAD)</b>	Cassidian, Orion Aries, v3.1.39 (Installed: 2006)		
<b>Logging Recording System</b>	Verint Audiolog 5K Series, v10.0.6		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.3		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	None		

### **3.7.6. Juniata County**

#### **Overview**

Juniata County is a Seventh Class County with a population of 24,913. The County covers approximately 391 square miles, and has 13 townships and 4 boroughs within its boundaries, including the Borough of Mifflintown, which is the County seat.

The County’s public safety answering point (PSAP) dispatches for one law enforcement agency, nine fire departments and six emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police and neighboring counties.

The PSAP handled an average of 23 9-1-1 calls each day in 2015. Of these, 36 percent were wireline, 64 percent were wireless. The percentage of 9-1-1 calls that were answered within 10 seconds last year is unknown.

#### **Considerations**

Key factors affecting Juniata County and its PSAP include the following:

- The County has numerous state forest lands that are popular with hikers, campers and hunters.
- The County is largely rural, with many working farms, which generate specific emergency incidents such as silo rescues, barn fires, and farm implement accidents.



- A chicken-processing plant—Empire Kosher—is located in the County, and generates occasional industrial accidents. In addition, English is the second language for many of the employees, which creates a need for translation services.
- The County’s population is growing, as it is becoming a bedroom community for both Harrisburg and State College.

## **Staffing**

The PSAP has two management positions: a 9-1-1 director and a 9-1-1 supervisor. There also is one part-time PSAP training coordinator. In addition, eight full-time telecommunicators handle both call-taking and dispatching; they are supplemented by five part-time telecommunicators, who equate to two full-time equivalents (FTE).

## **Facility**

The PSAP is located at 11 North 3<sup>rd</sup> Street, Mifflintown, PA 17059, in a County-owned building. The PSAP shares the facility with the County’s emergency operations center (EOC) and administrative offices. The facility has break and conference rooms, as well as a training area.

The 9-1-1 Center has five combined console positions (call-taker and dispatcher). The County also has a backup facility that maintains two positions.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Caliber (formerly Interact) TNG v10.3.4.1 that was installed in 2015.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Sentinel Patriot v3.0 that was installed in 2008. It is scheduled for replacement in 2016, as a regional shared solution with Perry County.

## **Radio Systems**

The radio system is a Motorola UHF Project 25 (P25) system that was installed in 2014.

A tower is located beside the County Courthouse, which is about a block from the PSAP and was its original location. The tower contains a microwave dish that connects to the Port Royal site, which is the hub for the rest of the microwave system. In addition, two Global Positioning Satellite (GPS) antennas—for the synchronous clocking system—are mounted on the east end of the PSAP building. The Port Royal tower also is shared with Perry County, allowing for a seamless microwave radio system solution.



## **Radio Console System**

Motorola MCC 5500 v1.3 consoles were installed in 2009.

## **Facility Infrastructure**

The PSAP is served by diverse copper paths from CenturyLink. Cable television (CATV), fiber and Internet service also is available, with the latter provisioned via the County's network, which also interconnects County buildings in the campus via fiber-optic cabling.

## **Power Systems**

### Uninterruptible Power System

The PSAP is supported by an Emerson 30 kilovolt amperes (kVA) UPS system located in the equipment room and was installed in 2008. The UPS output has a transfer switch mounted on the west wall of the room, behind the battery units and close to the electrical panels.

### Backup Power

Backup power to the facility is provided by an Onan 250-kilowatt (kW) diesel generator with a belly fuel tank and was installed in 2008. The generator is located outside in the northeast area of the parking lot.

## **Equipment Room**

The main equipment room is accessed through the PSAP, and it provides direct connections to the PSAP, i.e., there is no intermediate telecommunications room between them.

There are three rows of equipment racks. The majority of the existing cabinets/racks in the room are full and do not provide available power connections. However, the room has ample space for the placement of additional racks for new terminations and network equipment. Other noteworthy items include the following:

- There is an overhead cable tray for cable routing, which can support additional cabling.
- There is adequate UPS-backed normal/emergency power available for future use.
- The room has a grounding system.
- There is spare capacity in the core network equipment, which would allow for a future Emergency Services Internet Protocol Network (ESInet) deployment.



**Table 50: Juniata County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>JUNIATA COUNTY</b>	7	24,913	391 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	No	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	2,955	5,304	0
<b>Number of Trunks</b>	3	3	0
<b>Primary Selective Routers</b>	CenturyLink (Carlisle/Chambersburg)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Sentinel Patriot, v3.0 (Installed: 2008)		
<b>Computer-Aided Dispatch (CAD)</b>	Caliber TNG, v10.3.4.1 (Installed: 2015)		
<b>Logging Recording System</b>	Mercom 4668, v3.3		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.3.1		
<b>Databases Maintained</b>	Special Needs		
<b>Leased Equipment</b>	None		

### **3.7.7. Mifflin County**

#### **Overview**

Mifflin County is a Sixth Class County with a population of 46,790. The County covers approximately 411 square miles, and has 10 townships and 6 boroughs within its boundaries, including the Borough of Lewistown, which is the County seat.

The County’s public safety answering point (PSAP) dispatches for 5 law enforcement agencies, 19 fire departments and 5 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police and neighboring counties.

The PSAP handled an average of 40 9-1-1 calls each day in 2015. Of these, 37 percent were wireline and 63 percent were wireless. Last year, 9-1-1 calls were answered within 10 seconds 100 percent of the time.

#### **Considerations**

Key factors affecting Mifflin County and its PSAP include the following:

- The PSAP staff is quite proud of the fact that despite being a small County, Mifflin was the first to have a wireline and wireless 9-1-1 plan approved by the state.
- Though largely rural, the County’s population is growing, as it is becoming a bedroom community to both Harrisburg and State College.



- There is a large Amish community in the County that presents challenges; horse-drawn buggies often are involved in automobile and truck accidents; many in the community do not have telephones, which causes delays in emergency response.
- State route 322 runs through the County, and is the main road to State College, serving as a connector for Interstates 81 and 83 to Interstate 80; it is very heavily traveled when the Pennsylvania State University football team is playing at home.
- There is significant rail activity in the County, with the Norfolk and Southern main freight line running along the Juniata River through the County; in addition, Amtrak's Pennsylvanian commuter line, which connects Pittsburgh to New York City, traverses the County.
- There are two state parks in the county that draw a significant influx of visitors to the County.

### **Staffing**

The PSAP has three management positions: a director, a communications operations manager, and a Geographic Information System (GIS) manager. There are no full-time supervisors. However, 10 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by four part-time telecommunicators, who equate to two full-time equivalents (FTE).

### **Facility**

The PSAP is located is located at 20 N. Wayne Street, Lewistown, PA 17044, in the basement of the County Courthouse. The PSAP shares the facility with the County's emergency operations center (EOC).

The 9-1-1 Center six combined console positions (call-taker and dispatcher). The County also has a backup facility that maintains two positions.

### **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a LogiSYS Northstar v4.X that was installed in 1994. An upgrade is expected to be complete in 2020.

### **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Sentinel Patriot v3.2 that was installed in 2006. An upgrade is expected to be complete in 2016.



## **Radio Systems**

The radio system is a Motorola analog conventional system that operates in the VHF band for law enforcement, and in the UHF band for fire and EMS. The system was installed in 2012 to meet Federal Communication Commission (FCC) narrowbanding requirements.

A microwave dish, Global Positioning Satellite (GPS) antenna—for the synchronous clocking system—and several other antennas are attached to the roof. The microwave dish connects to the Blue Mountain site, which serves as the hub for the microwave radio system.

## **Radio Console System**

Motorola MCC 5500 v2.7.0149 consoles were installed in 2012.

## **Facility Infrastructure**

The PSAP facility is served by a single copper path from Verizon, as well as by County-owned fiber that interconnects the PSAP to other County facilities within the Borough. In addition, the facility has cable television (CATV) and Internet service, with the latter provisioned by Comcast (cable) and Verizon digital subscriber line (DSL).

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported by an Eaton 10 kilovolt amperes (kVA) UPS system located in the equipment room and was installed in 2006. All transfers are controlled internally to the UPS unit.

### Backup Power

Backup power to the PSAP is provided by an Onan model 175-kilovolt (kW) diesel generator with an underground fuel tank and was installed in 2006. The generator is located in the sub-basement beside a second generator for the rest of the building.

## **Equipment Room**

The main equipment room is accessed through the PSAP's break room; it provides direct connections to the PSAP, i.e., there is no intermediate telecommunications room between them. The room is divided into two rows of racks. The radio and microwave equipment racks are at the north end of the room, as are the racks that contain the supporting 48 VDC power plant. Meanwhile, the telephone equipment racks are at the south end. There currently is enough room for one additional equipment rack. However, an additional five racks could be accommodated as legacy racks are removed due to equipment being taken out of service.



The majority of existing cabinets/racks in the equipment room are full and do not provide available power connections. Other noteworthy items include the following:

- The room has space for the placement of an additional rack or two for new terminations and network equipment, if the non-functional radio console cabinets/racks are removed.
- There is an overhead cable tray for cable routing.
- There is adequate UPS-backed normal/emergency power available for additional power connections.
- The room has an adequate grounding system.
- There is limited spare capacity in the core network equipment, and this would need to be addressed to accommodate future interfaces.

**Table 51: Mifflin County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>MIFFLIN COUNTY</b>	6	46,790	411 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	No	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	5,474	9,273	0
<b>Number of Trunks</b>	4	4	0
<b>Primary Selective Routers</b>	Verizon (Harrisburg/Paxtang)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Sentinel Patriot (Installed: 2006)		
<b>Computer-Aided Dispatch (CAD)</b>	LogiSYS Northstar, v4.X (Installed: 1994)		
<b>Logging Recording System</b>	Eventide VR778, v1.9		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.2		
<b>Databases Maintained</b>	Special Needs		
<b>Leased Equipment</b>	None		

### **3.7.8. Snyder County**

#### **Overview**

Snyder County is a Seventh Class County with a population of 39,751. The County covers approximately 329 square miles, and has 15 townships and six boroughs within its boundaries, including the Borough of Middleburg, which is the County seat.

The County's public safety answering point (PSAP) dispatches for 6 law enforcement agencies, 15 fire departments and 7 emergency medical services (EMS) agencies, and has no ringdown connections.



The PSAP handled an average of 29 9-1-1 calls each day in 2015. Of these, 37 percent were wireline and 64 percent were wireless. The percentage of 9-1-1 calls that were answered within 10 seconds last year is unknown.

## **Considerations**

Key factors affecting Snyder County and its PSAP include the following:

- The County for the most part is very rural.
- The Susquehanna River runs along the eastern edge of the county, and attracts recreational boating and fishing enthusiasts. Because the river is the County line, it generates considerable mutual-aid response scenarios with neighboring Northumberland County. The river also is prone to flooding and has many bridges.
- The Bald Eagle State Forest and several state game lands are located in the County, all of which generate numerous rescue operations.
- U.S. 522 bisects the County from west to east, while U.S. 11/15 runs along the river and connects to Interstate 81 in Harrisburg; both are heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- There is significant farming activity in the County, which generates emergency calls involving barn fires, silo rescues and farm implement accidents.
- The County is home to Susquehanna University.
- The County is home to numerous fairs, festivals and auctions that attract tourists year round.

## **Staffing**

The PSAP has two management positions, including: a 9-1-1 coordinator and an operations manager. There are three full-time supervisors. In addition, six full-time telecommunicators handle both call-taking and dispatching; they are supplemented by four part-time telecommunicators, who equate to two full-time equivalents (FTE).

## **Facility**

The PSAP is located at 30 Universal Road, Selinsgrove, PA 17870, in a standalone building brick facility that it shares the building with the local branch of the Seven Mountains EMS Council. The Selinsgrove Pennsylvania State Police barracks is in the same complex. The facility has a break room, but no training room; training is accomplished in the 9-1-1 Center.

The 9-1-1 Center has six combined console positions (call-taker and dispatcher). There is ample space for expansion. The County also has a back-up trailer that has some capability for computer-aided dispatch (CAD), phone and radio.



## **Computer-Aided Dispatch**

The CAD system is a Caliber (formerly InterAct) solution that was installed in 2006. It is scheduled to be upgraded in 2017.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Sentinel Patriot v3.2 that was installed in 2011. It is scheduled to be upgraded in 2022.

## **Radio Systems**

The radio system is a Motorola five-channel conventional analog simulcast system that is fairly dated, though the actual installation date is unknown. The County is considering an upgrade, but has not developed firm plans for doing so.

There is a 100-foot self-supporting tower onsite that has some ancillary local antennas that are used for amateur radio functions and repeater functions. In addition, there is a microwave loop that is used for radio system backhaul. There is no shelter for the tower site.

## **Radio Console System**

Motorola MCC 5500 v2.4 consoles are used. The installation date is unknown. Currently there are no replacement plans.

## **Facility Infrastructure**

The PSAP is served by copper feeds from Verizon. There is no fiber to the facility.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported with an Eaton model 9150 UPS system, rated at 15 kilovolt amperes (kVA). The installation date is unknown. This unit is located in the equipment room adjacent to the 9-1-1 Center. The UPS output is through a transfer switch that is in the same room. The present load is 45 percent. Maintenance is provided by Eaton.

### Backup Power

Backup power to the facility is provided by a Cummins 75 kilowatt kW generator that was installed in 2000. The generator powers the entire facility and is supplied by a piped natural gas line. The generator is located outside the building on the north side, and sits in the tower compound. Maintenance is provided by Cummins Harrisburg.



## Equipment Room

The equipment room contains all network, telephone, radio, microwave, CAD, and information technology equipment, as well as all other ancillary connections that are needed. The room contains 14 cabinets and one wall of telephone punch downs. It is small and expansion would not be possible at this time. While two racks have some space for additional equipment, space will need to be verified based on equipment to be installed.

Maintenance is provided by Keystone Communications for telephony, while any IT needs are contracted to private vendors on an as-needed-basis. The equipment room does have a grounding system in place via a grounding bus and grounding ring.

The County utilizes the following switches and routers:

- Two Hewlett-Packard (HP) Pro Curve 2610—10/100/1000; 24 ports; each has 10 ports available
- Two HP 1810-48G—each has up to eight ports available
- Cisco ASA 5505 virtual private network (VPN) connection router—no ports are available
- Netgear Pro Safe—24 ports; up to 10 ports are available
- Cisco 2950-SX—10/100; 24 ports; 12 ports are available

**Table 52: Snyder County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>SNYDER COUNTY</b>	7	39,751	329 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	No	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	3,950	6,794	0
<b>Number of Trunks</b>	4	4	0
<b>Primary Selective Routers</b>	Verizon (Bloomsburg/Scranton)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Sentinel Patriot (Installed: 2011)		
<b>Computer-Aided Dispatch (CAD)</b>	Caliber (formerly InterAct), v6.2.3.76 (Installed: 2006)		
<b>Logging Recording System</b>	Verint Audiolog, v5		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10		
<b>Databases Maintained</b>	Public Safety Database, Business Contacts, Local Resources		
<b>Leased Equipment</b>	None		



### **3.8. SOUTHEAST REGION**

#### **SUMMARY**

The Southeast Pennsylvania Regional Task Force (SEPA RTF) was founded in 1998. It includes Bucks County, Chester County, Delaware County, Montgomery County, and the City of Philadelphia (which is coterminous with the County of Philadelphia) and serves a population of almost 4.1 million.

SEPA RTF has established a five-member executive board consisting of the emergency management coordinators from the five member entities, with each maintaining an equal partnership in the regional authority. Those members nominate and elect a chairperson from among the current representatives every two years. Montgomery County has been designated as the official standing fiduciary agent for the region, which allows for quick processing of project funds. There is a consistent and well-structured assessment and evaluation process for all ongoing and future regional projects; this ensures that the vision of SEPA RTF continues to focus on the safety and well-being of the public it serves.

The emergency communications/ 9-1-1 discipline is represented by the executive board-appointed Operations and Information Technology (IT) Committee, which maintains equal voting representation from each political subdivision. As a partnering workgroup, the 9-1-1 managers meet regularly to discuss opportunities and obstacles specific to the 9-1-1 community, and forward their information to the Committee, which is the body of decision-makers who are accountable for maintaining a regional vision for emergency communications. As a direct result of established and active collaborative relationships, Berks County (East Central region) has joined the 9-1-1 manager workgroup sessions.

The four counties each maintain a single consolidated public safety answering point (PSAP) that provides emergency call-taking and comprehensive dispatch functions for law enforcement, the fire service and emergency medical services. The City of Philadelphia maintains a primary PSAP that handles all initial call-taking and law enforcement dispatch from a single site. All fire and medical emergencies are forwarded to, and handled by, the city's secondary PSAP, which operates from an alternate site.

The total 9-1-1 call volume for the regional PSAPs is 3.7 million annually, excluding Delaware County who was unable to furnish call statistics prior to report submission. A true total count of 9-1-1 calls would likely be in excess of 4 million. With a significant number of limited access highways, mass transit systems, and internationally recognized attractions, the area realizes a sharp increase in visitor and commuter traffic on a daily basis. Heavy emergency call volume regularly trends upward during traditional "rush hour" periods, but sharp and sudden increases also are experienced as a result of mass public gatherings, organized sporting events, and natural disasters. On average, the region's PSAPs meet and exceed the Commonwealth's mandate of answering 90 percent of all 9-1-1 calls within 10 seconds.



The region has established SECOM (Southeast Communications), an interoperability system built on a redundant microwave ring. SECOM connects the primary PSAPs in Bucks, Chester, Delaware, and Montgomery counties, as well as the secondary PSAP in Philadelphia. It also connects the Southeastern Pennsylvania Transportation Authority (SEPTA), the Delaware River Port Authority (DRPA), the University of Pennsylvania Police Department, Temple University Police Department, and seven neighboring counties in New Jersey, Delaware, and Maryland.

The result is that disparate radio systems can be linked as emergency responders move throughout the region. Conference call features also can be leveraged among the communication centers and jurisdictional emergency managers. SECOM does have limitations regarding the distance that radios can be removed from their originating coverage footprint. Additionally, the fees to maintain the system continue to increase while the available bandwidth struggles to provide the necessary throughput for emerging technology.

A high level of discussion, planning, and cooperation exists within and among the Operations and IT Committee and the 9-1-1 managers workgroup, and their work maintains a high level of support from the SEPA RTF executive board. As a product of group assessment work and regularly scheduled work sessions, there is strong unity among the members regarding the future vision for the deployment of Next Generation 9-1-1 (NG9-1-1) technology that will ultimately improve the emergency services provided to the residents, workers, and visitors of the region.

Work already is underway to build a robust Emergency Services Internet Protocol (IP) Network (ESInet) that will allow a large volume of voice and data traffic to pass from PSAP to PSAP. The backbone of this ESInet is designed to employ Pennsylvania Department of Transportation (PennDOT)-owned fiber, which already connects each PSAP within the region for traffic video access. Leveraging this established resource creates a direct communication tie between PennDOT and the PSAPs, providing a robust and redundant path to share critical information, and improving the region's Intelligent Transportation Systems.

The current speed and availability of this broadband connectivity is more than sufficient for today's needs, with the ability to increase when necessary. There also is work underway to make fiber connections to Berks County; doing so would connect the County to the ESInet platform and initiate the first steps toward ESInet expansion outside of a designated region. A memorandum of understanding (MOU) has been approved and signed by PennDOT and all participating counties.

Meanwhile, a very active group of Geographic Information System (GIS) specialists has emerged in parallel to the 9-1-1 managers group and focuses on the vital function of mapping in an NG9-1-1 environment. The group is initiating the design phase for a regional GIS workspace that will support collaboration efforts. Transferring the region's disparate GIS data to one shared platform is a critical first step on the road toward a regional GIS database that can be used for more accurate 9-1-1 call routing, shared dispatch functionality, and other substantial improvements to the region's NG9-1-1 effort.



The regional vision will lead to significant ability to improve the delivery of emergency services and decrease the financial investment toward overly redundant hardware and facilities. Currently, the region's monthly recurring costs for system sustainment exceed \$490,000, excluding personnel costs. Continued deployment of NG9-1-1 services will provide many opportunities to invest recurring costs in emerging technology, which in turn will improve the capabilities and accessibility of the 9-1-1 system.

There are some challenges associated with regionality. For instance, many of the design and deployment phases for regional projects involve a sizable time investment, which taxes the available administrative staff from each PSAP. (However, contracted services have been engaged to bear the majority of the project deliverable burden.) Additionally, considerable front-end effort is needed to mitigate disparities in technology, operational policies and procedures, as well as possible political differences.

The committee and workgroup members are aware of these potential hurdles in the mission, and continue to enter into healthy discussions and focused collaboration toward issue resolution. Their commitment to the regional vision has been a key to their continued success.

### **3.8.1. Bucks County**

#### **Overview**

Bucks County is a Second Class (2-A) County with a population of 626,377. The County covers approximately 604 square miles, and has 31 townships and 23 boroughs within its boundaries, including the Borough of Doylestown, which is the County seat.

The County's public safety answering point (PSAP) dispatches for 40 law enforcement agencies, 60 fire departments and 20 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police, neighboring counties, 7 hospitals, and Burlington, New Jersey.

The PSAP handled an average of 652 9-1-1 calls each day in 2015. Of these, 26 percent were wireline and 74 percent were wireless. Last year, 9-1-1 calls were answered within 10 seconds 97.9 percent of the time.

#### **Considerations**

Key factors affecting Bucks County and its PSAP include the following:

- The five-county Southeast region has a 150 Mbps microwave system that connects all counties in the region and counties in New Jersey, Delaware, and Maryland. Presently, it is being used for radio traffic and interoperability between the counties. A 10 Gbps fiber network is currently being deployed in the Southeast region counties as an ESInet backbone.



- The Delaware River runs along the southern border of the County.
- The County is adjacent to populous Philadelphia County—which is coterminous with the City of Philadelphia—which results in a large volume of 9-1-1 wireless traffic from commuters.
- Nockamixon State Park—a 5,286-acre park that features Lake Nockamixon, a very large lake built by the Army Corps of Engineers— is very popular with boaters, swimmers, campers and horseback-riding enthusiasts.
- Interstate 95, the Pennsylvania Turnpike and state routes 309 and 202 all traverse the County and are heavily traveled. There is commercial trucking traffic, which increases the possibility of vehicular accidents including jackknives, which can create hazmat situations depending on the cargo.
- A canal system in New Hope along the Delaware River—which used to be used for barge traffic—now is a popular restaurant and bar destination.
- The Parx Casino and race track is located in Bensalem.
- The County has numerous other popular tourist attractions, including Washington Crossing Historic Park, the James A. Michener Art Museum, and the home of Pulitzer Prize-winning author Pearl S. Buck.
- Numerous commuter rail lines traverse the County, specifically those of the Southeastern Pennsylvania Transportation Authority (SEPTA) and Amtrak.

## **Staffing**

The PSAP has seven management positions, including: a 9-1-1 coordinator/director, a deputy 9-1-1 director, a director of radio technology, an operations superintendent, a training superintendent, a computer-aided dispatch (CAD) coordinator, and a fire/EMS coordinator. There are 13 full-time supervisors. In addition, 98 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by 10 part-time telecommunicators, who equate to seven full-time equivalents (FTE).

## **Facility**

The PSAP is located on the upper level of the building located at 911 Freedom Way, Ivyland, PA 18974. The facility has a breakroom/kitchen, a training room and a conference room. There is no room for expansion; the training or conference rooms would need to be converted to accommodate any future expansion.

The 9-1-1 Center has 38 combined console positions (call-taker and dispatcher). The County also has a backup facility that maintains 20 positions.

## **Computer-Aided Dispatch**

The CAD system is a Northrup Grumman COBOL CAD system that was installed in 1992. It is scheduled to be upgraded in 2018.



## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Meridian v2.2 that was installed in 2008. It is scheduled to be replaced with an Airbus Vesta system in 2016.

## **Radio Systems**

The radio system is a Motorola Astro Project 25 (P25) Phase 2 system that was installed in 2015. There is a radio tower onsite, and the radio shelter connects directly to the equipment room through various means.

## **Radio Console System**

Motorola MCC 7500 consoles were installed in 2015.

## **Facility Infrastructure**

The PSAP is served by fiber-optic cable feeding from Verizon, as well as from the Pennsylvania Department of Transportation (PennDOT) and County network services. In addition, cable television (CATV) service is provided by Comcast. There are also underground fiber optic and copper feeds to the radio shelter. The primary Verizon connections are routed to the equipment room, where they are converted to copper-based services for handoff to the PSAP.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported with an Eaton, model 9390, 160 kilovolt amperes (kVA) UPS system with battery cabinets, located in an electrical room adjacent to the equipment room. This system was installed in 2008, has a runtime at current load of 86 minutes, and supports the equipment room and the 9-1-1 Center. The UPS system is maintained by Eaton. A separate UPS system is located in the radio shelter and supports the equipment located there.

### Backup Power

Backup power to the PSAP is provided from four 125-kilowatt Generac generators that were installed in 2008. Three are for the 9-1-1 Center and equipment, while one is used to back up the radio equipment. All generators are fueled by natural gas, and as such are considered to provide power indefinitely; however, there is no redundant gas feed to the generator compound at the south side of the building. These generators are maintained by Atlantic Switch and Generator.



The County is concerned that the generators have failed numerous times after commercial power has been lost, necessitating the deployment of portable generators, which creates logistical challenges. There are plans to replace the existing generators with two 500 kW generators in the near future.

### Equipment Room

The equipment room is located on the lower level of the south side of the building. It has a grounding system that appears to comply with communications site grounding standards, and it has an ample overhead cable runway. However, the number of existing racks recently has been reduced as a result of the PSAP's radio project; therefore, power connections are available for any future racks. In addition, many of the existing racks have additional space to support more equipment, on a rack-by-rack basis.

**Table 53: Bucks County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>BUCKS COUNTY</b>	2-A	626,377	604 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	Yes	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	62,278	175,690	0
<b>Number of Trunks</b>	22	10	0
<b>Primary Selective Routers</b>	Verizon (Allentown/Hatboro)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Meridian, v2.2 (Installed: 2008)		
<b>Computer-Aided Dispatch (CAD)</b>	Northrup Grumman COBOL, MSS 40 (Installed: 1992)		
<b>Logging Recording System</b>	Nice NiceCLS, v8.9		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.2		
<b>Databases Maintained</b>	Everbridge		
<b>Leased Equipment</b>	Some tower sites used for radio system		

### 3.8.2. Chester County

#### Overview

Chester County is a Third Class County with a population of 506,190. The County covers approximately 751 square miles, and has 57 townships and 15 boroughs within its boundaries, including the Borough of West Chester, which is the County seat.

The County's public safety answering point (PSAP) dispatches for 46 law enforcement agencies, 37 fire departments and 28 emergency medical services (EMS) agencies, and has ringdown connections with



the Pennsylvania State Police, neighboring counties, as well as the West Chester Police Department and Limerick Generating Station nuclear power plant in adjacent Montgomery County.

The PSAP handled an average of 493 9-1-1 calls each day in 2015. Of these, 21 percent were wireline, 72 percent were wireless and 7 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 98.7 percent of the time.

## **Considerations**

Key factors affecting Chester County and its PSAP include the following:

- The five-county Southeast region has a 150 Mbps microwave system that connects all counties in the region and counties in New Jersey, Delaware, and Maryland. Presently, it is being used for radio traffic and interoperability between the counties. A 10 Gbps fiber network is currently being deployed in the Southeast region counties as an ESInet backbone.
- The County is leveraging the Mutualink interoperability system that enables its PSAP to access video feeds from schools, which greatly enhances situational awareness during incidents.
- There are numerous popular tourist attractions in the County, including the Brandywine Valley wineries and various arboretums.
- U.S. 1 cuts across the southern portion of the County, U.S. 30 traverses the center portion, and the Pennsylvania Turnpike across the northern portion; all are heavily traveled. So are state routes 322 and 202. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- The Schuylkill River flows through the County; it is prone to flooding and attracts significant numbers of recreational boaters.
- Major tourist attractions include the Kennett Square area, which is known as the mushroom capital of the world; the Valley Forge historic site; and numerous camps, campgrounds and horse stables.
- Lancaster County's Octoraro Reservoir, which is popular with boating and fishing enthusiasts, borders the County.
- There are multiple food processing plants in the County.
- There is a significant Amish community that generates uncommon emergency calls such as accidents involving horse-drawn buggies and cars/trucks.

## **Staffing**

The PSAP has five management positions, including: a deputy director of operations, an assistant deputy director of operations, an assistant deputy director of technology, a training coordinator, and an assistant director of quality. There also is 12 other administrative staff, plus eight full-time supervisors.



In addition, 72 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by 10 part-time telecommunicators, who equate to two full-time equivalents (FTE).

## **Facility**

The PSAP is located in the basement of a County-owned building located at 601 Westtown Road, West Chester, PA 19380. The PSAP shares the building with numerous County offices. The PSAP has offices, a conference room, a breakroom and a training room with console positions.

The 9-1-1 Center has nine call-taker-only console positions, and 13 combined console positions (call-taker and dispatcher). The County does not have a backup facility, but plans to implement one in 2016.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Northrup Grumman COBOL CAD system that was installed in 1992. It is scheduled to be upgraded to a Hexagon (formerly Intergraph) system in 2016.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Sentinel Patriot R4.4 that originally was installed in 2007 and upgraded in 2013. The County is scheduled to replace this system in 2016 with an Airbus Vesta system that will be Next Generation 9-1-1 (NG9-1-1) capable.

## **Radio Systems**

The radio system is a Harris Project 25 (P25) 700/800 MHz system that was installed in January 2016.

There is a tower onsite, and the equipment room connects to the radio room with both fiber-optic and copper cables. The radio room houses the microwave and radio equipment for the PSAP, and connects to the tower through an antenna port on the west wall of the building.

## **Radio Console System**

Harris Symphony v10A consoles were installed in January 2016.

## **Facility Infrastructure**

The PSAP is served by fiber-optic cable feeds from Verizon. Additional fiber-optic connections enter the facility from the County's information technology (IT) department, AT&T, Frontier, the Keystone Initiative for Network Based Education and Research (KINBER), the Pennsylvania Department of Transportation (PennDOT), and Comcast, which is providing cable television (CATV) and secondary



Internet service over coaxial cables. Copper connections also are in place to interface the Alcatel PCX switch at the core of the SECOM network.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported with two Eaton model #9390 UPS systems. Each UPS provides 160 kilovolt amperes (kVA) with battery cabinets, are located in an electrical room. This system was installed in 2007, and supports the equipment room's servers, IT loads, radio systems, and the 9-1-1 Center. The system has a runtime of one hour at current load, and is maintained under contract by Eaton.

### Backup Power

Backup power to the PSAP is provided from a 500-kilowatt (kW) Caterpillar diesel generator with a 75-gallon fuel tank that is refilled by two 20,000-gallon fuel tanks on-site. The generator is covered by a maintenance contract with Premium Power and was installed in 2007.

## **Equipment Room**

The telephone equipment room and data center are in the basement on the south end of the building on the east side, while the radio room is located on the south end of the building on the west side.

There is a great deal of existing rack capacity available and floor space for additional racks. However, power connections may need to be added, depending on the existing density of installed equipment, on a rack-by-rack basis.

The telephone equipment room and data center are connected to room grounding systems, but do not appear to be in compliance with communications site grounding standards. Then grounding system and grounding connections in the radio room appear to comply with communications site grounding standards. In addition, the telephone equipment and radio rooms have ample overhead cable runways.



**Table 54: Chester County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>CHESTER COUNTY</b>	3	506,190	751 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	Yes	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	36,939	129,904	13,200
<b>Number of Trunks</b>	12	20	0
<b>Primary Selective Routers</b>	Verizon (Phoenixville/Paoli)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Sentinel Patriot (Installed: 2007)		
<b>Computer-Aided Dispatch (CAD)</b>	Northrup Grumman COBOL, v10.0 (Installed: 1992)		
<b>Logging Recording System</b>	Verint Mercom, v5 (SP3)		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.2		
<b>Databases Maintained</b>	Special Needs, Everbridge (Community alerting)		
<b>Leased Equipment</b>	None		

### 3.8.3. Delaware County

#### Overview

Delaware County is a Second Class (2-A) County with a population of 560,699. The County covers approximately 184 square miles, and has 21 townships and 27 boroughs within its boundaries, including the Borough of Media, which is the County seat.

The County’s public safety answering point (PSAP) dispatches for 40 law enforcement agencies, 65 fire departments and 31 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police and neighboring counties.

The PSAP handled an average of 1,427 9-1-1 calls each day in 2015. Of these, 21 percent were wireline, 72 percent were wireless and 7 percent were voice over Internet Protocol (VoIP).<sup>3</sup> Last year, 9-1-1 calls were answered within 10 seconds 98.7 percent of the time.

#### Considerations

Key factors affecting Delaware County and its PSAP include the following:

- The five-county Southeast region has a 150 Mbps microwave system that connects all counties in the region and counties in New Jersey, Delaware, and Maryland. Presently, it is being used for radio traffic and interoperability between the counties. A 10 Gbps fiber

<sup>3</sup> The data regarding average 9-1-1 calls per day and call type were provided by Delaware County on March 30, 2016; consequently, this data is not reflected in any of the data presented in Section 2 of this report.



network is currently being deployed in the Southeast region counties as an ESInet backbone.

- The County has a very large industrial base, including a large Boeing airplane manufacturing plant.
- The County has an extremely high incidence of violent crime; the City of Chester has the second-highest murder rate per capita in the U.S.
- Part of Philadelphia International Airport is located in the County.
- The County is very diverse in the sense that part is urban and part is rural.
- Villanova University is located in Radnor Township.
- Numerous Interstate and state highways traverse and intersect in the County, notably I-95—which runs the length of the County—and the Northeast Extension (I-476), which connects I-95 to the Pennsylvania Turnpike (I-76). There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general. In addition, there is considerable commuter traffic in and out of Philadelphia, which generates a large number of wireless 9-1-1 calls.
- The Delaware River runs along the southern border of the County, and has heavy commercial barge and freighter activity; it also is popular with recreational boaters, and the riverfront attracts many tourists.
- Other popular tourist attractions include the Tyler Arboretum and Ridley Creek State Park.
- The County is home to professional soccer (Philadelphia Union) in Chester.

## **Staffing**

The PSAP has five management positions including: a 9-1-1 director, a 9-1-1 assistant director, a 9-1-1 coordinator, a chief of operations, and a chief training officer. There are nine full-time supervisors. In addition, 98 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by part-time personnel who equate to two full-time equivalents (FTE).

## **Facility**

The PSAP is located in a single-level building at 360 North Middletown Road, Lima, PA 19037. The PSAP has a break room/kitchen, a locker room and a training room.

The 9-1-1 Center has 10 call-taker-only console positions, and 13 combined console positions (call-taker and dispatcher). The County also has a backup facility with six positions.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Hexagon (formerly Intergraph) v9.2 (MR5) solution that originally was installed in 2003 and upgraded in 2015.



## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v4.3.521 that was installed in January 2016. Despite the fact that Verizon is the local exchange carrier, the PSAP's 9-1-1 wireline trunks are provisioned by Intrado.

## **Radio Systems**

The radio system is a Motorola Quantar analog conventional system that operates in the UHF T-Band; currently, all T-Band users are required to vacate those frequencies by 2022, per a Federal Communications Commission (FCC) order. In addition, the surrounding counties all are operating Project 25 (P25) radio systems; this creates interoperability challenges for Delaware County, which has no plans right now for replacing its current radio system.

There is a tower onsite, and the equipment room connects to the radio shelter with both fiber-optic and copper cables. The radio shelter houses the microwave and radio equipment for the PSAP.

## **Radio Console System**

The PSAP utilizes Zetron consoles that are personal computer (PC)-based. The County is upgrading to a server-based system in 2016; this will eliminate the need to have a PC tower at each console position.

## **Facility Infrastructure**

The PSAP facility is served by two diverse fiber-optic cable feeds from Verizon. There also are 100-pair copper cables from Verizon and Comcast. Additional fiber-optic connections enter the facility from the County's information technology (IT) department, Zayo, and the Pennsylvania Department of Transportation (PennDOT). The entrance facilities are located in the equipment room, where the telecommunications multiplexer provides T1 connections out for 9-1-1 trunks.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported with six different UPS systems. Each supports a portion of the load for the equipment room's servers, IT loads, radio systems, and the 9-1-1 Center. These systems are located in various rooms around the facility. None have a maintenance agreement in place. They are as follows:

- System one is a Best Unity I, model 330, installed in 1993, which has a runtime of 45 minutes with current load.
- System two is a Best Ferrups FE Series, installed in 1993, which has a runtime of 45 minutes with current load.



- System three is an Eaton Powerware, installed in 2012, which has a runtime of 45 minutes with current load.
- System four is an Emerson Liebert NX, installed in 2014, which has a runtime of 45 minutes with current load.
- System five is an Eaton 9170, installed in 2015, which has a runtime of 45 minutes with current load.
- System six is an Emerson Liebert NX, installed in 2015, which has a runtime of 45 minutes with current load.

**Backup Power**

Backup power for the PSAP is provided from two diesel generators. The first is a Spectrum 400-kilowatt (kW) with a 5,000-gallon fuel tank onsite, installed in 2001. The second is an Onan 600-kW with a 5,000-gallon fuel tank onsite, installed in 1993. The generators are covered by a maintenance contract with Penn Power; it is anticipated that they can run for one month with current fuel.

**Equipment Room**

The equipment room is located on the west side of the building. It has a raised floor and cabling is run beneath the floor in a cable tray; cables also are run on an overhead cable tray. Cables traversing the building run above the ceiling. There is limited amount of existing rack (floor and wall) capacity available, and limited floor space for additional racks. Power connections may need to be added, depending on the existing density of installed equipment, on a rack-by-rack basis. The equipment in this room appears to be properly grounded to the room grounding system, however the grounding system is not compliant with communications site grounding standards.

**Table 55: Delaware County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>DELAWARE COUNTY</b>	2-A	560,699	184 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	Yes	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	109,705	374,168	36,929
<b>Number of Trunks</b>	14	18	0
<b>Primary Selective Routers</b>	Intrado (Paoli/Phoenixville)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta, v4.3.521 (Installed: 2016)		
<b>Computer-Aided Dispatch (CAD)</b>	Hexagon (formerly Intergraph), v9.2 (MR5) (Installed: 2003; upgraded 2015)		
<b>Logging Recording System</b>	Nice		
<b>Geographic Information System (GIS)</b>	Hexagon GeoMedia, v9.2		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	None		



### **3.8.4. Montgomery County**

#### **Overview**

Montgomery County is a Second Class (2-A) County with a population of 808,946. The County covers approximately 483 square miles, and has 38 townships and 24 boroughs within its boundaries, including the Borough of Norristown, which is the County seat.

The County's public safety answering point (PSAP) dispatches for 52 law enforcement agencies, 92 fire departments and 20 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police, neighboring counties, the Philadelphia County and Chester County Police Departments, the Chester County Fire Department, the PennStar medical evacuation service, Montgomery County Prison, and Limerick Generating Station nuclear power plant.

The PSAP handled an average of 1,123 9-1-1 calls each day in 2015. Of these, 17 percent were wireline, 77 percent were wireless and 6 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 90.9 percent of the time.

#### **Considerations**

Key factors affecting Montgomery County and its PSAP include the following:

- The five-county Southeast region has a 150 Mbps microwave system that connects all counties in the region and counties in New Jersey, Delaware, and Maryland. Presently, it is being used for radio traffic and interoperability between the counties. A 10 Gbps fiber network is currently being deployed in the Southeast region counties as an ESInet backbone.
- The County is traversed by several major highways, including the Pennsylvania Turnpike, the Schuylkill Expressway (Interstate 76), and the Northeast Extension to the Turnpike (Interstate 476). There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general. In addition, there is considerable commuter traffic in and out of Philadelphia, which generates a large number of wireless 9-1-1 calls.
- There is considerable freight and commuter rail activity throughout the County, notably that of the Southeastern Pennsylvania Transportation Authority (SEPTA).
- The majority of Valley Forge National Historic Park, a very popular tourist destination, is located in the County. The area also is home to the Valley Forge casino and convention center.
- The second-largest shopping mall in the U.S., the King of Prussia Mall, is located in the County.
- There are several large pharmaceutical manufacturing plants—which store considerable amounts of chemicals—in the County, notably Merck and Pfizer.



- The Limerick Generating Station, a nuclear power plant, is located in the County; the PSAP has a ringdown connection to this plant.
- There are several popular recreational areas in the County, including the Green Lane Reservoir and the Spring Mountain ski resort.

## **Staffing**

The PSAP has 10 management positions including: a deputy director of communications, an assistant director of operations, an assistant director of technology, an assistant director of professional standards, a professional development coordinator, a special operations coordinator, and two platoon commanders. There are 11 full-time supervisors. In addition, 128 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by 13 part-time telecommunicators, who equate to two full-time equivalents (FTE).

## **Facility**

The PSAP is located on the main level of a County-owned building located at 50 Eagleville Road, Eagleville, PA 19403. The PSAP shares the building with the County's emergency management agency (EMA), EMS, homeland security department, and hazardous materials (hazmat) unit.

The PSAP has two training rooms—large and small—a breakroom/kitchen and two conference rooms. The console positions were designed so that telecommunicators could work sitting or standing.

The 9-1-1 Center has 14 call-taker-only console positions, and 24 combined console positions (call-taker and dispatcher). The County also has a backup facility with 19 positions.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Hexagon (formerly Intergraph) v9.2 solution that originally was installed in 2006 and upgraded in 2014.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Intrado Viper v5.5 that was installed in 2012. The County plans to upgrade this system in 2017.

## **Radio Systems**

The radio system is a Motorola Smartzone v4.1 800 MHz trunked system. The County is replacing the system in 2016 with a Motorola Astro Project 25 (P25) 700/800 MHz system.

There is a radio tower onsite; the radio equipment room connects directly to it through an antenna port.



## **Radio Console System**

The PSAP utilizes Motorola Centracom Gold Elite consoles that are approaching end-of-life. They are being replaced as part of the radio system replacement project in 2016.

## **Facility Infrastructure**

The PSAP facility is served by diverse fiber-optic cable feeds and a 600-pair copper feed from Verizon. There also are fiber-optic feeds from the Pennsylvania Department of Transportation (PennDOT) and Sunesys—the County’s information technology (IT) connection—as well as coaxial cable feeds from Comcast. Eventually the County plans to install a fiber-optic feed from the Keystone Initiative for Network Based Education and Research (KINBER) in order to extend the regional Emergency Services Internet Protocol (IP) Network (ESInet) connection to other counties outside the Southeast region.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported with two UPS systems. The first is an MGE 72-16002-42, 160 kilovolt amperes (kVA) UPS with battery cabinets, which is located in an electrical room. It was installed in 2007 and is maintained by Schneider Electric. This UPS system supports half of the 9-1-1 Center and the equipment room.

The second UPS system consists of a pair of Eaton model 9390, 80 kVA UPS units with battery cabinets, located in the radio equipment room. They each are capable of supporting the critical load. This system was installed in 2009 and is maintained by Core Power. This UPS pair supports half of the 9-1-1 Center and the equipment room.

### Backup Power

Backup power to the PSAP is provided from two 300-kilowatt kW Onan diesel generators, each with a 600-gallon day tank; they also share an underground 10,000-gallon fuel tank. The generators were installed in 2005 and are maintained by County technicians.

## **Equipment Rooms**

The radio and network equipment rooms are on the main level on the south side of the building. There is a raised floor throughout the facility. There also is an overhead cable tray system in both rooms for cable distribution. There is a small amount of additional rack capacity available in the network room. There also is additional rack capacity available in the radio room. Both rooms have grounding systems that appear to comply with communications site grounding standards.



**Table 56: Montgomery County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>MONTGOMERY COUNTY</b>	2-A	808,946	483 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	Yes	Yes
<b>9-1-1 Calls (2015)</b>	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
	70,745	310,446	24,254
<b>Number of Trunks</b>	22	19	0
<b>Primary Selective Routers</b>	Verizon (Hatboro/Phoenixville)		
<b>Customer Premises Equipment (CPE)</b>	Intrado Viper, v5.5 (Installed: 2012)		
<b>Computer-Aided Dispatch (CAD)</b>	Hexagon (formerly Intergraph), v9.2 (Installed: 2006; upgraded 2014)		
<b>Logging Recording System</b>	Verint Mercom, v5.2.2 (SP2)		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.2		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	Some radio system tower sites		

### 3.8.5. City of Philadelphia

#### Overview

Philadelphia County is a First Class County with a population of 1.55 million. The County covers approximately 134 square miles and is coterminous with the City of Philadelphia, the largest city in the state and the fifth-most-populous in the U.S.

The County's primary public safety answering point (PSAP) is operated by the Philadelphia Police Department; it receives all 9-1-1 calls but dispatches only law enforcement-related calls. Fire- and emergency medical service (EMS)-related calls are transferred to a secondary PSAP operated by the Philadelphia Fire Department. Neither PSAP has ringdown connections.

The primary PSAP handled an average of 7,982 9-1-1 calls each day in 2015. Of these, 18 percent were wireline, 78 percent were wireless and 4 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 89.5 percent of the time.

#### Considerations

Key factors affecting Philadelphia County and its PSAP include the following:

- The five-county Southeast region has a 150 Mbps microwave system that connects all counties in the region and counties in New Jersey, Delaware, and Maryland. Presently, it is being used for radio traffic and interoperability between the counties. A 10 Gbps fiber



network is currently being deployed in the Southeast region counties as an ESInet backbone.

- The primary PSAP handles the largest call volume of any such facility in the state—nearly three million calls in 2015.
- The County/City is home to four professional sports teams.
- The County/City has a one of the highest crime rates in the U.S., with a violent crime rate that is nearly three times the national average; it is directly across the Delaware River from the City of Camden, a city with one of the highest violent crime rates in New Jersey.
- The County/City is just 30 miles from Trenton, the capital of New Jersey.
- Interstates 95 and 76 (the Schuylkill Expressway, which terminates in the County/City and is one of the most congested highways in the state) traverse the area. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general. In addition, there is considerable commuter traffic in and out of Philadelphia, which generates a large number of wireless 9-1-1 calls.
- There is considerable freight and commuter rail activity throughout the County, notably that of the Southeastern Pennsylvania Transportation Authority (SEPTA) and Amtrak.
- The County/City is home to Philadelphia International Airport, one of the nation's busiest airports.
- The County/City is home to numerous colleges and universities, notably the University of Pennsylvania, Temple University, LaSalle University and Drexel University.
- The City operates 800 fixed video surveillance cameras that provide feeds to the primary PSAP; the University of Pennsylvania, Temple University and SEPTA also provide camera feeds to the PSAP from their own systems.
- The County/City has a large industrial base.

## **Staffing**

The primary PSAP has seven management positions including: a chief inspector, an inspector, two captains and two lieutenants, all with the police department. The secondary PSAP has one management position, a fire communications supervisor who reports to the deputy fire chief. There are 43 full-time police supervisors and four full-time fire supervisors. In addition, 267 full-time telecommunicators handle both call-taking and dispatching functions.

## **Facility**

The primary PSAP is located at 750 Race Street, Philadelphia, PA 19106. The building is a former police precinct headquarters built in the 1960s that has converted part of one floor into a PSAP. Space is very limited, so there is no training room; training is done in the 9-1-1 Center on a spare console.



The primary 9-1-1 Center has 38 police call-taker-only console positions, and 15 police dispatcher-only positions. The secondary PSAP has 15 fire combined positions (call-taking and dispatch). The County does not have a backup facility.

### **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Northrup Grumman CommandPoint v2.3 system that was installed in 2007. It currently is scheduled to be upgraded in 2016.

### **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta DMS 100 v2.3 that was installed in 2005. It currently is scheduled to be replaced in 2016.

### **Radio Systems**

The radio system is a Motorola Astro Project 25 (P25) v7.14 system that was upgraded in 2014.

### **Radio Console System**

Motorola Gold Elite consoles are used; they need to be replaced because they are approaching end-of-life. No replacement plan currently is in place.

### **Facility Infrastructure**

The primary PSAP is served by diverse fiber-optic and copper feeds from Verizon. The trunks to the PSAP are Centrex based and provide automatic call distribution (ACD) functionality and subsequent transfers to the secondary PSAP operated by the fire department. The primary PSAP is also served by data network and Internet services from the City's Office of Information Technology (OIT).

Administrative communications to the primary PSAP are provided via Centrex services and a Nortel Option 81 private branch exchange (PBX). The building also is supported by a distributed antenna system (DAS) from Verizon.

### **Power Systems**

#### Uninterruptible Power Supply

The PSAP, data center and some life-safety functions are supported by two 150 kilovolt amperes (kVA) UPS systems from United Power Systems that provide 30 minutes runtime at full load. The distribution from the UPS is through four power distribution units (PDU) located throughout the building.



### Backup Power

Backup power to the PSAP is provided from two Spectrum diesel generators. One generator provides 800 kilowatts (kW) and can support the entire building load. If that unit fails, the second generator provides 500 kW and requires a controlled shutdown of non-essential equipment. Each generator has a 100-gallon fuel tank; a supplemental 2,000-gallon tank provides runtime of approximately three days at full load.

### **Equipment Rooms**

The primary PSAP has two equipment rooms, a data center and a radio room.

#### Data Center

This room, which is operated by the City's OIT department, contains police department computer-based servers, switches and routers. It also contains the CPE and CAD systems, as well as two ancillary equipment cabinets for multiplexors, channel banks, etc. The CAD system is housed in two cabinets in the data center.

There is a shortage of power connections, and core data switches are connected to daisy-chained power strips on the floor. There is no grounding system visible in the data center.

Fiber-optic cable terminations and core switching are located in the data center. The core network equipment is being changed from an older Nortel switching platform to a Juniper platform, which will create approximately 24 inches of rack-mounting space in the network core rack. Due to the age and construction of the facility, along with power and other limitations, expansion of this facility is not a ready option.

#### Radio Room

The PSAP has a dedicated radio room that supports eight racks of radio equipment, and which has a grounding system which appears to comply with communications site grounding standards. Connections to antenna/tower site locations is across the City's information technology (IT) network, as there are no local antennas onsite.



Table 57: Philadelphia County at a Glance

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
PHILADELPHIA COUNTY	1	1,548,647	134 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	No (primary); Yes (secondary)	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	515,781	2,282,584	115,102
<b>Number of Trunks</b>	76	32	0
<b>Primary Selective Routers</b>	Verizon (Market Street/Locust Street)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta DMS 100 (Installed: 2005)		
<b>Computer-Aided Dispatch (CAD)</b>	Northrup Grumman, Command Point, v2.3 (Installed: 2007; upgraded 2016)		
<b>Logging Recording System</b>	Nice Inform, v6		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.3		
<b>Databases Maintained</b>	9IMS (Management Information System [MIS])		
<b>Leased Equipment</b>	None		

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### **3.9. SOUTHWEST REGION**

#### **SUMMARY**

The Southwest region consists of Allegheny County and the City of Pittsburgh, as well as Armstrong, Beaver, Butler, Cambria, Fayette, Greene, Indiana, Lawrence, Mercer, Somerset, Washington, and Westmoreland counties, all of which are part of the Southwestern Pennsylvania Emergency Response Group (SWPERG), which was established in 1998.

In late 2015, Venango County, previously part of the Northwest region, was approved for membership in SWPERG, which now puts the County in the Southwest region. This region has a population of 2.95 million and includes the Pittsburgh Metropolitan Statistical Area (MSA). In 2015, the public safety answering points (PSAPs) in the Southwest region processed more than 1.9 million 9-1-1 calls.

The member counties over the last four years have strategically converged technologies in an interoperable voice and data environment. This initiative by the SWPERG and the Pennsylvania Emergency Management Agency (PEMA) developed an integrated approach to managing and coordinating public safety activities through improved communications and technology capabilities. Benefits include leveraging existing assets and resources, achieving efficiencies through increased sharing of public safety applications, and elimination of duplicate, but not redundant, systems.

The key element of improving these capabilities was the establishment of a public safety network known as an Emergency Services Internet Protocol (IP) Network (ESInet), which is considered to be a critical step toward Next Generation 9-1-1 (NG9-1-1). Through the deployment of a SWPERG regional ESInet, these counties were able to develop a comprehensive strategy that identified opportunities to share resources.

Establishing this regional ESInet has enabled the provisioning of enhanced real-time data to first responders in the SWPERG service area. More accurate, detailed, and timely information from the incident scene will increase the situational awareness of the emergency responders and improve their response capabilities. The ESInet also promotes the sharing of information between emergency operations centers (EOCs) and PSAPs, and facilitates continuity of operations in the event of an EOC/PSAP failure, or an entire region becoming nonfunctional or overwhelmed.

Project activities included identifying county systems and available assets for a broadband network within the geographic footprint of southwest Pennsylvania, with a strategy that leverages existing infrastructure to build out a public safety ESInet in the most cost-effective manner. A gap analysis subsequently was performed to document the additional items needed to bring the ESInet to a fully operational state, in order to take advantage of the data, applications, and cost sharing that is envisioned for the regional and statewide network.



The SWPERG prioritized funding for the deployment of a regional ESInet for its member counties and recognized the opportunity to develop a comprehensive strategy that included sharing the cost of network design and deployment with PEMA using a U.S. Department of Transportation (USDOT) Enhanced 9-1-1 (E9-1-1) Grant Program award. Grant funds invested to date used the 2008-2014 Homeland Security Grant Fund Programs (HSGP), as well as the E9-1-1 implementation grant. The initiative leveraged both county- and state-owned assets, which contributed to the successful deployment of the ESInet and resulted in cost savings; the avoidance cost to date is in capital and recurring expenses. Total costs for both phases of the ESInet deployment and related applications are \$12,639,530 as of March 3, 2015. Total savings realized by all counties to date are \$13,331,683.

An early cooperative initiative that started in 2011 within SWPERG involved the Inter-County Regional Radio System (ICORRS) project. Using Homeland Security funds, three counties—Indiana, Armstrong, and Westmoreland—initially received funding to support a radio master site installed at Westmoreland County to enable region-wide interoperability among participating counties, using an ESInet for connectivity. (Fayette, Lawrence, and Somerset counties later joined the initiative.) Enhanced features of the ICORRS network include the following: compliance with Association of Public-Safety Communications Officials (APCO) Project 25 (P25) standards, redundancy and recovery, interoperability, emergency alerting, system monitoring, and network monitoring. All user counties benefit from this cooperative arrangement.

Additionally in 2011, several SWPERG member counties had a vision for a shared 9-1-1 customer premises equipment (CPE) system. This is known as the Western Counties Regional ESInet (WestCORE) project. The primary purpose of WestCORE is to guide the development of long-range public safety network plans, to perform monitoring of system operations, and to develop and support interoperability processes and procedures. The ESInet that serves southwest Pennsylvania will enable the sharing of resources, and will position WestCORE members for the transition to NG9-1-1. The WestCORE group members are governed by a separate set of agreements signed by all member counties.

Installation of the PSAP CPE system began in late 2014 and is expected to be completed in mid to late 2016; it will serve the participating counties of Allegheny, Armstrong, Beaver, Butler, Cambria, Greene, Fayette, Indiana, Lawrence, Mercer, Somerset, Venango and Westmoreland. The newly installed NG9-1-1-ready system includes geo-diverse hosts located at Allegheny, Butler, and Westmoreland counties; the system currently is split into East and West networks with the eventual requirement of a single system. This will allow for the transfer of 9-1-1 calls between PSAPs without the reliance on the public-switched telephone network (PSTN) Additional planned enhancements include greater individual site survivability and a system-wide text-to-9-1-1 solution. The PSAP's will also have "hot seating" capability that allows them to move to another PSAP in the region in the event of an evacuation of their center.



Other applications that utilize the ESInet for connectivity to support the EOCs include an enterprise administrative telephone system, regional logging recording as part of the ICORSS system, and a Polycom video-teleconferencing system.

Several subsets of the member counties are actively planning to leverage the ESInet to support regional computer-aided dispatch (CAD) systems or CAD-to-CAD applications.

### **3.9.1. Allegheny County**

#### **Overview**

Allegheny County is a Second Class County with a population of 1.23 million. (It is the only Second Class County in the state, and is the second most populated County.) The County covers approximately 730 square miles, and has 42 townships and 85 boroughs within its boundaries, plus the cities of Clairton, Duquesne and Pittsburgh, which is the County seat.

The County's public safety answering point (PSAP) dispatches for 94 law enforcement agencies, 176 fire departments and 43 emergency medical services (EMS) agencies, and has ringdown connections with 17 agencies.

The PSAP handled an average of 2,975 9-1-1 calls each day in 2015. Of these, 27 percent were wireline, 63 percent were wireless, 7 percent were voice over Internet Protocol (VoIP) and 3 percent were multi-line telephone system (MLTS). Last year, 9-1-1 calls were answered within 10 seconds 99.8 percent of the time. The County currently is accepting text-to-911 calls through the Intrado PC client.

#### **Considerations**

Key factors affecting Allegheny County and its PSAP include the following:

- The County participates in the Region 13 Emergency Management Task Force.
- It is one of four host sites for the Regional Emergency Management Enterprise telephone system (Avaya), and is one of three host sites for the Western Pennsylvania County Regional ESInet (WestCORE) Enterprise 9-1-1 customer premises equipment (CPE) system (Airbus Vesta).
- The County is unique in that it owns its own 9-1-1 selective routers and standalone Automatic Location Identification (ALI) system.
- The County is home to three professional sports teams that play in Pittsburgh (Pirates, Penguins and Steelers).
- Pittsburgh is home to Point State Park, a popular tourist destination; it is where the Allegheny and Monongahela rivers converge to form the Ohio River.
- There are two airports in the County: Pittsburgh International Airport and Allegheny County Airport.



- The County has an extensive system of locks and dams on the Allegheny, Monongahela and Ohio rivers, which see a considerable amount of barge traffic, as well as recreational boaters.
- Interstates 79, 76 (the Pennsylvania Turnpike) and 376 all traverse the County and are heavily traveled. There is commercial trucking traffic, which increases the possibility of vehicular accidents including jackknives, which can create hazmat situations depending on the cargo.
- Pittsburgh hosts numerous festivals and cultural events throughout the year; virtually every summer weekend has an event that draws crowds greater than 10,000—this is in addition to Pirates games.
- The City is home to Carnegie-Mellon and Duquesne universities, and the University of Pittsburgh.
- Pittsburgh also has a busy convention center that hosted the G20 economic summit in 2009.
- The County is home to the Oakmont Country Club, which will host the 2016 United States Open.
- There is still a large industrial and manufacturing presence in the County, particularly in Pittsburgh.
- The Country is home to 33 healthcare facilities, including hospitals and long-term care centers.
- Low-lying areas of the County are prone to flooding, which occasionally has been serious enough to close I-376 near downtown Pittsburgh, as well as flood communities along the Monongahela River.

## Staffing

The PSAP has 35 management positions including the following:

- 9-1-1 communication managers (3)
- administrative assistants (4)
- assistant chief of administration (1)
- assistant chief/9-1-1 coordinator (1)
- fiscal officer (1)
- quality assurance (QA) manager (1)
- QA assistants (6)
- radio systems coordinator (1)
- shift commanders (15)
- emergency geographic address assistant (1)
- emergency geographic address coordinator (1)

There are 15 full-time lead telecommunicators. In addition, 232 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by part-time telecommunicators who equate to ten full-time equivalents (FTE).



## **Facility**

The PSAP is located at 400 North Lexington Street, Suite 200, Pittsburgh, PA 15208, on the third floor of a three-story building that is leased by the County. The PSAP shares the facility with the County's emergency operations center (EOC), as well as numerous other County offices and private businesses. The PSAP has a break room/kitchenette, a locker room, and a training facility that has 12 console positions plus a conference room that is used for classroom instruction.

The 9-1-1 Center has 20 call-taker-only console positions, 21 dispatch-only console positions, and 22 combined console positions (call-taker and dispatcher). The County also has a backup facility with 40 positions.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a TriTech (formerly Tiburon) Command CAD v2.8 that was installed in 2010. It currently is scheduled to be upgraded in 2016.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v6.0 that was installed in 2014. The County is one of the host sites for the WestCORE regional CPE system.

## **Radio Systems**

The radio system is a hybrid of multiple makes and models, though the most prevalent is Motorola conventional simulcast base stations. The County operates under 88 Federal Communications Commission (FCC) licenses for multiple tower sites with six countywide interoperability channels that provide area-wide emergency communications. Components of the system are very old. The county does programmatically upgrade older equipment, but has no current plans for a complete system replacement, as that would be cost-prohibitive for a system this size.

## **Radio Console System**

Motorola Gold Elite consoles were installed in 2000; the system is reaching end-of-life, and the County is considering replacement in 2016 or 2017, depending on funding availability.

## **Facility Infrastructure**

The PSAP is served by copper facilities from Verizon, plus fiber facilities from Verizon and DQE Communications. The land mobile radio (LMR) system is supported by multiprotocol label switching (MPLS) circuits and microwave. The facility's wiring is primarily Category 6 with some Category 5E; it appears that wiring is installed for each application.



## Power Systems

The PSAP is supported by an Exide 160 kilovolt amperes (kVA) uninterruptible power supply (UPS) system that was installed in 1995. Backup power to the PSAP is provided from a Caterpillar diesel generator and was installed in 1995. The UPS output is through automatic transfer switches (ATS). Both the UPS system and the generator have capacity for additional equipment support should that be necessary.

## Equipment Rooms

The PSAP has three equipment rooms located on the second floor that are dedicated to supporting the PSAP and EOC operations, and each of them uses overhead cable trays. The largest of the three rooms supports the UPS, computer and information technology (IT) equipment; and CAD servers. This room has space to support ten more cabinets; however, heating/ventilating/air-conditioning (HVAC) cooling is a limiting factor that needs to be considered before any additional equipment could be added.

One additional equipment room is used as the facility's telecommunications room and is located in the basement. This room is supported by Verizon fiber and a LiteSpan fiber mux. This room is only supported by a single entrance facility.

**Table 58: Allegheny County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>ALLEGHENY COUNTY</b>	2	1,229,912	730 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	Yes	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	290,749	688,095	76,915
<b>Number of Trunks</b>	126	64	75
<b>Primary Selective Routers</b>	Plant CML (now Airbus) ECS-1000		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta v6.0 (Installed: 2014)		
<b>Computer-Aided Dispatch (CAD)</b>	TriTech Command CAD, v2.8 (Installed: 2010)		
<b>Logging Recording System</b>	Eventide NexLog, v2.5.7-1		
<b>Geographic Information System (GIS)</b>	911 Mapping Systems Maverick/Esri ArcGIS, v10		
<b>Databases Maintained</b>	Quality Enhanced Management System (QEMS)		
<b>Leased Equipment</b>	None		



### **3.9.2. Armstrong County**

#### **Overview**

Armstrong County is a Sixth Class County with a population of 68,367. The County covers approximately 653 square miles, and has 28 townships and 16 boroughs within its boundaries, including the Borough of Kittanning, which is the County seat.

The County's public safety answering point (PSAP) dispatches for 18 law enforcement agencies, 32 fire departments and eight emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police.

The PSAP handled an average of 114 9-1-1 calls each day in 2015. Of these, 31 percent were wireline, 64 percent were wireless and 5 percent were voice over Internet Protocol (VoIP). The percentage of 9-1-1 calls that were answered within 10 seconds in 2015 could not be captured.

#### **Considerations**

Key factors affecting Armstrong County and its PSAP include the following:

- The County is part of the Southwestern Pennsylvania Regional Task Force (Region 13) Emergency Services Internet Protocol (IP) Network, or ESInet.
- The County also leverages the Region 13 Avaya enterprise administrative telephone system and Polycom video-conferencing system.
- The County is part of the Inter County Regional Radio System (ICORRS) since 2012.
- U.S. 422 and state route 28 traverse the County and are fairly heavily traveled. There is commercial trucking traffic, which increases the possibility of vehicular accidents including jackknives, which can create hazmat situations depending on the cargo.
- The Keystone Generating Station, a coal-fired power plant, is located in the County.
- The County is mostly rural.
- The Allegheny River flows through the County; it is popular with boating enthusiasts. It also is prone to flooding, especially in spring when the ice melts and ice floes curtail water flow along the river.
- The Kiskiminetas River, a 27-mile tributary of the Allegheny River, also flows through the County.
- There are several state parks and game lands in the County.

#### **Staffing**

The PSAP has four management positions: a public safety director, a 9-1-1 coordinator, a systems administrator, and an administrative assistant. There are four full-time supervisors. In addition, 11 full-



time telecommunicators handle both call-taking and dispatching; they are supplemented by part-time telecommunicators who equate to one full-time equivalent (FTE).

## **Facility**

The PSAP is located at 131 Armsdale Road, Kittanning, PA 16101, in a new single-story building constructed in 2012. The PSAP shares the facility with the County's emergency operations center (EOC). The facility has a multipurpose room that is used as the EOC and for training, plus a break room/kitchen and offices.

The 9-1-1 Center has six combined console positions (call-taker and dispatcher). The County does not have a backup facility.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a New World Systems (now Tyler Technologies) Aegis MSP solution that was installed in 2014. It currently is scheduled to be upgraded in 2017.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta that was installed in 2015. The County participates in the Western Pennsylvania County Regional ESInet (WestCORE) regional CPE sharing initiative as a remote with hosts located in Butler and Westmoreland counties.

## **Radio Systems**

The radio system is a Motorola Astro Project 25 (P25) v7.14 800 MHz system that was installed in 2012. The County is a participant in the ICORRS regional trunked radio system. The system core, which is located in Westmoreland County, is scheduled to be upgraded to v7.15 in 2016.

Radio traffic is backhauled on the County's MPLS fiber network to respective County tower sites. There is no tower on the PSAP property.

## **Radio Console System**

Motorola MCC 7500 v7.14 consoles were installed in 2012 as part of the ICORRS radio project. Currently there is no plan to upgrade them.

## **Facility Infrastructure**

The PSAP is served by Salsgiver Communications with four dark fiber strands lit at 10 gigabits per second (Gbps) for the Region 13 primary ESInet connection. The fiber has diverse entrances into the



building. In addition, Windstream provides two 25-pair copper cables plus Internet service over fiber, and Primary Rate Interface (PRI) service over Ethernet on fiber.

Region 13 ESInet infrastructure consists of an Alcatel/Lucent service aggregation router (SAR-18) for all ESInet services, and a Cisco 2811 router and 3560 switch for backup region connectivity. An Avaya G450 gateway and three Avaya ERS 3524GT Ethernet switches provide connectivity for the region-wide VoIP telephone system. The Cisco 2811 and 3560 are located in the County Courthouse campus, so they would not be useful for expansion.

An Airbus Vesta 9-1-1 CPE solution, which is part of the WestCORE regional 9-1-1 system, also uses the ESInet for connectivity. The Vesta Ethernet switches are Cisco 2960s. Fourteen copper 10/100 ports are available on these switches. The Avaya switches are reserved for the VOIP enterprise administrative telephone system.

A Polycom video-conferencing system is connected to Region 13 over the ESInet.

Armstrong County has an extensive fiber Multiprotocol Label Switching (MPLS) network using Alcatel/Lucent SARs with a 1-Gbps fiber backbone. The network connects the Courthouse campus and PSAP/EOC to 14 remote locations in order to provide radio backhaul and Ethernet services. This network extends into neighboring Indiana County for inter-county radio services.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported with an American Power Conversion (APC) UPS system, rated for 100 kilovolt amperes (kVA), which is located in the equipment room. This system was installed in 2015. It supports the equipment room and the 9-1-1 Center. The UPS system has a runtime of 1.5 hours at full load, and is maintained under contract by Remark.

### Backup Power

Backup power for the PSAP is provided from a 450 kilowatt (kW) Cummins natural-gas generator that is mounted outside the rear of the building on the south side. The generator is maintained by the County's maintenance staff with time-and-material support from Bridgeway Power. It was installed in 2012.

## **Equipment Room**

The equipment room is in the southeast area of the building, and is adjacent to the 9-1-1 Center. Cables are run under the floor and adequate space exists for additional cabling. Overhead cable trays are installed above the row of equipment racks and extend to a single rack that holds the Avaya hardware and a County Cisco Ethernet switch.



County network infrastructure is supported by the emergency services staff with additional support from the County's IT department. Core network equipment includes Cisco routers and switches.

Existing equipment racks are mostly full, but the room possibly could support two additional racks.

The room has a grounding system that appears to comply with communications site grounding standards.

**Table 59: Armstrong County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>ARMSTRONG COUNTY</b>	6	68,367	653 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	Yes	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	12,647	26,758	2,160
<b>Number of Trunks</b>	11	4	0
<b>Primary Selective Routers</b>	Windstream ECS-1000/DMS, Verizon, Consolidated, CenturyLink		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta, v 4.3 (Installed: 2015)		
<b>Computer-Aided Dispatch (CAD)</b>	New World Systems (now Tyler Technologies) Aegis MSP, v10.2 (Installed: 2014)		
<b>Logging Recording System</b>	Verint Audiolog, v4.7		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v9.3		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	Windstream ESC 1000		

### 3.9.3. Beaver County

#### Overview

Beaver County is a Fourth Class County with a population of 170,274. The County covers approximately 435 square miles, and has 30 townships and 30 boroughs within its boundaries, including the Borough of Beaver, which is the County seat. There also are two cities, Aliquippa and Beaver Falls.

The County's public safety answering point (PSAP) dispatches for 40 law enforcement agencies, 47 fire departments and 10 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police and the Beaver Valley Nuclear Generating Station.



The PSAP handled an average of 229 9-1-1 calls each day in 2015. Of these, 24 percent were wireline and 76 percent were wireless. Last year, 9-1-1 calls were answered within 10 seconds 69 percent of the time.

## Considerations

Key factors affecting Beaver County and its PSAP include the following:

- The County is part of the Southwestern PA Regional Task Force (Region 13) Emergency Services Internet Protocol (IP) Network (ESInet).
- The County leverages the Region 13 Avaya enterprise administrative telephone system and Polycom video-conferencing system.
- The County hosts the Region 13 firewall authentication server, which maintains the rules for all ESInet firewalls within the region.
- The PSAP has access to the Region 13 alert notification system.
- The PSAP would trigger the alert/siren system if an accident were to occur at the Beaver Valley nuclear power plant. If such a situation were to occur, the PSAP quickly could be overwhelmed by emergency calls. Currently, overflow calls would go to a 10-digit administrative line; if those lines are busy, the caller would receive a “fast busy” signal. The County expects that once it installs the Western Pennsylvania County Regional ESInet (WestCORE) regional CPE solution, calls could be rerouted to a neighboring PSAP.
- The PSAP dispatches for two Allegheny County municipalities: Bell Acres Borough and Leet Township.
- There is considerable freight rail activity in the County; the Norfolk-Southern railroad maintains a large railyard in the County.
- The PSAP has the ability to tap into the video camera feeds of more than a dozen school districts in the County, to enhance situational awareness during an incident at one of the schools.
- Interstate 76 (the Pennsylvania Turnpike) and 376, in addition to state route 65 traverse the County, and all are heavily traveled. There is commercial trucking traffic, which increases the possibility of vehicular accidents including jackknives, which can create hazmat situations depending on the cargo.
- The Ohio River, containing several locks and dams, flows through the County; the river is heavily used by commercial and recreational boating.

## Staffing

The PSAP has six management positions: a director, two deputy directors, an information technology (IT) manager, and two administrative personnel. There are nine full-time supervisors. In addition, 26 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by six part-time telecommunicators, who equate to three full-time equivalents (FTE).



## **Facility**

The PSAP is located at 351 14<sup>th</sup> Street, Ambridge, PA 15003, in a single-story building. The PSAP shares the facility with the County's emergency operations center (EOC), constructed in 2009. There is secure access at the external doors and at specific doors in the facility. The facility has break, quiet and training rooms, as well as a fitness room and locker room.

The 9-1-1 Center has 15 combined console positions (call-taker and dispatcher). The room is large enough to be expanded by up to four console positions. The County does not have a backup facility.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Hexagon (formerly Intergraph) I/CAD v9.2 that was installed in 2008. System hardware was refreshed in 2014. It currently has no scheduled upgrade date.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v2.2 (SP2) that was installed in 2005. It is scheduled to be replaced in 2016 when the County moves to the WestCORE regional CPE solution.

## **Radio Systems**

The radio system is a Motorola conventional simulcast system that operates on VHF high-band frequencies; the system was installed in 2011. The County maintains the following radio sites: Hanover, Midland, Baden, North Sewickley, Beaver Falls, South Beaver, Friendship Ridge (all of these are County-owned), Aliquippa, Freedom, Harmony, and New Brighton (all of these are owned by other entities). Backup antennas are mounted on a 180-foot tower to the north of the PSAP building.

## **Radio Console System**

Motorola Gold Elite consoles were installed in 2009; the system is reaching end-of-life. The County is planning for replacement.

## **Facility Infrastructure**

The PSAP is served by fiber-optic cable feeds from DQE Communications for the ESInet, and Verizon—using a LiteSpan system—for 9-1-1 trunks, local telephone lines and various other circuits required to support the center. The DQE and Verizon fiber both have last-mile diversity.

Verizon also serves the facility with a 200-pair copper cable, which also has diversity. Comcast provides Internet service with 10 gigabits per second (Gbps) of bandwidth.



Region 13 ESInet infrastructure consists of an Alcatel/Lucent service aggregation router (SAR-18) and a Cisco 3560 switch. An Avaya G450 gateway and three Avaya ERS 3524GT Ethernet switches provide connectivity for the region-wide VoIP telephone system. Ten copper 10/100 ports are available on the Cisco 3560 switch. The Avaya switches are reserved for the enterprise VOIP system.

A Polycom video-conferencing system is connected to Region 13 over the ESInet.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported by two American Power Conversion (APC) UPS systems, each rated for 80 kilovolt amperes (kVA) and located in the equipment room. These systems were installed in 2009 and support the equipment room, radio equipment and the 9-1-1 Center.

### Backup Power

Backup power to the PSAP is provided from two 300 kilowatt (kW) Cummins diesel generators. The generators are located in enclosures to the north of the building and were installed in 2009. They are covered by a maintenance contract with Bridgeway Power.

## **Equipment Room**

The equipment room is on the north side of the building. Cables are run under the raised floor between the equipment room and the 9-1-1 Center, and throughout the building for network connectivity. The room also has overhead cable trays for rack-to-rack cabling. There is adequate space in the cable trays for additional cabling.

Network infrastructure is supported by the County's information technology (IT) department. Core network equipment includes Cisco routers and switches. The County uses a Cisco VoIP administrative telephone system, which is integrated with the Avaya system.

The equipment room is large and could support 8-10 additional equipment racks. Existing racks are mostly full. The room also has an interior perimeter ground bus system.



**Table 60: Beaver County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>BEAVER COUNTY</b>	4	170,274	435 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	Yes	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	19,666	63,937	0
<b>Number of Trunks</b>	7	7	0
<b>Primary Selective Routers</b>	Verizon (Bellevue, Braddock)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta v2.2 (SP2) (Installed: 2005)		
<b>Computer-Aided Dispatch (CAD)</b>	Hexagon (formerly Intergraph) I/CAD, v9.2 (Installed: 2008, Refresh 2014)		
<b>Logging Recording System</b>	Verint Audiolog, v5		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.2.2		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	None		

### 3.9.4. *Butler County*

#### Overview

Butler County is a Fourth Class County with a population of 185,084. The County covers approximately 789 square miles, and has 33 townships and 23 boroughs within its boundaries, plus the City of Butler, which is the County seat.

The County’s public safety answering point (PSAP) dispatches for 22 law enforcement agencies, 34 fire departments and 11 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police and Butler Hospital.

The PSAP handled an average of 267 9-1-1 calls each day in 2015. Of these, 46 percent were wireline and 54 percent were wireless. Last year, 9-1-1 calls were answered within 10 seconds 88 percent of the time.

#### Considerations

Key factors affecting Butler County and its PSAP include the following:

- The County is part of the Southwestern Pennsylvania Regional Task Force (Region 13) Emergency Services Internet Protocol (IP) Network, or ESInet.
- The County also leverages the Region 13 Avaya enterprise administrative telephone system and Polycom video-conferencing system.



- The PSAP is working to develop a text-to-9-1-1 capability that it hopes to launch later in 2016.
- The County is home to numerous Marcellus Shale fracking operations, which creates a risk of derrick/well fires, accidents and hazmat incidents.
- Cranberry Township, in the southwest corner of the County near where Interstate 79 intersects the Pennsylvania Turnpike, is a rapidly growing area with considerable commercial real estate and corporate headquarters.
- I-79 and I-76 (Pennsylvania Turnpike) run along the County's western edge, while U.S. 422 cuts across the County from west to east; both are heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- Iron Mountain, an old limestone mine, is now used to store highly sensitive government documents, original movie reels, and the like.
- The County has numerous recreational areas that attract large numbers of visitors, including Moraine State Park/Lake Arthur, state game lands, and Slippery Rock Creek (popular with canoeists and kayakers).
- The County is home to Slippery Rock University.

## **Staffing**

The PSAP has two management positions: a 9-1-1 coordinator and a training/quality assurance (QA) manager. There are four full-time supervisors. In addition, 18 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by 12 part-time telecommunicators, who equate to eight full-time equivalents (FTE).

## **Facility**

The PSAP is located at 120 McCune Drive, Butler, PA 16001, in a single-story, free-standing facility. The PSAP shares the facility with the County's emergency management agency (EMA). The facility has a multipurpose room that is used as the emergency operations center (EOC), and for training and meetings; a room-divider system is used to create each area.

The 9-1-1 Center has eight combined console positions (call-taker and dispatcher). There is space available that would accommodate two additional console positions. The County does not have a backup facility.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is an InterAct solution (v6.2.3.77) that was installed in 2004. It is scheduled to be upgraded or replaced in 2017 as part of a regional CAD initiative with Lawrence, Mercer and Venango counties.



## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v4.3 that was installed in 2014. It is scheduled to be upgraded to release 6.0 in early 2016.

## **Radio Systems**

The radio system is a 10-site Motorola UHF conventional simulcast system that was installed in 2004. The nearby Sunnyview radio tower is the prime site for the 8-channel, fully repeated system. The nine remote towers are tied to the primary Sunnyview tower by T1 lines.

The County is considering a replacement system, in part because the current system is approaching end-of-life (EOL), but also because of the Federal Communications Commission (FCC) order to vacate UHF T-Band spectrum by 2022. The County plans to issue a request for proposals (RFP) later this year for a countywide 700 MHz Project 25 (P25) system, however it also is interested in exploring a regionally shared radio system, such as the Inter County Regional Radio System (ICORRS).

## **Radio Console System**

Motorola Gold Elite consoles were installed in 2004. They are approaching EOL and will be replaced whenever the radio system is replaced.

## **Facility Infrastructure**

The PSAP is served by geo-diverse fiber-optic feeds provided by DQE Communications, and by copper feeds and 9-1-1 trunks from CenturyLink. Cable television and Internet service is provided by Armstrong Internet.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported by an Eaton UPS system located in a separate power room on the north side of the facility. The system, which was installed in 2004, supports the entire facility and is maintained under contract by Eaton.

### Backup Power

Backup power to the PSAP is provided from a Kohler 125 kilowatt (kW) natural-gas generator. It is located outside of the northwest corner of the facility. The generator, which was installed in 2004, is covered by a maintenance contract with Alternative Power.



## Equipment Room

The equipment room is located in the central area of the facility, next to the 9-1-1 Center. It contains 13 racks, with space available to add two additional racks. Grounding is present in the equipment room, but it is uncertain whether it meets communications site grounding standards.

The equipment room hosts the following:

- Demarcation points for fiber, telephone and cabling systems
- Central equipment banks for the Motorola Gold Elite radio console system
- Fiber connectivity for radio and telephone to the Sunnyview tower site
- Synchronized time source
- Regional ESInet DQE fiber panels
- Avaya phone system
- CAD servers and storage
- Network firewalls and routers
- Voice logging recorder

**Table 61: Butler County at a Glance**

BUTLER COUNTY	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
	4	185,084	789 sq. mi.
	Backup PSAP?	ESInet?	Text-to-911?
No	Yes	No	
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
9-1-1 Calls (2015)	44,276	52,908	138
Number of Trunks	6	4	0
Primary Selective Routers	CenturyLink (Chambersburg/Carlisle)		
Customer Premises Equipment (CPE)	Airbus Vesta v4.3 (Installed: 2014)		
Computer-Aided Dispatch (CAD)	InterAct, v6.2.3.77 (Installed: 2004)		
Logging Recording System	Verint Audiolog, v5		
Geographic Information System (GIS)	Esri ArcGIS, v10.0.2		
Databases Maintained	None		
Leased Equipment	None		

### 3.9.5. Cambria County

#### Overview

Cambria County is a Fourth Class County with a population of 141,541. The County covers approximately 688 square miles, and has 30 townships and 32 boroughs within its boundaries, plus the City of Johnstown. The Borough of Ebensburg is the County seat.



The County's public safety answering point (PSAP) dispatches for 51 law enforcement agencies, 41 fire departments and 20 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police.

The PSAP handled an average of 170 9-1-1 calls each day in 2015. Of these, 29 percent were wireline, 62 percent were wireless, 5 percent were voice over Internet Protocol (VoIP) and 4 percent were multi-line telephone system (MLTS). Last year, 9-1-1 calls were answered within 10 seconds 90 percent of the time.

## **Considerations**

Key factors affecting Cambria County and its PSAP include the following:

- The County is part of the Southwestern Pennsylvania Regional Task Force (Region 13) Emergency Services Internet Protocol (IP) Network, or ESInet.
- There is a considerable business and industrial presence in the County, which is the home to Lockheed-Martin, Northrop Grumman, and Johnstown Steel.
- A museum that commemorates the famous Johnstown Flood of 1889 is a popular tourist attraction.
- The County is home to a minor league hockey team (Johnstown Tomahawks) that plays in War Memorial Arena, where the movie Slapshot was filmed.
- The County has numerous recreational areas, including several state game lands, two state parks—Prince Gallitzin/Greenland Lake and Laurel Ridge—and 70 miles of hiking trails.
- The County is home to St. Francis University and a University of Pittsburgh branch campus.
- U.S. 22 cuts across the center of the County, while U.S. 219 bisects the County from north to south; both are heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- There also is considerable freight rail activity in the County, which creates the same sort of challenges as those created by commercial trucking.
- There are numerous natural-gas fracking operations in the County, which creates a risk of derrick/well fires, explosions, accidents and hazmat incidents.

## **Staffing**

The PSAP has five management positions: a 9-1-1 director, operations manager, training supervisor, quality assurance (QA) supervisor, and a tower technician. There are four full-time supervisors. In addition, 28 full-time telecommunicators handle both call-taking and dispatching. There are no part-time telecommunicators.



## **Facility**

The PSAP is located at 401 Candlelight Drive, Suite 100, Ebensburg, PA 15931, in a single-story building. The PSAP shares the facility with the County's emergency operations center (EOC), other County offices, and a small Pennsylvania State University branch campus. The facility has a break room/kitchen and a training room that doubles as the EOC.

The 9-1-1 Center has three call-taker-only console positions, and five combined console positions (call-taker and dispatcher). The 9-1-1 Center has enough space to accommodate two additional console positions. Also, there is an additional console position in the EOC, and two more in the radio room, that can be used in overflow situations. The County does not have a backup facility.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is an Infor EnRoute v7.00.022 that was installed in 2000. It currently is scheduled to be upgraded in 2016.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v4.3 that was installed in 2015. The County participates in the Western Pennsylvania County Regional ESInet (WestCORE) regional CPE sharing initiative. The County participates in the WestCORE regional CPE sharing initiative as a remote with hosts located in Butler and Westmoreland counties.

## **Radio Systems**

The radio system is a Harris Master III analog system. The installation date is unknown. Currently there are no replacement plans.

## **Radio Console System**

Motorola MCC 5500 consoles are used; they are scheduled to be upgraded to MCC 7500 consoles in 2016.

## **Facility Infrastructure**

The PSAP is served by Sunesys fiber-optic cable and an Alcatel-Lucent microwave link (both are used for the ESInet); Verizon 9-1-1 trunks, local telephone lines and various circuits required to support the center; and a Consolidated Communications primary rate interface (PRI). The telecommunications demarcation and primary protection are located in the equipment room.



Region 13 ESInet infrastructure consists of an Alcatel-Lucent service aggregation router (SAR-18) for all ESInet services, a Cisco 2811 router, and a Cisco 3560 switch for backup regional connectivity. Two Avaya G450 gateways and four Avaya ERS 3524GT Ethernet switches provide connectivity for the region-wide VoIP enterprise administrative telephone system.

Meanwhile, a Polycom video-conferencing system is connected to Region 13 over the ESInet, while an Airbus Vesta 9-1-1 CPE solution, which is part of the WestCORE regional 9-1-1 system, also leverages the ESInet for connectivity. The Vesta Ethernet switches are Cisco 2960s.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported by one American Power Conversion (APC) UPS system with three battery cabinets and was installed in 2007. It is located in the Radio Amateur Civil Emergency Service (RACES) room near the EOC. Capacity is 30 kilovolt amperes (kVA) and runtime is 90 minutes at full load. This system backs up the entire 9-1-1 Center, including the radio, telephone and CAD equipment. A second APC system serving the facility has capacity of 16 kVA and a 36-minute runtime at full load.

### Backup Power

Backup power to the PSAP is provided from a Kohler 150RZGB generator and was installed in 1992. This generator is a 150 kilowatt (kW), three-phase, propane-fueled model. The generator is located on the south side of the building in a dedicated microwave shelter.

## **Equipment Room**

The equipment room, aka the data room, houses 14 racks that contain various equipment; there is enough space available to accommodate two additional racks.



**Table 62: Cambria County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>CAMBRIA COUNTY</b>	4	141,541	688 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	Yes	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	18,216	38,472	3,036
<b>Number of Trunks</b>	5	5	0
<b>Primary Selective Routers</b>	Verizon (Altoona/State College)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta, v4.3 (Installed: 2015)		
<b>Computer-Aided Dispatch (CAD)</b>	INFOR EnRoute, v7.00.022 (Installed: 2000)		
<b>Logging Recording System</b>	Verint Audiolog, v5 (SP2)		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.3		
<b>Databases Maintained</b>	Southern Allegheny		
<b>Leased Equipment</b>	None		

### 3.9.6. Fayette County

#### Overview

Fayette County is a Fourth Class County with a population of 135,668. The County covers approximately 790 square miles, and has 24 townships and 16 boroughs within its boundaries, plus the cities of Connellsville and Uniontown, which is the County seat.

The County’s public safety answering point (PSAP) dispatches for 22 law enforcement agencies, 49 fire departments and 12 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police; surrounding counties; Mutual Aid Ambulance Service; Fayette County Mental Health; Garret County, Maryland; Monongalia County, West Virginia; and the City of Uniontown.

The PSAP handled an average of 207 9-1-1 calls each day in 2015. Of these, 27 percent were wireline and 73 percent were wireless. Last year, 9-1-1 calls were answered within 10 seconds 97.6 percent of the time.

#### Considerations

Key factors affecting Fayette County and its PSAP include the following:

- The County is part of the Southwestern PA Regional Task Force (Region 13) Emergency Services Internet Protocol (IP) Network (ESInet).
- The County leverages the Region 13 Polycom video-conferencing system.
- The County is part of the Inter County Regional Radio System (ICORRS).



- The County is part of the Western Pennsylvania County Regional ESInet (WestCORE) Enterprise 9-1-1 customer premises equipment (CPE) system (Airbus Vesta).
- The County is home to Fallingwater, a house designed by Frank Lloyd Wright that was built over a waterfall, which is a major tourist attraction.
- The County also is home to several state game lands and two state parks—Ohiopyle and Laurel Ridge.
- There is considerable whitewater rafting activity on the Youghiogheny River, which has resulted in emergency calls involving swift-water rescues and drownings.
- The Nemacolin Woodlands resort attracts visitors year round, as it offers, golf, skiing (downhill and cross country), snow tubing, snowboarding, snowshoeing, and dog sledding. There also is a casino and spa.
- The Fort Necessity National Battlefield, where the first battle of the French and Indian War occurred in 1754, is operated by the National Park service and located 11 miles east of Uniontown.
- There are numerous state routes in the County that are heavily traveled, including state route 43, which is a major toll road that connects to the south Pittsburgh suburbs. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.

## **Staffing**

The PSAP has eight management positions including: a 9-1-1 coordinator, deputy 9-1-1/Geographic Information System (GIS), systems analyst, assistant analyst, quality assurance (QA) supervisor, terminal agency coordinator, planner/trainer, and an administrative assistant. There are four full-time supervisors. In addition, 19 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by three part-time telecommunicators, who equate to two full-time equivalents (FTE).

## **Facility**

The PSAP is located at 24 East Main Street, Uniontown, PA 15401, in a building that used to be a department store. The PSAP shares the facility with the County's emergency operations center (EOC). The facility has a break room, conference room, offices and a training room.

The 9-1-1 Center has eight combined console positions (call-taker and dispatcher). There is enough available space to accommodate three additional console positions. The County also has a backup facility with three console positions and six telephone workstations.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Caliber (formerly InterAct) solution (v6.2.3.77) that was installed in 2007. It currently is scheduled to be upgraded in 2017.



## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus (formerly Cassidian) ECS-1000 that was installed in 2006. It currently is scheduled to be upgraded in 2016.

## **Radio Systems**

The radio system is a Motorola Astro Project 25 v7.14 system that was installed in 2014. The County is a participant in the Inter County Regional Radio System (ICORRS).

## **Radio Console System**

Motorola MCC 7500 consoles were installed in 2014.

## **Facility Infrastructure**

The PSAP is served by copper facilities from Verizon, and fiber facilities from Sunesys that are used for the ESInet connection. The telecommunications demarcation and primary protection are located in the equipment room.

Region 13 ESInet infrastructure consists of an Alcatel-Lucent service aggregation router (SAR-18) for all ESInet services, a Cisco 2811 router, and a Cisco 3560 switch for backup regional connectivity. An Avaya G450 gateway and three Avaya ERS 3524GT Ethernet switches provide connectivity for the region-wide VoIP enterprise administrative telephone system.

A Polycom video-conferencing system is connected to Region 13 over the ESInet. In 2016 the PSAP will move to an Airbus Vesta 9-1-1 CPE solution, which is part of the WestCORE regional 9-1-1 system, and which also uses the ESInet for connectivity. The Vesta Ethernet switches are Cisco 2960s.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported by a Mesta 20 kilovolt amperes (kVA) UPS control unit and was installed in 1995. The current load is at 65 percent.

### Backup Power

Backup power to the PSAP is provided from a Kohler 250 kilowatt (kW) diesel generator and was installed in 1995. The generator is located in the basement on the south side of the building.



## Equipment Room

The equipment room is located on the fifth floor of the facility. It has a partial raised floor and a cable tray overhead for distribution. The room houses a row of eight racks, a second row of two racks, and one cabinet. There is also a row with two cabinets and one rack of CPE equipment; separated in the same row are three UPS controllers and three dual-battery arrays.

The equipment room also houses an Airbus (formerly Cassidian) ECS-1000 CPE system that will soon be replaced by an Airbus Vesta shared CPE solution when the County joins WestCORE, as well as an Avaya Communication Manager that provides the PSAP with administrative call traffic separate from the CPE.

The equipment room has available vacant power connections. A server room has space for several additional racks.

**Table 63: Fayette County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>FAYETTE COUNTY</b>	4	135,668	790 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	Yes	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	20,463	55,077	0
<b>Number of Trunks</b>	6	6	0
<b>Primary Selective Routers</b>	Verizon (Braddock/Bellevue)		
<b>Customer Premises Equipment (CPE)</b>	Airbus (formerly Cassidian) ECS-1000 (Installed: 2006)		
<b>Computer-Aided Dispatch (CAD)</b>	Caliber (formerly InterAct, v6.2.3.77 (Installed: 2007)		
<b>Logging Recording System</b>	Verint Audiolog, v5 (SP2)		
<b>Geographic Information System (GIS)</b>	Caliber (formerly InterAct), v5.1.15.0.66		
<b>Databases Maintained</b>	Special Needs, Places Database		
<b>Leased Equipment</b>	Motorola Equipment		

### 3.9.7. Greene County

#### Overview

Greene County is a Sixth Class County with a population of 38,088. The County covers approximately 576 square miles, and has 20 townships and six boroughs within its boundaries, including the Borough of Waynesburg, which is the County seat.



The County's public safety answering point (PSAP) dispatches for 6 law enforcement agencies, 16 fire departments and 9 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police.

The PSAP handled an average of 73 9-1-1 calls each day in 2014. Of these, 39 percent were wireline and 61 percent were wireless. In 2014, 9-1-1 calls were answered within 10 seconds 90 percent of the time.<sup>4</sup>

## **Considerations**

Key factors affecting Greene County and its PSAP include the following:

- The County, which is very rural, borders both West Virginia and Ohio, which creates interstate mutual-aid emergency response scenarios.
- There is considerable Marcellus Shale natural-gas fracking operations, which generates emergency calls involving derrick/well fires, explosions, hazmat incidents, and accidents.
- The County is home to a fairgrounds, Ryerson Station State Park, state game lands and numerous hunting camps and other campgrounds.
- Waynesburg University is located in the County.
- Interstate 79 bisects the County from north to south, and is heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- There also is considerable freight rail activity in the County, which creates the same sort of challenges as those created by commercial trucking.

## **Staffing**

The PSAP has one management position, a 9-1-1 coordinator. There are no full-time supervisors. However, eight full-time telecommunicators handle both call-taking and dispatching; they are supplemented by one part-time telecommunicator, who equates to less than one-half full-time equivalent (FTE).

## **Facility**

The PSAP is located at 55 West Greene Street, Waynesburg, PA 15370, in a Windstream central office. The PSAP shares its portion of the facility with the County's emergency management agency (EMA).

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<sup>4</sup> Data for 2015 was not available because the County's management information system was out of service at the time of the technical survey. Call statistics for 2014 were gathered from PEMA's annual report; the call-answering statistic was gathered from the County's 2015-2017 Triennial Plan filed with PEMA.



Windstream serves as the primary end office for the PSAP and hosts the primary selective routers. The PSAP also shares Windstream's backup power facilities (uninterruptible power supply and a generator); this creates a situation where, if the Windstream facilities fail, then the PSAP would be rendered inoperable, with no backup available.

There is a small break room. Training is conducted in a small multipurpose room that also doubles as the emergency operations center (EOC); training also occurs in the 9-1-1 Center.

The 9-1-1 Center has four combined console positions (call-taker and dispatcher). There is a small amount of available space that could accommodate an additional console position. The County does not have a backup facility.

### **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is an Archonix (now Securus Technologies) solution (v5.1.2) that was installed in 2002 and upgraded in 2005. It currently is scheduled to be upgraded in 2016.

### **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus ECS-1000 (hosted by Windstream) that was installed in 2016.

### **Radio Systems**

The radio system is a VHF analog hybrid system consisting of Motorola Quantar and GTR equipment. The installation date is unknown. Currently there are no upgrade plans.

### **Radio Console System**

Motorola MCC 7500 consoles were installed in 2015; they are Next Generation 9-1-1 (NG9-1-1) capable.

### **Facility Infrastructure**

The PSAP is served by fiber-optic cables from DQE Communications. The DQE fiber terminates in the Ben Franklin Building, about 75 feet to the east of the PSAP; the fiber then continues as County-owned fiber into the building. Windstream provides copper cables for the PSAP.



## **Power Systems**

### Uninterruptible Power Supply

UPS capability is provided by standalone devices at each workstation and each rack. The make, model and carrying capacity of the devices vary.

### Backup Power

The generator supplying backup power is owned by Windstream and is provided with the space lease. The generator is located on the second floor of the facility and is a Cummins DSGAD-1409676 diesel generator with a kilovolt amperes (kVA) rating of 218.7. Runtime and fuel capacity is not known.

## **Equipment Room**

The equipment room is on the first floor of the facility just outside the 9-1-1 Center. It is possible that two additional racks could be placed in the room; there also is space available in the current racks. However, there is limited availability of power outlets and additional electrical circuits may need to be installed to support additional equipment. Cabling is run using hangers on the walls from rack to rack. UPS units are provided with each rack to supply conditioned power to the devices.

The equipment room hosts:

- ESInet fiber termination and distribution modules
- Avaya switches (four ports used out of 24)
- L2 and L3 switches with up to 18 ports available
- CAD servers and storage
- Logging recorder and storage

Additional racks are located in the 9-1-1 Center (along the west wall) and contain the following:

- Radio and microwave system controllers and routers
- Avaya switches and routers
- Synchronized time source controllers



**Table 64: Greene County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>GREENE COUNTY</b>	6	38,088	576 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	Yes	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	16,511	10,391	N/A
<b>Number of Trunks</b>	26	12	0
<b>Primary Selective Routers</b>	Windstream (Waynesburg)		
<b>Customer Premises Equipment (CPE)</b>	Airbus ECS-1000 (Hosted by Windstream) (Installed: 2016)		
<b>Computer-Aided Dispatch (CAD)</b>	Archonix (Now Securus), v5.1.2 (Installed: 2002)		
<b>Logging Recording System</b>	Verint Audiolog, v3.3		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v9.3		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	Motorola Equipment		

### 3.9.8. Indiana County

#### Overview

Indiana County is a Sixth Class County with a population of 88,143. The County covers approximately 827 square miles, and has 25 townships and 13 boroughs within its boundaries, including the Borough of Indiana, which is the County seat.

The County’s public safety answering point (PSAP) dispatches for 7 law enforcement agencies, 23 fire departments and 2 emergency medical services (EMS) agencies (totaling 7 stations), and has no ringdown connections.

The PSAP handled an average of 66 9-1-1 calls each day in 2015. Of these, 25 percent are wireline, 67 percent are wireless and 8 percent are voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 98 percent of the time.

#### Considerations

Key factors affecting Indiana County and its PSAP include the following:

- The County is part of the Southwestern PA Regional Task Force (Region 13) Emergency Services Internet Protocol (IP) Network (ESInet).
- The County also leverages the Region 13 Avaya enterprise administrative telephone system and Polycom video-conferencing system.



- The County is part of the Inter County Regional Radio System (ICORRS).
- Several state highways crisscross the County and are heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- There is considerable freight rail activity—the Norfolk-Southern, Baltimore & Pittsburgh, and R.J. Corman railroads all operate in the County—which creates challenges similar to those created by commercial trucking.
- The County is known as the “Christmas tree capital of the world,” shipping more than 1 million trees annually.
- The Jimmy Stewart regional airport is located in the County.
- The County is home to Indiana University of Pennsylvania, with a student population of about 14,000.
- The County is home to several state game lands and state parks, including Yellow Creek State Park—which contains Yellow Creek Lake—a popular destination for hikers, boaters, swimmers and fishing enthusiasts.
- Three power generating stations—Homer City, Conemaugh and Seward—as well as the Keystone Generating Station in adjacent Armstrong County, cause a considerable amount of coal-truck traffic to flow through Indiana County.

## **Staffing**

The PSAP has three management positions: a 9-1-1 coordinator, quality assurance supervisor and addressing coordinator, who are supported by data management staff. There are four full-time supervisors. In addition, 12 full-time telecommunicators handle both call-taking and dispatching.

## **Facility**

The PSAP is located at 85 Haven Drive, Indiana, PA 15701, in a single-story building located at 85 Haven Drive, Indiana, PA. The PSAP shares the facility with the County’s emergency management agency (EMA). There is a combined break room/kitchen, and a multipurpose room that is used for conferences, classroom training and by the emergency operations center (EOC). Console training for new employees is done in the 9-1-1 Center, which has enough available space to accommodate one additional console position.

The 9-1-1 Center has one call-taker-only console position, and six combined console positions (call-taker and dispatcher). The County also has a backup facility with two positions.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Caliber (formerly InterAct) solution (v6.2.3.78G) that was installed in 2006. It currently is scheduled to be upgraded in 2016.



## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v4 that was installed in 2015. The County participates in the Western Pennsylvania County Regional ESInet (WestCORE) regional shared CPE system.

## **Radio Systems**

The radio system is a Motorola Astro Project 25 (P25) 800 MHz system that is being upgraded to v7.15 in 2016. The County participates in the Inter County Regional Radio System (ICORRS); Motorola is contracted to provide annual hardware and software updates through 2025.

## **Radio Console System**

Motorola MCC 7500 consoles are used. They were installed along with the 800 MHz system in 2012. Similar to the radio system, Motorola is contracted to provide annual console system hardware and software upgrades through 2025.

## **Facility Infrastructure**

The PSAP is served by fiber-optic cable feeds from Salsgiver for the ESInet and from Verizon for the 9-1-1 trunks. The Salsgiver fiber has last-mile diversity. In addition, Consolidated Communications provides a primary rate interface (PRI) for the local telephone lines required to support the 9-1-1 Center. The PSAP also is served by a Verizon copper cable system. The telecommunications demarcation and primary protection are located in the equipment room.

Region 13 ESInet infrastructure consists of an Alcatel-Lucent service aggregation router (SAR-18) for all ESInet services, a Cisco 2811 router, and a Cisco 3560 switch for backup regional connectivity. An Avaya G450 gateway and three Avaya ERS 3524GT Ethernet switches provide connectivity for the region-wide VoIP administrative telephone system.

A Polycom video-conferencing system also is connected to Region 13 over the ESInet. An Airbus Vesta 9-1-1 CPE solution, which is part of the WestCORE regional 9-1-1 system, also uses the ESInet for connectivity. The Vesta Ethernet switches are Cisco 2960s.

There are 13 copper 10/100 ports available on the Cisco 3560 and 14 copper 10/100 ports available on the Cisco 2960s.



## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported by two Mitsubishi Diamond Plus 15 kilovolt amperes (kVA) UPS control units with two battery banks per control unit, installed in 2014. Panel A is used to back up the 9-1-1 CPE, hardware and lighting in the facility. Panel E is used to back up the infrastructure, Avaya system and remaining servers in the equipment room. Current capacity is 19 percent on each unit. The UPS units are housed on the north side of the building.

### Backup Power

Backup power to the facility is provided from a Spectrum 100 natural gas generator rated at 250 kilowatts (kW) and was installed in 2000. The generator is located in the northeast corner of the building. Noteworthy is that the natural gas used for daily operations is provided by a County-owned well that is an endless and cost-effective fuel supply. If needed, a connection to a City-owned connection also is maintained, as well as the ability to operate the generator from a stationary propane fuel system. The County has prepared this backup power system to extend the operating capability of the facility indefinitely.

## **Equipment Room**

The equipment room has a partially raised floor, and there is a cable tray overhead for distribution. The room houses the following:

- A row containing two storage cabinets.
- A second row with four racks containing radio equipment, fiber patch panels, an ESInet router and Zetron alphanumeric paging equipment.
- A third row with two racks containing administrative phone equipment, recording equipment and the Airbus 9-1-1 CPE.
- An Avaya Communication Manager that provides the PSAP with Administrative call traffic separate from the 9-1-1 CPE.
- A telecommunications main grounding busbar (TMGB) that is connected to some of the equipment. Motorola has certified, via an independent consultant, that all components of the County's systems comply with the Motorola R56® requirements (documentation is available).
- The room has additional power service connections available on the A panel, served by the UPS system for additional system installations. (Note: the E panel only was installed for the console, radio, paging, alarm and system monitoring equipment).
- The room has space for three additional equipment racks to be installed.



**Table 65: Indiana County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>INDIANA COUNTY</b>	6	88,143	827 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	Yes	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	5,861	15,962	1,821
<b>Number of Trunks</b>	6	4	0
<b>Primary Selective Routers</b>	Verizon (Bellevue/Braddock)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta v4.0 (release 3.2) (Installed: 2015)		
<b>Computer-Aided Dispatch (CAD)</b>	Caliber (formerly InterAct), v6.2.3.78G (Installed: 2006)		
<b>Logging Recording System</b>	Verint Audiolog, v5 (SP2)		
<b>Geographic Information System (GIS)</b>	Esri ArcView, v9.2		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	None		

### **3.9.9. Lawrence County**

#### **Overview**

Lawrence County is a Fifth Class County with a population of 89,766. The County covers approximately 358 square miles, and has 16 townships and 10 boroughs within its boundaries, plus the City of New Castle, which is the County seat.

The County's public safety answering point (PSAP) dispatches for 17 law enforcement agencies, 22 fire departments and 22 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police.

The PSAP handled an average of 125 9-1-1 calls each day in 2015. Of these, 37 percent were wireline and 63 percent were wireless. Last year, 9-1-1 calls were answered within 10 seconds 97 percent of the time.

#### **Considerations**

Key factors affecting Lawrence County and its PSAP include the following:

- The County is part of the Southwestern PA Regional Task Force (Region 13) Emergency Services Internet Protocol (IP) Network (ESInet).
- The County will join the Inter County Regional Radio System (ICORRS) in 2016.
- The County maintains central monitoring station equipment, and monitors burglar and fire alarms for private businesses and residences, which provides an additional revenue stream.



- The City of New Castle has a crime rate that is well above the national average, resulting in a large number of emergency calls.
- The County is home to McConnells Mills State Park and Slippery Rock Creek, which is a popular destination for whitewater rafters; this leads to emergency calls involving swift water rescues and drownings.
- The County also is home to five state game lands, which generate emergency calls related to hunting accidents.
- The County is home to Westminster College in New Wilmington.
- Interstates 76 and 376, as well as state route 422, traverse the County, and all are heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- The county maintains a mobile command unit that can support 9-1-1 and radio communications.

## **Staffing**

The PSAP has two management positions: a director and deputy director. There are four full-time supervisors. In addition, 12 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by 12 part-time telecommunicators, who equate to eight full-time equivalents (FTE).

## **Facility**

The PSAP currently is located at 110 East Lincoln Avenue, New Castle, PA 16101, on the second floor of the Scottish Rite Cathedral. The building is a large, century-old marble-and-stone structure that hosts special events and a concert venue that is home to the Pittsburgh Symphony Orchestra.

The 9-1-1 Center has five combined console positions (call-taker and dispatcher) and one dispatch-only console position. The County does not have backup facility, although there are geo-diverse 9-1-1 trunks installed at the Mercer County PSAP.

The PSAP and the County's emergency operations center (EOC) are scheduled to move into a new facility in late March 2016. The County plans to add two console positions as the new 9-1-1 Center is occupied.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Caliber (formerly InterAct) solution that was installed in 2006. It currently is scheduled to be upgraded or replaced in 2016. The County is working with neighboring Mercer, Butler and Venango counties on a regional CAD initiative.



## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v6 that was installed in 2015 as part of the Western Pennsylvania County Regional ESInet (WestCORE) regional CPE sharing initiative.

## **Radio Systems**

The radio system is a Motorola VHF high-band conventional system that will be replaced by a Motorola Astro Project 25 (P25) eight-site trunked system when the County joins ICORRS in 2016.

A Motorola microwave hop from the PSAP to the Spartan Park tower provides a 100 megabits per second (Mbps) secondary Ethernet link to the Region 13 ESInet.

## **Radio Console System**

Motorola Gold Elite consoles are used; they are approaching end-of-life and will be replaced with Motorola MCC 7500 consoles when the PSAP moves to the new radio system.

## **Facility Infrastructure**

The PSAP is served by a 100-pair copper cable from Verizon that is used for 9-1-1 trunks, local telephone lines and various circuits required to support the 9-1-1 Center. Comcast serves the facility with fiber, providing point-to-point Ethernet connectivity to other County locations, including Spartan Park tower, which provides a 100 Mbps link to the Region 13 ESInet. Comcast also provides Internet service to the PSAP and private rate interface (PRI) service for the administrative telephone system.

Region 13 ESInet infrastructure consists of an Alcatel-Lucent service aggregation router (SAR-18) for all ESInet services, a Cisco 2811 router, and a Cisco 3560 switch for backup regional connectivity. An Avaya G450 gateway and three Avaya ERS 3524GT Ethernet switches provide connectivity for the region-wide voice over Internet Protocol (VoIP) administrative telephone system.

A Polycom video-conferencing system is connected to Region 13 over the ESInet. An Airbus Vesta 9-1-1 CPE solution, which is part of the WestCORE regional 9-1-1 system, also uses the ESInet for connectivity. The Vesta Ethernet switches are Cisco 2960s.

There are 13 copper 10/100 ports available on the Cisco 3560 and 14 copper 10/100 ports available on the Cisco 2960s.

## **Power Systems**



Uninterruptible Power Supply

The PSAP is supported with a Best UPS system, rated for 12.5 kilovolt amperes (kVA), which is located in the equipment room. This system was installed in 2004 and supports the equipment room, radio room and 9-1-1 Center. The UPS has a runtime of 1.5 hours at full load, and is maintained under contract by Eaton Power.

Backup Power

Backup power to the PSAP is provided from a 40 kilowatt (kW) Kohler natural gas generator. The generator is mounted outside the rear of the building on the south side. It was installed in 2004 and is covered by a maintenance contract with Bridgeway Power.

**Equipment Room**

The equipment room is on the north side of the facility, and is located adjacent to the 9-1-1 Center. Cables are run above the ceiling tile to the 9-1-1 Center and throughout the building for network connectivity. There is adequate space in the ceiling for additional cabling.

County network infrastructure is supported by the emergency services staff with additional support from the information technology (IT) department. Core network equipment includes the Cisco routers and switches.

The equipment is compact and could not support any additional equipment racks. Existing racks are mostly full. The room has a limited grounding system.

**Table 66: Lawrence County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>LAWRENCE COUNTY</b>	5	89,766	358 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	Yes	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	16,916	28,828	0
<b>Number of Trunks</b>	6	6	0
<b>Primary Selective Routers</b>	Verizon (Bellevue/Braddock)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta, v6 (Installed: 2015)		
<b>Computer-Aided Dispatch (CAD)</b>	Caliber (formerly InterAct), v6.2.3.78C (Installed: 2006)		
<b>Logging Recording System</b>	Eventide NexLog 840		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v10.1		
<b>Databases Maintained</b>	Quality Enhanced Management System (QAES)/ SIS Alarms		
<b>Leased Equipment</b>	None		



### **3.9.10. Mercer County**

#### **Overview**

Mercer County is a Fifth Class County with a population of 115,629. The County covers approximately 673 square miles, and has 31 townships and 14 boroughs within its boundaries, plus the cities of Sharon, Hermitage and Farrell. The Borough of Mercer is the County seat.

The County's public safety answering point (PSAP) dispatches for 16 law enforcement agencies, 25 fire departments and 5 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police.

The PSAP handled an average of 158 9-1-1 calls each day in 2015. Of these, 27 percent were wireline and 73 percent were wireless. Last year, 9-1-1 calls were answered within 10 seconds 98.8 percent of the time.

#### **Considerations**

Key factors affecting Mercer County and its PSAP include the following:

- The County is part of the Southwestern PA Regional Task Force (Region 13) Emergency Services Internet Protocol (IP) Network (ESInet).
- The County is unique in that it does not own its radio infrastructure, which makes system and equipment upgrades and replacements challenging.
- The County borders the State of Ohio, which creates interstate mutual-aid response and call transfer challenges.
- Interstate 79 traverses the County from north to south and is heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- Interstate 80 cuts across the southern portion of the County and is a heavily traveled route between the Midwest and New York City metropolitan area. Large numbers of commuter and commercial truck traffic travel I-80 daily. When vehicular accidents occur that close the highway, traffic diverts to local routes, compounding issues for the PSAP.
- Shenango River Lake—a reservoir formed by the Shenango Dam—is located in the County, and is a popular destination for fishing and camping enthusiasts.
- Maurice K. Goddard State Park and Pymatuning State Park is located in the County.
- Grove City College and Thiel College—as well as a Pennsylvania State University, Shenango branch campus—are located in the County.
- The Wendell August Forge—the last working forge in the state—is a popular tourist destination.



- The County maintains a mobile command post that can support 9-1-1 and radio communications.

## **Staffing**

The PSAP has three management positions: a director, 9-1-1 deputy, and quality assurance (QA)/training coordinator.

There are four full-time supervisors. In addition, 16 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by 14 part-time telecommunicators, who equate to 10 full-time equivalents (FTE).

## **Facility**

The PSAP, public safety department, and emergency operations center (EOC) are located at 205 South Erie Street, Mercer, PA 16137, in a two-story standalone building. The PSAP also shares the facility with the County's sheriff's department.

The 9-1-1 Center has nine combined console positions (call-taker and dispatcher). The County does not have a backup facility.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Hexagon (formerly Intergraph) solution that was installed in 2007. It currently is scheduled to be upgraded in 2016.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Patriot v3.1 that was installed in 2007. The County is planning to migrate to the Western Pennsylvania County Regional ESInet (WestCORE) regional shared 9-1-1 CPE system in mid-2016.

## **Radio Systems**

The radio system is a hybrid UHF and VHF high-band system consisting of equipment from multiple vendors that is owned by the municipalities or agencies. The separate systems and the number of active channels requires the PSAP to staff a higher than expected number of positions on each shift. Currently, there are no upgrade plans. There are five primary radio tower sites, including one at the PSAP.

Various antennas supporting primary and backup systems are mounted on the 150-foot tower adjacent to the southeast corner of the building. Coaxial cables are routed from the equipment room to the tower.



## **Radio Console System**

Motorola Gold Elite consoles are used; they are approaching end-of-life and will need to be replaced.

## **Facility Infrastructure**

The PSAP is served by Sunesys fiber-optic cable- providing 10 gigabits per second (Gbps) capacity—used for the primary Region 13 ESInet connection. Verizon provides 9-1-1 trunks, local telephone lines—via a 100-pair copper cable—and various circuits required to support the telephony. As part of the WestCORE initiative, the County also houses diverse 9-1-1 trunks for Lawrence County.

In addition, Zito Media has a presence in the equipment room and provides Internet service to the PSAP. This could be a possible gateway between the Region 13 and Northern Tier regional ESInets if cross-connected with the Sunesys fiber.

Region 13 ESInet infrastructure consists of an Alcatel-Lucent service aggregation router (SAR-18) for all ESInet services, a Cisco 2811 router, and a Cisco 3560 switch for backup regional connectivity. There are 34 copper 10/100 ports available on the Cisco 3560. An Avaya G450 gateway and three Avaya ERS 3524GT Ethernet switches provide connectivity for the region-wide Voice over Internet Protocol (VoIP) administrative telephone system.

Two Hewlett-Packard ProCurve 2626 Ethernet switches are used for the Sentinel Patriot 9-1-1 CPE positions. Eighteen 10/100 copper ports are available on these switches, but the 9-1-1 CPE system is scheduled to be replaced in 2016.

A Polycom video-conferencing system is connected to Region 13 over the ESInet.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported with an Emerson/Liebert UPS system, rated for 45 kilovolt amperes (kVA) and located in the equipment room. This system was installed in 2015 and is maintained by Liebert/Emerson under a maintenance contract. It supports the equipment room, radio room and the 9-1-1 Center. The UPS is running at 48-percent capacity.

### Backup Power

Backup power to the PSAP is provided from a 150 kilowatt (kW) Kohler diesel generator, mounted outside the south side of the building. The generator was installed in 2015 and is covered by a maintenance contract with Bridgeway Power.



## Equipment Room

The equipment room is on the lower level of the building on the east side, adjacent to the 9-1-1 Center. Cables are run under the floor to the 9-1-1 Center and throughout the building for network connectivity. There is adequate space under the floor for additional cabling.

County network infrastructure is supported by the emergency services staff with additional support from the County's information technology (IT) department. Core network equipment included Cisco routers and switches. There is a spare 10-Gbps fiber-optic port, and available small form-factor pluggable (SFP) ports. There are available ports also on the CPE, CAD and audiovisual (A/V) networks.

The equipment room is full and could not support any additional equipment racks. Existing racks are mostly full. The room has limited grounding systems.

**Table 67: Mercer County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>MERCER COUNTY</b>	5	115,629	673 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	Yes	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	15,396	42,412	0
<b>Number of Trunks</b>	6	6	0
<b>Primary Selective Routers</b>	Verizon (Bellevue/Braddock)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Patriot, v3.1 (Installed: 2007)		
<b>Computer-Aided Dispatch (CAD)</b>	Hexagon (formerly Intergraph), v8.01.02.39 (Installed: 2007)		
<b>Logging Recording System</b>	Verint (formerly Mercom) Audiolog, v3.3		
<b>Geographic Information System (GIS)</b>	Esri ArcGIS, v9.3		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	None		

### 3.9.11. Somerset County

#### Overview

Somerset County is a Sixth Class County with a population of 77,115. The County covers approximately 1,074 square miles, and has 25 townships and 25 boroughs within its boundaries, including the Borough of Somerset, which is the County seat.



The County's public safety answering point (PSAP) dispatches for 14 law enforcement agencies, 28 fire departments and 11 emergency medical services (EMS) agencies, and has ringdown connections with the State Police, State Correctional Institution (SCI) – Laurel Highland, and SCI – Somerset.

The PSAP handled an average of 58 9-1-1 calls each day in 2015. Of these, 29 percent were wireline, 63 percent were wireless and 8 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 95 percent of the time.

## **Considerations**

Key factors affecting Somerset County and its PSAP include the following:

- The County is part of the Southwestern PA Regional Task Force (Region 13) Emergency Services Internet Protocol (IP) Network (ESInet).
- The County participates in the Inter County Regional Radio System (ICORRS).
- The County participates in the Western Pennsylvania County Regional ESInet (WestCORE) regional shared 9-1-1 customer premises equipment (CPE) system.
- Interstate 76 (the Pennsylvania Turnpike) traverses the County from north to south and is heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- The County is home to numerous recreational areas, including the 5,000-acre Prince Gallitzin State Forest, Quemahoning Reservoir, and several state game lands. There is considerable boating, cycling, hunting, and fishing activity throughout the County.
- The highest peak in the state—the 3,200-foot Mount Davis in the 60,000-acre Forbes State Forest—is popular with climbers.
- The Flight 93 National Memorial, operated by the National Park Service, is located in Stonycreek Township, and is a popular tourist destination.

## **Staffing**

The PSAP has one management position, a 9-1-1 coordinator. There are four full-time supervisors. In addition, 14 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by one part-time telecommunicator who equates to less than one full-time equivalent (FTE).

## **Facility**

The PSAP is located at 100 East Union Street, Somerset, PA 15501, across the street from the County courthouse. The PSAP is housed on the third floor in the facility, which it shares with the County's emergency management agency (EMA) and emergency operations center (EOC).



The 9-1-1 Center has five combined console positions (call-taker and dispatcher). Two additional console positions are available in the EMA for overflow situations. The 9-1-1 Center has available space to add another position. The County does not have backup facility.

### **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Caliber (formerly InterAct) Classic v2.3.76 that was installed in 2002. The system was upgraded in 2008. The County is planning on replacing the system, contingent on securing the necessary funding.

### **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v 4.6 that was installed in 2015. The County participates in the WestCORE regional shared 9-1-1 CPE system.

### **Radio Systems**

The radio system is a Motorola Astro Project 25 (P25) system (v7.14) that was installed in 2015. The County participates in ICORRS.

### **Radio Console System**

Motorola MCC 7500 v7.14 consoles were installed in 2015.

### **Facility Infrastructure**

The PSAP is served by an Alcatel-Lucent microwave link that provides the primary connectivity to the ESInet, and a fiber-optic feed from DQE Communications that provides backup connectivity. Verizon copper facilities and 9-1-1 trunks, and a Consolidated Communications private rate interface (PRI) for the local telephone lines required to support the center. The telecommunications demarcation and primary protection are located in the equipment room.

Region 13 ESInet infrastructure consists of an Alcatel-Lucent service aggregation router (SAR-18) for all ESInet services, a Cisco 2811 router, and a Cisco 3560 switch for backup regional connectivity. An Avaya G450 gateway and three Avaya ERS 3524GT Ethernet switches provide connectivity for the region-wide VoIP administrative telephone system.

A Polycom video-conferencing system is connected to Region 13 over the ESInet. An Airbus Vesta 9-1-1 CPE solution, which is part of the WestCORE regional 9-1-1 system, also uses the ESInet for connectivity. The Vesta Ethernet switches are Cisco 2960s.



## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported by two Liebert APS UPS systems rated at 20 kilovolt amperes (kVA) each, and were installed in 2014. Runtime is 128 minutes at full load. The UPS is located in a second-floor room next to the equipment room.

### Backup Power

Backup power for the PSAP is provided from a 500 kilowatt (kW) Cummins Power Generation diesel generator with a 6,000-gallon tank and was installed in 2002. Runtime is 14 days at full load. The generator is located in the basement of the building.

## **Equipment Room**

The equipment room houses the CPE, radio system and network equipment. The main portion of the room has two rows with a total of nine racks. The secondary room contains one row of four racks. The equipment room can accommodate additional server or network equipment and the addition of two racks. It hosts the following equipment:

- Liebert NX UPS (Room next door)
- Radio cards, radio controllers
- Networking switches and routers
- Spectracom time-synchronization equipment, CAD, Geographic Information System (GIS) and call-recording equipment
- Region 13 ESInet equipment
- Airbus Vesta 9-1-1 CPE
- Punch-down board for radio, telephone and reverse 9-1-1 circuits
- County network switches



**Table 68: Somerset County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>SOMERSET COUNTY</b>	6	77,115	1,074 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	No	Yes	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	6,076	13,361	1,757
<b>Number of Trunks</b>	6	4	0
<b>Primary Selective Routers</b>	Verizon (Altoona/State College)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta v4.6 (Installed: 2015)		
<b>Computer-Aided Dispatch (CAD)</b>	Caliber (formerly InterAct) Classic, v2.3.76 (Installed: 2002)		
<b>Logging Recording System</b>	Verint Audiolog, v5.16.10.2		
<b>Geographic Information System (GIS)</b>	Esri ArcSDE (Spatial Database Engine), v9.2		
<b>Databases Maintained</b>	County Warrant Database		
<b>Leased Equipment</b>	None		

### **3.9.12. Washington County**

#### **Overview**

Washington County is a Fourth Class County with a population of 208,451. The County covers approximately 857 square miles, and has 32 townships and 32 boroughs within its boundaries, plus the cities of Monongahela and Washington, which is the County seat.

The County’s public safety answering point (PSAP) dispatches for 38 law enforcement agencies, 51 fire departments and 15 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police, Borough of Belle Vernon, City of Pittsburgh and the Pennsylvania Turnpike.

The PSAP handled an average of 394 9-1-1 calls each day in 2015. Of these, 25 percent were wireline, 67 percent were wireless and 8 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 90 percent of the time.

#### **Considerations**

Key factors affecting Washington County and its PSAP include the following:

- The County is part of the Southwestern PA Regional Task Force (Region 13) Emergency Services Internet Protocol (IP) Network (ESInet).



- The County serves as a backup host site for the Region 13 Avaya enterprise administrative telephone system.
- The County leverages the Region 13 Polycom video-conferencing system via the ESInet.
- The County maintains a mobile command post that can support 9-1-1 and radio communications.
- Interstate 79 traverses the County from north to south, while I-70 cuts across from west to east; they intersect in Washington, and both are heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- The County borders the State of West Virginia, which creates interstate mutual-aid and call-transfer challenges.
- The County is home to a minor league baseball team (Washington Wild Things) that plays at Consol Energy Park.
- The Monongahela River flows through the County and receives considerable commercial and recreational boating traffic.
- The County is home to numerous Marcellus Shale natural gas fracking operations, which generates emergency calls related to derrick/well fires, explosions and other accidents.

## **Staffing**

The PSAP has six management positions: 9-1-1 director, operations manager, systems manager, computer-aided dispatch (CAD) manager, Geographic Information System (GIS) manager, and GIS technician. There are six full-time supervisors. In addition, 24 full-time telecommunicators handle both call-taking and dispatching; they are supplemented by 18 part-time telecommunicators, who equate to 13 full-time equivalents (FTE).

## **Facility**

The PSAP is located at 100 West Beau Street, Washington, PA 15301, on the first floor of the Court House Square building. The PSAP shares the facility with the County's emergency management agency (EMA). There is a break room and an emergency operations center (EOC) that has consoles that are used for training and overflow situations.

The 9-1-1 Center has seven call-taker-only console positions, and eight combined console positions (call-taker and dispatcher). The County plans to convert the call-taker-only positions to combined consoles by the end of 2016. Enough available space exists in the 9-1-1 Center to accommodate up to five additional console positions. The County does not have backup facility.



## **Computer-Aided Dispatch**

The CAD system is a Hexagon (formerly Intergraph) I/CAD solution (v8.1.0) that was installed in 2006. It was upgraded to v9.3 in early 2016.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is a Zetron S3300 (v5.6.5.2177) that was installed in 2008. The County plans to move to a Next Generation 9-1-1 (NG9-1-1)-compatible Zetron Max Dispatch platform in 2018.

## **Radio Systems**

The radio system is a hybrid conventional VHF high-band system consisting primarily of Daniels base stations with some Motorola. The system was upgraded prior to 2012 to comply with the Federal Communication Commission (FCC) narrowbanding requirement.

A microwave network connects to all of the radio tower sites and a redundant link provides backup connectivity to the Region 13 ESInet—primary connectivity is via 10 gigabits per second (Gbps) capacity fiber.

## **Radio Console System**

Orbacom Tandem IPC T5 consoles are used; however, they no longer are supported by the manufacturer and will need to be replaced.

## **Facility Infrastructure**

The PSAP is served by geo-diverse fiber-optic feeds provided by DQE Communications and copper facilities provided by Verizon.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported by a Liebert Npower UPS system rated at 600 kilovolt amperes (kVA)/1,000 amperes (dual-feed system) and was installed in 2008. The system was installed in 2008 and is supported through a maintenance contract with Emerson Electric.

### Backup Power

Backup power is provided to the PSAP by a Kohler model 600REOZM 600 kilowatt (kW) diesel generator and was installed in 2008. The generator is located in the parking garage adjacent to the PSAP.



## Equipment Room

The equipment room is located adjacent to the 9-1-1 Center. The room is the termination point for the fiber, cable and copper facilities to the PSAP. It also hosts the telephone, radio and CAD system equipment, the logging recorder, and data storage for the facility.

Specifically, the equipment room hosts the following systems:

- Fiber termination and switching panels
- Copper termination and switching panels
- Verint Audiolog logging recorder system
- Zetron CPE
- Hexagon (formerly Intergraph) I/CAD system
- Orbacom Tandem IPC T5 radio controllers and voters (planned for upgrade in 2016)
- Spectracom NetClock 9183 time-synchronization equipment

There is space for an additional two to three racks, once decommissioned equipment is removed. The humidity in the room is monitored and controlled using room humidifiers to assist with the control of static electricity.

The room is provided with an FM-200 fire-suppression system.

The facility also has a separate area on the eighth floor with racks of radio base stations for communication with the radio towers.

**Table 69: Washington County at a Glance**

WASHINGTON COUNTY	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
	4	208,451	857 sq. mi.
	Backup PSAP?	ESInet?	Text-to-911?
	No	Yes	Yes
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
9-1-1 Calls (2015)	36,327	95,276	11,989
Number of Trunks	10	6	0
Primary Selective Routers	Verizon (Bellevue/Braddock)		
Customer Premises Equipment (CPE)	Zetron S3300, 5.6.5.2177 (Installed: 2008)		
Computer-Aided Dispatch (CAD)	Hexagon (formerly Intergraph) I/CAD, v8.1.0 (Installed: 2006)		
Logging Recording System	Verint Audiolog, v5 (SP2)		
Geographic Information System (GIS)	Esri ArcGIS, v10		
Databases Maintained	None		
Leased Equipment	None		



### **3.9.13. Westmoreland County**

#### **Overview**

Westmoreland County is a Third Class County with a population of 363,233. The County covers approximately 1,028 square miles, and has 21 townships and 31 boroughs within its boundaries, plus 6 cities, including Greensburg, which is the County seat.

The County's public safety answering point (PSAP) dispatches for 36 law enforcement agencies, 132 fire departments and 19 emergency medical services (EMS) agencies, and has ringdown connections with the Pennsylvania State Police, City of Greensburg, North Huntingdon Township, Mutual Aid Ambulance Service, Latrobe Fire Department, and the Pennsylvania Turnpike.

The PSAP handled an average of 471 9-1-1 calls each day in 2015. Of these, 18 percent were wireline, 73 percent were wireless and 9 percent were voice over Internet Protocol (VoIP). Last year, 9-1-1 calls were answered within 10 seconds 93 percent of the time.

#### **Considerations**

Key factors affecting Westmoreland County and its PSAP include the following:

- The County is part of the Southwestern PA Regional Task Force (Region 13) Emergency Services Internet Protocol (IP) Network (ESInet).
- The County participates in the Western Pennsylvania County Regional ESInet (WestCORE) regional CPE sharing initiative and serves as one of the host locations.
- The County serves as a host site for the Inter County Regional Radio System (ICORRS).
- The County has a mobile communications unit that has dispatching capabilities.
- Interstates 70 and 76 (the Pennsylvania Turnpike), and U.S. 22 (business) traverse the County, and all are heavily traveled. There is significant commercial truck traffic, which increases the probability of vehicular accidents that could result in potential hazmat situations impacting the community in general.
- The County's population is growing due in large measure to its comparatively lower taxes, but also due to urban sprawl from Pittsburgh.
- The County is home to Arnold Palmer Regional Airport, which is the site of the annual Westmoreland County International Air Show, which attracts more than 100,000 visitors over its two-day run.
- Several rivers flow through the County that are prone to flooding; they also attract whitewater rafting enthusiasts, which leads to emergency calls involving swift water rescues and drownings.



- Pennsylvania State University and the University of Pittsburgh both operate branch campuses in the County, which also is home to several other small colleges and universities.
- Four state parks exist in the County: Keystone, Laurel Ridge, Laurel Summit, and Linn Run.

## **Staffing**

The PSAP has eight management positions, including a 9-1-1 operations chief, a 9-1-1 operations deputy chief, and a quality assurance (QA) supervisor. There are six full-time supervisors. In addition, 56 full-time telecommunicators handle both call-taking and dispatching; there are no part-time telecommunicators.

## **Facility**

The PSAP is located 911 Public Safety Road, Greensburg, PA 15601, in a single-story standalone building. The facility has a multipurpose room that is used as the County's emergency operations center (EOC) and for training; temporary consoles are brought into the room for the latter purpose.

The 9-1-1 Center has six call-taker-only console positions, and 20 combined console positions (call-taker and dispatcher). The County also has a backup facility designed primarily as a backup EOC; 9-1-1 calls would be handled from the mobile communications unit.

## **Computer-Aided Dispatch**

The computer-aided dispatch (CAD) system is a Hexagon (formerly Intergraph) I/CAD solution that was installed in 2001. It was upgraded in early 2016. The County has expressed interest in being part of a regional CAD system using the Hexagon (formerly Intergraph) system.

## **Customer Premises Equipment**

The customer premises equipment (CPE) is an Airbus Vesta v4.3.2 that was installed in 2014 as part of the WestCORE project. An upgrade to release 6.0 is planned for 2016.

## **Radio Systems**

The radio system is a Motorola Astro Project 25 (P25) v7.14 system that was installed in 2010. The County participates in ICORRS, and serves as the master core host site.

## **Radio Console System**

Motorola MCC 7500 consoles were installed in 2012, in both the PSAP and the mobile communications unit.



## **Facility Infrastructure**

The PSAP is served by fiber-optic cable feeds from Sunesys and DQE Communications for the ESInet, and Verizon copper facilities for 9-1-1 trunks, local telephone lines and various circuits required to support the center. The DQE fiber has last mile diversity.

Region 13 ESInet infrastructure consists of an Alcatel-Lucent service aggregation router (SAR-18) for all ESInet services, a Cisco 2811 router, and a Cisco 3560 switch for backup regional connectivity. An Avaya G450 gateway and three Avaya ERS 3524GT Ethernet switches provide connectivity for the region-wide VoIP administrative telephone system.

A Polycom video-conferencing system is connected to Region 13 over the ESInet. An Airbus Vesta 9-1-1 CPE solution, which is part of the WestCORE regional 9-1-1 system, also uses the ESInet for connectivity. The Vesta Ethernet switches are Cisco 2960s.

## **Power Systems**

### Uninterruptible Power Supply

The PSAP is supported with an American Power Conversion (APC) UPS system, rated for 125 kilovolt amperes (kVA) and located in the equipment room. This system was installed in 2001 during the original building installation. The batteries were replaced in 2014. The system supports the equipment room, radio room and the 9-1-1 Center, and is maintained under contract by Schneider Electric.

### Backup Power

Backup power to the PSAP is provided from a 300 kilowatt (kW) Olympian natural gas generator. A 400 kW Kohler diesel generator also backs up the facility. The generators are located outside on the northwest corner the building, and are maintained by the County. The Olympian was installed in 2014, and the Kohler in 2001.

## **Equipment Room**

The equipment room is on the east side of the facility. Cables are run through conduit to the call center and throughout the building for network connectivity. The conduit does not have much space remaining to add any additional cables. Cable trays run throughout the equipment room, and they have available space.

County network infrastructure is supported by the emergency services staff, with additional support from the County's information technology (IT) department. Core network equipment includes Cisco routers and switches.



The equipment room is large, and while most of the installed racks are full, the room could support an additional two equipment racks.

**Table 70: Westmoreland County at a Glance**

	<u>CLASS</u>	<u>POPULATION</u>	<u>SIZE</u>
<b>WESTMORELAND COUNTY</b>	3	363,233	1,028 sq. mi.
	<b>Backup PSAP?</b>	<b>ESInet?</b>	<b>Text-to-911?</b>
	Yes	Yes	No
	<u>Wireline</u>	<u>Wireless</u>	<u>VoIP</u>
<b>9-1-1 Calls (2015)</b>	30,151	125,965	15,723
<b>Number of Trunks</b>	12	10	4
<b>Primary Selective Routers</b>	Verizon (Bellevue/Braddock)		
<b>Customer Premises Equipment (CPE)</b>	Airbus Vesta, v4.3.2 (Installed: 2014)		
<b>Computer-Aided Dispatch (CAD)</b>	Hexagon (formerly Intergraph), v9.3 (Upgraded: 2016)		
<b>Logging Recording System</b>	Verint Audiolog, v5		
<b>Geographic Information System (GIS)</b>	Esri ArcSDE (Spatial Database Engine), v10.2		
<b>Databases Maintained</b>	None		
<b>Leased Equipment</b>	None		

**A NOTE TO THE READER**

The information presented in this document represents a best effort to capture substantial data in order to present a “snapshot in time” view of the 9-1-1 community in the Commonwealth. In doing so, considerable effort was made to present the data in a consistent manner; for example, vendor names were standardized where possible. In addition, the data was vetted and validated by local 9-1-1 representatives prior to submission. Because 9-1-1 service in the Commonwealth is continually evolving—both technologically and operationally—this should be considered a “living document” that will be modified frequently going forward.



## Appendix A: Glossary of Terms

TERM	DEFINITION
Act 12	Enacted Pennsylvania law that directs and supports aspects of the Commonwealth's 9-1-1 system including governance, funding, and vision casting.
Admin phone system	Typically a multiline telephone system used for administrative calls and outgoing calls in the PSAP environment. These systems are separate from and should not be confused with the CPE (the 9-1-1 phone system).
Automatic Location Identification (ALI)	The automatic display at the PSAP of the caller's address/location of the telephone and supplementary emergency services information of the location from which a call originates.
Automatic Number Identification (ANI)	The automatic display at the PSAP of the telephone number associated with the access line from which a call originates.
Central Office	The Local Exchange Carrier facility where access lines are connected to switching equipment for connection to the Public Switched Telephone Network.
Centralized Automatic Message Accounting (CAMA)	Router to PSAP trunk typically using Enhanced MF Signaling.
Commonwealth Law Enforcement Assistance Network (CLEAN)	State network providing access to DMV information, state criminal history records, active Protection from Abuse (PFA) orders, and active files on stolen items, missing persons, and wanted persons
Competitive Local Exchange Carrier (CLEC)	A telephone company competing with established local telephone companies by providing their own network and switching.
Computer-Aided Dispatch (CAD)	A computer based system, which aids PSAP telecommunicators by automating selected dispatching and record keeping activities.
Core Service	A specific and essential function within the 9-1-1 industry. Examples of core functions are call routing, call processing, call dispatching, and logging.
Customer Premises Equipment (CPE)	Communications or terminal equipment located in the customer's facilities. (The 9-1-1 telephone equipment at the Public Safety Answering Point.)
Database	A collection of information that is organized, and typically computerized, so that it can be easily accessed, managed, and updated.
Emergency Medical Dispatch (EMD)	Refers to a system that enhances services provided by the PSAP telecommunicators by allowing the call taker to quickly narrow down the caller's type of medical or trauma situation, so as to better dispatch emergency services, and provide quality instruction to the caller before help arrives.



TERM	DEFINITION
Emergency Notification System (ENS)	General category for any systems used to notify persons/public of an emergency. May include changeable message signs, sirens, telephone and other media.
Emergency Service Internet-Protocol Network (ESInet)	An IP-based network dedicated for the use of public safety operations; and has the ability to route 9-1-1 calls to a PSAP and support other methods of data sharing between public safety agencies. An ESInet cannot be proprietary to a specific core service product or group of products.
End Office	The Local Exchange Carrier facility where access lines are connected to switching equipment for connection to the Public Switched Telephone Network.
Fiber	Full term is “Fiber Optic” – Refers to the technology associated with transmission of information as light impulses along a glass or plastic wire or fiber. This mode of data transport is faster and more robust than conventional copper wire.
Footprint	The geographic area covered by a particular radio system, wireless cell or cell sector.
Full-Time (FT)	The Fair Labor Standards Act (FLSA) does not define full-time employment. This is a matter generally to be determined by the employer (US Department of Labor). The definition by employer can vary and is generally published in an organization’s Employee Handbook. Organizations commonly require from 35 to 40 hours per week to be defined as full-time and therefore are eligible for benefits.
Full-Time Equivalent (FTE)	In the U.S. Federal Government, FTE is defined by the Government Accountability Office (GAO) as the number of total hours worked divided by the maximum number of compensable hours in a full-time schedule as defined by law.
Geographic Information System (GIS)	A system for capturing, storing, displaying, analyzing and managing data and associated attributes which are spatially referenced.
Geospatial	Relating to, occupying, or having the character of space, denoting data that is associated with a particular location. Geographic Information Systems store spatial data in regional databases.
Iamresponding/Active 911	A wireless device application (App) that delivers alarms, maps, and other critical information instantly to first responders
Integrated Services for Digital Network (ISDN)	A set of communication standards that allows traditional phone switches and wires to be upgraded and utilized in a digital network format – increasing the amount and type of data that can be sent and received.
Intelligent Transportation System (ITS)	Advanced applications which, without embodying intelligence as such, aim to provide innovative services relating to different modes of transport and traffic management and enable various users to be better informed and make safer, more coordinated, and smarter use of transport networks.



TERM	DEFINITION
Internet Service Provider (ISP)	A company that provides Internet access to other companies and individuals
JNET	Pennsylvania Justice Network – a network that allows participating law enforcement agencies to interface their RMS with all other JNET members.
Last Mile Diversity	Multiple routes or paths of a network to ensure redundancy in 911 call delivery and other core services.
Layer 2 (L2)	A network device that forwards network traffic through physical links based on a specific destination and source address.
Layer 3 (L3)	A network device that routes information at very high speeds mainly using an IP network address. The destination does not have to be physically linked to a Layer 3 router.
Legacy	A term that is used to describe established hardware and services that will no longer be viable after a full transition to NG9-1-1 has been completed.
Local Exchange Carrier (LEC)	A telephone company that provides the local exchange telephone services.
Logger/Logging System	A device that records, stores and is capable of playing back all communication media within the PSAP. Media can include, but is not limited to voice, radio, text and network elements involved with routing a 9-1-1 call. Logging recorders should have the capability to simultaneously record from several sources.
Master Street Address Guide (MSAG)	A database of street names and house number ranges within their associated communities defining Emergency Service Zones (ESZs) and their associated Emergency Service Numbers (ESNs) to enable proper routing of 9-1-1 calls.
Microwave	A mode of transmission using electromagnetic waves generally in the frequency range measured in gigahertz (GHz). Microwave band is well suited for wireless transmission signals having large bandwidth.
Multi-Line Telephone System (MLTS)	A system comprised of common control unit(s), telephone sets, control hardware and software, and traditionally used in large businesses and campuses where many telephone sets share one main number.
Next Generation 9-1-1 (NG9-1-1)	An Internet Protocol (IP) based system comprised of managed Emergency Services IP networks (ESInets), functional elements (applications), and databases that replicate traditional E9-1-1 features and functions and provides additional capabilities. NG9-1-1 is designed to provide access to emergency services from all connected communications sources, and provide multimedia data capabilities for Public Safety Answering Points (PSAPs) and other emergency service organizations.



TERM	DEFINITION
Part-Time (PT)	The Fair Labor Standards Act (FLSA) does not define part-time employment. A part-time employee works fewer hours per week than a full-time employee. Part-time employees commonly work fewer than 30 hours per week and are not eligible for benefits.
Pennsylvania Emergency Incident Reporting System (PEIRS)	Reporting system for counties to send large scale incident information to PEMA.
Primary Rate Interface (PRI)	A bundle of ISDN circuits. <i>See ISDN</i>
Project 25 (P25) or APCO-25	Is a suite of interoperability standards for digital radio communications for use by federal, state/province and local Public safety organizations.
Public Safety Answering Point (PSAP)	An entity responsible for receiving 9-1-1 calls and processing those calls according to a specific operational policy.
Quality of Services (QoS)	Controlling and managing network resources by setting priorities for specific types of data on a network.
Radio Console	Referring to hardware and other equipment associated with an end-user interface to the radio system. In current technology, this likely consists of a desktop computer, specific system software, and other ancillary hardware components installed at a workstation.
RCDD	Registered Communications Distribution Designer
Records Management System (RMS)	The management of records for an organization throughout the record's life cycle. The activities in this management include the systematic and efficient control of the creation, maintenance, and destruction of the records along with the business transactions associated with them.
Ringdown Line	A direct and dedicated phone line between two points that allows one phone to call another, but no dialing is necessary. In a PSAP frequently called numbers are put on ringdown lines for efficiency and speed.
Router	An interface device that forwards data packets from one local area network (LAN) to another and that selects the most expedient route based on traffic load, line speeds, costs, or network failures to complete the call.
Secondary PSAP	A PSAP to which 9-1-1 calls are transferred from a Primary PSAP. A secondary PSAP is typically established to handle a specific sub-set of emergency traffic (e.g. – EMS and fire incidents).
Selective Router	An interfacing device located in a Central Office that routes the 9-1-1 calls to the appropriate PSAP based on the caller's location information.



TERM	DEFINITION
Short Message Service (SMS)	A service typically provided by mobile carriers that sends short (160 characters or fewer) messages to an endpoint. SMS is often fast, but is not real time.
Single Point of Failure	Describes a flawed network or system design that includes non-redundant components, and the potential for interruption or failure of services should that non-redundant component fail.
Survey Tool	A systematic and uniform method used to gather specific points of information that can be gathered and analyzed
Switch	Computer networking device (Layer 2) that physically connects hardware together on a computer network by using packet switching to receive and forward data to the destination device.
T-1	A commercial-grade telephone line that is used to transport multiple simultaneous phone calls or large quantities of data.
Talk Group	In a trunked radio system environment, this term replaces “channel”. System users are grouped together on a talk group and utilize an available frequency to transmit.
Telematics	In the public safety industry, the use of wireless devices to transmit location and other vital information without human intervention. An example is an onboard vehicle system that makes an immediate notification after a collision is detected.
Teletypewriter / Telecommunications Device for the Deaf (TTY/TDD)	A teleprinter, an electronic device for text communication over a telephone line that is designed for use by persons with hearing or speech difficulties.
Transmission Control Protocol/Internet Protocol (TCP/IP)	A protocol for communication between computers; also used as a standard for transmitting data over networks
Trunk	Typically, a communication path between central office switches, or between the 9-1-1 Control Office and the PSAP.
Uninterruptible Power Supply (UPS)	An electrical apparatus that provides emergency power to a load when the input power source, typically main power, fails. A UPS will provide near-instantaneous protection from input power interruptions, by supplying energy stored in batteries. The on-battery runtime of most uninterruptible power supply is usually relatively short but sufficient to start a standby generator.
Video Teleconference (VTC)	The process of two or more locations communicating by simultaneous two-way video and audio transmissions.
Voice Over Internet Protocol (VoIP)	An IP telephony term for a set of facilities used to manage the delivery of voice information over the Internet.