

Statewide 911 Plan

Commonwealth of Pennsylvania

Adopted: December 2023

Table of Contents

1	Introduction.....	2
1.1	NG911 in Pennsylvania.....	3
2	Next Steps.....	4
3	Pennsylvania 911 System Priorities	5
3.1	Priority Area: Legislation.....	5
3.2	Priority Area: Funding Policies and Procedures for NG911	6
3.3	Priority Area: NG911 Technology.....	10
3.4	Priority Area: NG911 GIS	11
3.5	Priority Area: Cybersecurity.....	15
3.6	Priority Area: Operations	15
3.7	Priority Area: NG911 Public Education and Outreach.....	18
4	Summary of Strategic Goals.....	19
5	Statewide 911 Plan Supplemental Resources.....	24

1 Introduction

The ability to quickly access 911 is a vital part of the public safety system. It is the critical link between people who need help and the people who are trained to help. In Pennsylvania, the heart of our 911 system is comprised of a highly trained staff of telecommunicators in 61 county-based call centers which are commonly referred to as PSAPs, or Public Safety Answering Points. Pennsylvania PSAPs process approximately 15 million requests for service each year. The delivery of 911 services requires a combination of personnel, facilities, training, and complex systems and technology to be available 24 hours a day, 365 days a year to ensure that both the public and first responders receive the level of service that is expected and required in emergency situations.

Changes in consumer communications technology and preferences are rapidly outpacing changes to 911 systems. Decades-old legacy equipment designed for traditional wireline service is incapable of leveraging the enhanced data associated with common communication tools, such as real-time text, streaming video, and smartphone applications. Challenges also exist with location information originating from wireless callers, which now account for approximately 75 percent of all 911 calls in Pennsylvania. Additionally, some populations – such as the hearing-impaired community and non-English speaking individuals – continue to be underserved by today’s 911 system due to accessibility issues. These challenges have a direct impact on the ability of our PSAPs to support and service the public and first responders in the field.

Next Generation 911 (NG911) is an initiative to modernize today’s 911 services using digital, internet protocol (IP)-based, broadband-enabled technologies to coordinate emergency responses. The initial phases of Pennsylvania’s NG911 project revolutionized the infrastructure used to deliver 911 calls to our PSAPs. Subsequent efforts to achieve the definition of NG911 will focus on upgrading the applications and workflows in the call processing and dispatch functions used to process a 911 call and efficiently transmit data from the caller to the first responder in the field. The modernization of our 911 system through NG911 will continue to introduce new costs in areas such as GIS, training, cybersecurity, connectivity, incorporating multimedia communications, and interoperability with services and networks used by first responders to facilitate emergency response. Detailed planning and coordination are required among 911 system stakeholders to meet current and future service level expectations.

Chapter 53 of Title 35 of the Pennsylvania Consolidated Statutes requires PEMA to establish, in consultation with the 911 Advisory Board (Board), a Statewide 911 Plan that identifies priorities for 911 systems in the commonwealth and plans for Next Generation 911 (NG911). The intent of the plan is to:

- Provide an actionable strategy to advance 911 systems and services in Pennsylvania
- Establish priorities and action steps to continue implementing components of NG911
- Facilitate collaboration among stakeholders to address the Statewide 911 Plan priorities
- Outline a framework for a sustainable statewide NG911 enterprise
- Educate and inform stakeholders and the public

Fulfilling the intent of the plan requires recognizing that 911 service is no longer strictly a local issue and that it requires a coordinated and collaborative effort at all levels – local, regional, and state. True

interoperability between PSAPs is the greatest benefit. A state-of-the-art NG911 network, with all its features, provides PSAPs more efficiency and the ability to keep pace with changes in consumer technology and meet the goal of providing the highest level of 911 service anywhere, anytime, anyplace.

1.1 NG911 in Pennsylvania

1.1.1 What is NG911?

The National Emergency Number Association (NENA), defines NG911¹ as a system comprised of hardware, software, data, and operational procedures that:

- Provides standardized interfaces from emergency call and message services to support emergency communications
- Processes all types of emergency calls, including voice, data, and multimedia information
- Acquires and integrates additional emergency call data useful to call routing and handling
- Delivers the emergency calls, messages, and data to the appropriate PSAP and other appropriate emergency entities
- Supports data or video communications needs for coordinated incident response and management.

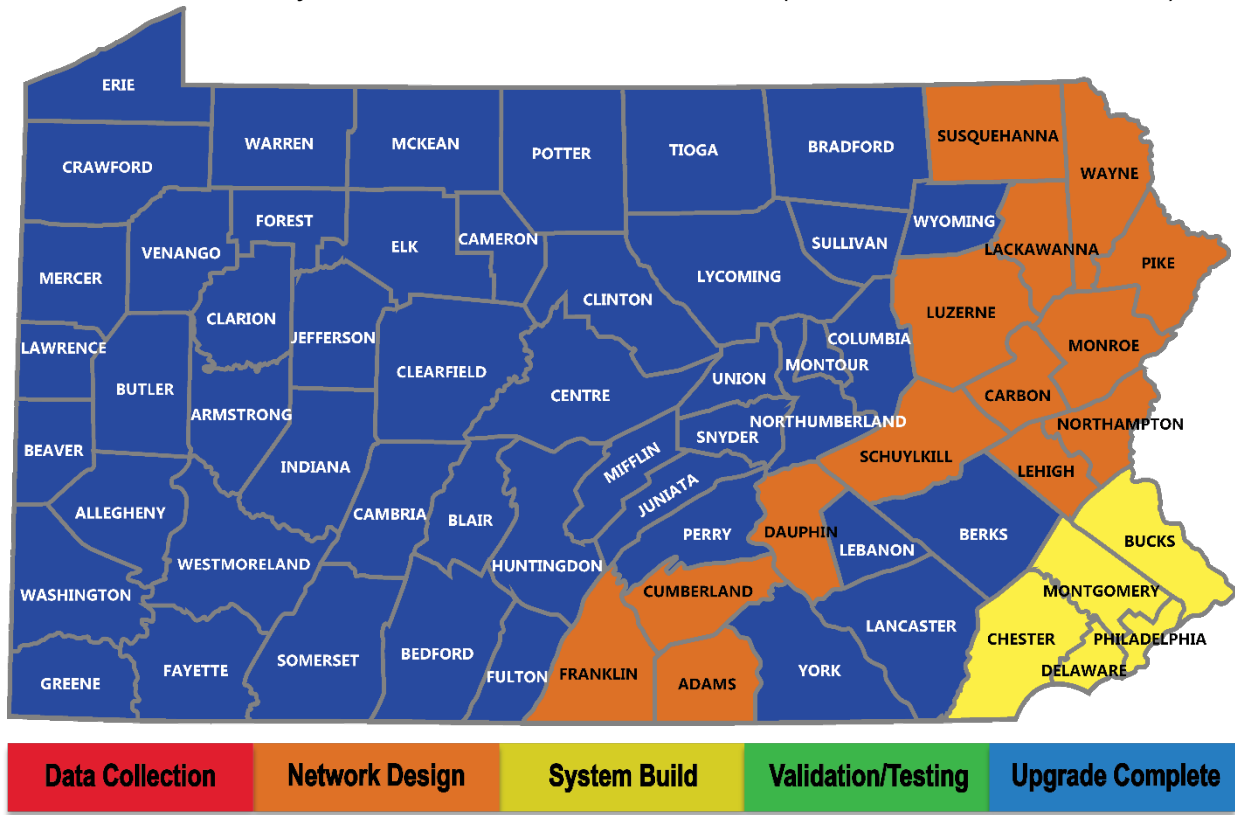
In summary, NG911 is a necessary transition from Pennsylvania's decades-old legacy 911 system infrastructure to an internet protocol (IP) based 911 system infrastructure. This specialized 911 infrastructure intends to enable the public to transmit requests for emergency services via voice, text messages, video, images, and data to the 911 center based on the caller's location. NG911 increases the routing accuracy of 911 callers and allows for additional information to flow from the 911 caller to the first responder – improving scene and responder safety and providing real-time updates to evolving emergency situations. The transition to NG911 is important to meet the needs and expectations of the public and first responders and strengthen our commitment to making emergency services more accessible for people in at-risk communities, such as those who have speaking or hearing impairments.

1.1.2 NG911 Progress

In accordance with the prior version of the Statewide 911 Plan and after a considerable review process, PEMA executed a contract with Comtech Telecommunications Corp. to implement and operate Pennsylvania's NG911 system. A historic milestone was achieved in September 2022 when the first Pennsylvania PSAP (Elk County) migrated to NG911 service. As of December 2023, forty-eight (48) Pennsylvania counties have migrated to NG911 call delivery service. The status of the NG911 migration in Pennsylvania is shown in Figure 1 below. More than 1.2 million calls have been processed by the NG911 system between September 2022 and October 2023. Pennsylvania's remaining nineteen (19) PSAPs will be migrated to NG911 service in a phased approach working from west to east across the state. The anticipated completion date for migrating all PSAPs to NG911 call delivery service is August 2024.

¹ <https://www.nena.org/page/glossary>

Figure 1 – Status of Pennsylvania’s transition to NG911 service (current as of December 2023)



- Primary Benefits Realized Today from Pennsylvania’s NG911 System:**
- IP-based technology, not limited by analog mediums and old equipment
 - Redundant and diverse fiber ESInet connections into each PSAP
 - Ability to decommission legacy 911 systems that are decades old with limited capabilities
 - Improved 911 call-routing accuracy using GIS data (geospatial routing)
 - Policy routing functionality to divert 911 calls to alternate PSAPs when necessary
 - Strong cybersecurity posture and regular cybersecurity awareness training for PSAPs
 - 24x7x365 Network Operations Center/Security Operations Center monitoring
 - Improved visibility into system availability, system performance, and call data
 - Text-to-911 will be available at all Pennsylvania PSAPs by July 2024
 - Fixed and level recurring costs for NG911 service through 2030

2 Next Steps

Together, the Pennsylvania 911 community has completed many of the action steps outlined in the previous version of the Statewide 911 Plan – which has increased the capabilities of the 911 system and advanced Pennsylvania towards modernization of its 911 system statewide with the migration to NG911.

The focus of this Statewide 911 Plan and priorities is to build from the successes in recent years and address the changing needs of the public and PSAPs in a coordinated, sustainable manner. The strategy and associated priorities in this Plan consist of the following themes:

- Incorporate additional public safety systems and applications, additional forms of communication, and other new capabilities onto the statewide NG911 system and Emergency Services Internet Protocol Network (ESInet) in a coordinated manner across Pennsylvania using an established governance framework
- Implement multiple strategies to support telecommunicator recruitment and retention
- Define the regulatory framework along with financial, operational, and technical roles and responsibilities of 911 system stakeholders for a NG911 environment
- Continually enhance the cybersecurity posture of the NG911 system and PSAP systems
- Enhance GIS data and workflows to meet current and anticipated NG911 requirements
- Ensure training requirements and training opportunities keep pace with changing capabilities and functionality of the NG911 system
- Provide education and outreach to ensure stakeholders and the public understand NG911 and how to use new capabilities as they are introduced to the service

3 Pennsylvania 911 System Priorities

The Statewide 911 Plan identifies priorities and action steps for 911 systems in Pennsylvania to facilitate continued improvement in 911 service and to serve as a foundation for statewide decisions related to 911. The anticipated result from implementing the priorities and action steps will be a 911 system that reflects all aspects of the NG911 service definition in Section 1.1.1 and strategy outlined in Section 2. The following priorities have been established to facilitate continued improvement in 911 service to meet the changing needs of the PSAPs, public, and first responders in a coordinated, sustainable manner. These priorities are listed in no particular order or ranking, and all will help guide efforts of Pennsylvania's 911 Program.

3.1 Priority Area: Legislation

3.1.1 Goal: Modernize legislative and regulatory framework to reflect NG911

Background:

Chapter 53 of Title 35 and 911 regulations in Chapter 4 of the Pennsylvania Code are currently based on decades-old Enhanced 911 (E911) technology and protocols. The 911 fee authorized by Chapter 53 of Title 35 is the primary funding source for the critical 911 systems and personnel that provide life-saving services every day in Pennsylvania. This legislation is scheduled to sunset in January 2024. It is necessary to strengthen Chapter 53 of Title 35 to sustain funding for 911 and modernize language in legislation and regulation to reflect Pennsylvania's transition to NG911 service.

Action Steps:

- Monitor Federal Communications Commission actions to facilitate the implementation of NG911 services and determine impacts to NG911 service in Pennsylvania
- Draft recommended language, in partnership with Pennsylvania 911 system stakeholders, for consideration to update Chapter 53 of Title 35 to support NG911 service
- Rescind the regulations in 4 PA Code Chapters 120 b, c, and d
- Establish a regulatory framework that aligns with NG911 service using the minimum requirements adopted by PEMA under Act 12 of 2015 as the foundation
- Compile and provide suggested updates to modernize the records retention schedule for Emergency Communication in the County Records Manual

Anticipated Results:

- Modernize legislation and regulatory framework to include NG911 terminology and services
- Roles and responsibilities are defined for NG911 service
- Increased funding to keep pace with the rising costs of 911 service and assist with telecommunicator recruitment and retention

3.2 Priority Area: Funding Policies and Procedures for NG911

3.2.1 Goal: Coordinate procurement actions to improve service and control costs

Background:

A common topic of discussion within the 911 Advisory Board and Subcommittees has been to find more effective ways of procuring systems and services, managing costs, and achieving consistent pricing across the Commonwealth. With numerous emerging applications and technologies entering the public safety community, careful consideration must be made when adopting them to determine the operational, technical, and financial implications of integrating these features into the 911 system.

NG911 provides a more robust and interconnected infrastructure than today's legacy 911 systems that can support quick and efficient data-sharing throughout the entire 911 community. The NG911 environment opens many new opportunities for PSAPs to incorporate new functionality, modernize and streamline workflows, and share application services. A coordinated approach to deploy a variety of systems and services, including those that support multimedia or additional types of data, will promote interoperability and data sharing among PSAPs and a successful long-term deployment for the public, PSAP personnel, and first responders.

Action Steps:

- Procure call-handling solutions as a service
- Identify other systems, applications, and services to coordinate procurement actions:
 - Define procurement strategies including opportunities for procurement at the state level
 - Define requirements, service level agreements (SLA), and other details for procurement
 - Where applicable, initiate the request for information (RFI) process to gather information from the vendor community to assist with the development of a solicitation

- Where applicable, initiate the request for proposal (RFP) process or other procurement methods and negotiate contracts with preferred technology vendors for PSAPs to use

Anticipated Results:

- Achieve known and consistent pricing across the Commonwealth
- Comprehensive contracts and consistent service level agreements for systems and services
- Increased interoperability and reduced duplication of efforts and costs
- Provide additional options for regionalization and consolidation for PSAPs

3.2.2 Goal: Define statewide interconnectivity funding policies for NG911

Background:

Looking ahead, investments with statewide interconnectivity funds (commonly referred to as “15% funds”), outside of the NG911 system, will primarily focus on standardization and leveraging technology to share workload and/or personnel among PSAPs. This approach aligns with the recommendation in the Legislative Budget & Finance Committee (LBFC) Report resulting from Senate Resolution 96 of 2021. Technical and operational requirements, along with specific eligibility criteria for regionalization and consolidation projects, will need to be defined to achieve the recommendation provided in the LBFC Report.

Since Act 12 of 2015 was signed into law, Pennsylvania’s 911 system has clearly progressed from a county focus to the regional and statewide focus we have today. The majority of Pennsylvania PSAPs are participating in regionalization projects. A primary focus of regionalization efforts has been on call delivery and call processing functions with the PSAP. Regionalization efforts are expected to continue with a focus on computer-aided dispatch (CAD), radio, and other systems which will increase system redundancy and resiliency while permitting shared call taking and dispatching responsibilities between PSAPs. CAD and radio projects make up roughly one quarter of our annual 911 system costs. It will be critical for PEMA and the Board to define clear parameters for regionalization projects focused on dispatch – including the definition of clear funding responsibilities among 15% funds, formula funds, and local revenue sources.

Action Steps:

- Define 15% funding policies for shared system projects (CAD, radio, additional data repositories, etc.) to achieve the LBFC Report recommendation
 - Identify minimum needs to achieve shared/regional dispatch
 - Identify options to share CAD, radio, or other systems in a cost-effective manner
 - Identify technical and eligibility requirements
 - Identify budgetary requirements for these types of regionalization projects
 - Define clear funding responsibilities among 15% funds, formula funds, and local revenue sources
- Define 15% funding policies for connectivity outside of the State ESInet
- Document and share regional best practices for governance, standard operating procedures (SOPs), and resolving differences in procedures, guidelines, units and other details for shared CAD and radio projects

- Incentivize the modernization of workflows to permit more efficient operations
- Implement Quarterly Progress Reporting process to monitor projects for progress and compliance
- If applicable, identify and implement procurement strategies or state contracting vehicles to enable these types of regionalization projects, increase interoperability, and control costs

Anticipated Results:

- Expansion of shared call delivery, processing, and dispatch functionality among PSAPs
- Enhance dispatching capabilities to match robust call-delivery capabilities of the NG911 system
- Facilitate standardization and interoperability among PSAPs as one strategy to assist with staffing shortages
- Clarify expectations for 15% funds as Pennsylvania moves into a NG911 environment
- Maintain the ability to support the NG911 system and existing regionalization efforts
- Maintain the ability to invest in 911 system improvements and future technologies
- Generate cost data to help maintain a multi-year plan for 15% funds

3.2.3 Goal: Maintain a NG911 service roadmap and 15% funding plan

Background:

The infrastructure upgrade to NG911 has added significant costs to the 15% funding stream. Therefore, the process to determine allocations of these funds has transitioned away from the competitive grant application process used in prior years. Allocations of 15% funds will be identified, planned, and budgeted for based on items such as the statewide NG911 service contract and County 911 System Plans. One of PEMA’s primary objectives is to work with the 911 Advisory Board and county partners to operate and enhance the NG911 system in a planned, coordinated, and financially sustainable manner. The purpose of the NG911 Service Enhancement Roadmap Development Process outlined in the 2023 911 Program guidance is to implement a structured framework for managing planned enhancements to the NG911 system. Data obtained through the NG911 Management Information System (MIS) will also be incorporated into this process to promote data driven decisions through analytics.

Action Steps:

- Enhance Inventory and Planning modules in the PSAP Portal to leverage statewide MIS data and further advance detailed planning, budgeting, and coordination among PSAPs and PEMA
- Provide PSAPs, Board, and Subcommittee members recurring training on the *NG911 Service Enhancement Roadmap Development Process*
- Publish and maintain a NG911 Service Enhancement Roadmap for Pennsylvania that includes a list of initiatives moving into production for NG911 service and associated timelines
- Monitor federal funding opportunities to support 911 service
- Publish and maintain a 15% Funding Plan that defines allocations of 15% funds for multiple years and takes into consideration: NG911 service contract costs, state level contracts for systems and services, GIS, shared system maintenance costs, planned NG911 service enhancements, and other costs identified by PEMA in consultation with the Board

Anticipated Results:

- Further automate planning and budgeting capabilities in the PSAP Portal
- Leverage NG911 MIS data and 911 System Plans to facilitate data driven decisions
- PEMA, counties, and Board fully understand roles, responsibilities, and timeframes associated with the *NG911 Service Enhancement Roadmap Development Process* to evaluate and identify NG911 service enhancements or new statewide interconnectivity initiatives to support
- Transition from an annual funding cycle focus to proactive budgeting of 15% funds for multiple years in advance and coordination among different funding sources

3.2.4 Goal: Update the distribution formula calculation**Background:**

Within 30 days after the end of each calendar quarter, PEMA is required to determine the amount available in the 911 Fund for distribution and disburse at least 83% of the revenue collected to the counties using a formula-based calculation (commonly referred to as “83% funds”). The formula distribution is intended to give counties a defined amount that provides budget certainty and serves as an incentive to manage within available dollars – knowing that the difference comes from the county general fund or other revenue sources.

One item that Pennsylvania 911 stakeholders continue working to address is an update to the distribution formula calculation of 83% funds. The formula in place is often cited as being outdated since it is primarily based on 911 fee collections and reported expenses between calendar years 2010-2014. In addition, the 911 legislation currently includes provisions related to the distribution formula outside of the calculation that are outdated or obsolete.

Action Steps:

- Identify and implement a new formula calculation in tandem with any 911 fee increase
- Update outdated or obsolete formula language in Chapter 53 of Title 35

Anticipated Results:

- An updated formula calculation that:
 - Ensures all counties realize a revenue increase
 - Aligns with the intent of the current 35 Pa C.S § 5306.1 (d) (1) that calls for “Not less than 80% of the amount in the fund shall be disbursed to a 911 system through a mathematical formula established by the agency in consultation with the board, of which at least 30% shall solely be based on population.”
 - Eliminates the need to use 15% funds for temporary offsets to address concerns with the current formula calculation

3.3 Priority Area: NG911 Technology

3.3.1 Goal: Deploy additional NG911 functionality

Background:

While the initial focus of the NG911 project is to upgrade Pennsylvania's infrastructure used to deliver 911 calls to the appropriate PSAP, it is anticipated that the NG911 system's features and functionality will continue to expand greatly in the coming years. As a result, it is also anticipated that 911 system stakeholders will be interested in leveraging the statewide ESInet for shared systems, additional public safety applications, and other enhancements to 911 service. Planning and coordination among PEMA, PSAPs, NG911 service providers, and various vendors will be required to manage enhancements to Pennsylvania's NG911 system. Understanding the impacts (i.e., impact on call processing times, increase in the number of law enforcement evidence requests, impact on training and quality assurance, etc.) of enhancements to the NG911 system will be an important consideration for planning and coordination efforts.

Action Steps:

- Identify, plan, and coordinate future enhancements to the NG911 system (i.e., Use of the NENA standard PSAP credentialing agency for increased security, use of STIR/SHAKEN tokens to increase security for SIP call flows and better secure the network from robocalls, integrated Text-to-911 transfers, geofencing for location-based policy routing, and much more)
- Identify, plan, and coordinate the addition of ancillary services onto the state ESInet
- Implement reporting enhancements in the NG911 Management Information System (MIS) to include items such trend analysis capabilities and enhanced ad-hoc reporting
- Document and share regional best practices for managing the impacts of enhancements to the NG911 system
- Develop a complete strategy for transfers to surrounding states with location information including governance, funding, and GIS responsibilities
- Evaluate the need and options for additional call delivery methods to PSAPs (911 phone system local survivability, tertiary ESInet connectivity, etc.)
- Maintain minimum requirements for technology and operations to keep pace with NG911 system changes
- Where applicable, provide PSAPs training on new NG911 service features and functions

Anticipated Results:

- Incorporate new NG911 service features and functions in a planned and coordinated manner
- Expanded reporting functionality in the MIS
- A plan and coordination with surrounding states to accomplish transfers with location information
- Where applicable, define plans, methods, requirements, and funding responsibilities for additional call delivery methods
- Minimum requirements keep pace with NG911 feature capabilities and applications to promote a consistent level of service across Pennsylvania

3.4 Priority Area: NG911 GIS

3.4.1 Goal: Promote addressing in alignment with NG911 standards

Background:

Geographic Information System (GIS) data plays a pivotal role in NG911 service delivery. Accurate, current, and authoritative GIS data layers, built and maintained by PEMA's county partners, are essential for enabling and sustaining accurate NG911 geospatial call routing. PEMA worked with the Pennsylvania GIS community, including the State Geospatial Coordinating Board, other state agency partners, the County GIS Professionals Association of Pennsylvania, and other county GIS stakeholders to develop the required GIS data layers and processes to support NG911. This work has enabled Pennsylvania to be among the few states to utilize geospatial call routing as part of its initial migration to NG911 service.

The NENA NG911 GIS Data Model Standard (NENA-STA-006.2a-2022)², which serves as the NG911 GIS data model standard for Pennsylvania, requires a Site/Structure Address Point (SSAP) layer. However, the NENA standard states that there is *currently* no requirement for the completeness of SSAP data (see page 31 of the referenced standard). Within Pennsylvania's statewide SSAP layer, data attribution gaps are present within its sub-addressing fields (e.g., building, floor, unit, room, seat, and additional location information (such as Pediatric Wing or Concourse B, etc.)). While the NENA standard identifies these values as "Optional", PEMA's NG911 GIS Data Model and Best Practices Guide classifies these fields as "Strongly Recommended". This is to encourage counties to focus on populating these layers, as they will likely become required fields in the future. Accomplishing this will necessitate county 911 authorities and GIS data stewards to engage with their local addressing authorities. PEMA recognizes that this will take time and resources to complete.

There are approximately 1,200 addressing authorities across Pennsylvania who are responsible for issuing addresses to homes, structures, etc. A critical need moving forward is to ensure the addressing authorities are issuing addresses according to NG911 standards and are working with county 911 authorities and GIS resources to identify and populate sub-addressing data, where currently missing, into their local SSAP layers, which will then be reflected in the statewide layer. More complete sub-addressing data will support more accurate 911 call delivery and assist first responders with identifying the location of the caller.

Action Steps:

- Develop an education and outreach plan to engage with Pennsylvania's addressing authorities
- Continue to develop, in partnership with county and state stakeholders, statewide sub-addressing standards and best practices for GIS data maintenance
- Engage with the United States Postal Service (USPS) and other governmental partners on address validation and related issues
- Publish best practices that promote coordination between county and local addressing stakeholders, such as tools that support coordination between counties and municipalities or

² https://www.nena.org/resource/resmgr/standards/nena-sta-006.2a_ng9-1-1_gis_.pdf

developing a model 911 addressing ordinance that establishes roles and responsibilities for addressing within a county

- Define requirements, roles, and responsibilities for addressing in legislation or regulation
- Identify and address existing gaps and inconsistencies in attribute standardization across all fields within required NG911 layers and promote attribute standardization at the local level

Anticipated Results:

- New addresses are issued according to NG911 standards across Pennsylvania, complete with sub-addressing data, where applicable
- As NG911 standards evolve and new requirements are introduced, Pennsylvania will keep pace to meet the needs and expectations of the public and first responders

3.4.2 Goal: Operationalize 3-dimensional (3D) location for NG911 service

Background:

According to the National Emergency Number Association, *“Introducing three-dimensional (3D) location and mapping to 911 operations represents a massive sea change in how caller location is conveyed and how callers are located. It is the largest shift in location for 911 since wireless Phase II was introduced in the late 1990s. Though many of the underlying technical capabilities already exist to operationalize 3D location for 911, they are not currently being leveraged for routine operations and there are gaps in understanding, implementation, and standardization.”*³ The focus of this goal is to begin addressing these gaps and standardize data, schemas and processes among public safety applications to operationalize 3D location data for NG911 and other PSAP systems.

Vertical elevation data, also known as z-value or z-axis data, is being formally recognized across the industry as a vital part of the NG911 environment – and Pennsylvania seeks to be on the cutting edge with this lifesaving technology. The Federal Communications Commission (FCC) also recognizes this need and in 2019 published a vertical accuracy benchmark as part of the Fifth Report and Order FCC-19-124⁴. This report outlines the accuracy requirements for vertical locations equating to within three meters above or below the handset of wireless callers.

As of 2023, several jurisdictions within Pennsylvania have already begun receiving vertical elevation data as part of the automatic location identification (ALI) feed from wireless providers. At this time Pennsylvania’s PSAPs are not fully prepared to ingest and operationalize this data, since sophisticated software algorithms are needed to properly convert this data into actionable location intelligence that can be readily utilized by 911 telecommunicators.

Action Steps:

- Identify gaps in schemas, data, technology, and workflows to operationalize 3D mapping and vertical elevation data, including integrating 3D mapping and z-axis location information into the NG911 system and other related PSAP systems

³ https://cdn.ymaws.com/www.nena.org/resource/resmgr/standards/nena-req-003.1-2022_3d_gis_2.pdf

⁴ <https://docs.fcc.gov/public/attachments/FCC-19-124A1.pdf>

- Define a plan and benchmarks to guide efforts in addressing these gaps
- Monitor updates from NENA regarding new standards for GIS and 3D mapping and the inclusion of z-axis data
- Publish best practices that are aligned to these national standards and provide training to assist counties with meeting anticipated 3D mapping and z-axis related data requirements
- Define imagery needs and formalize a strategy with other state agencies and GIS stakeholders to jointly obtain, fund, and share imagery among stakeholders to support NG911 and 3D GIS data development and maintenance
- Provide continued financial support with 15% Funds for local GIS data development:
 - For 15% Funding: Define requirements, eligibility criteria, and required outcomes to ensure projects accomplish expectations to operationalize 3D mapping and vertical elevation data for 911
 - Where applicable, develop detailed models for complex multistory structures of interest, such as those in densely populated areas or those expected to be densely occupied

Anticipated Results:

- Next Generation 911 Core Services (NGCS) and supporting applications within PSAPs can leverage 3D mapping technology and vertical elevation data to provide telecommunicators with additional accessible and actionable location intelligence.

3.4.3 Goal: GIS data supports interstate interoperability of NG911 call delivery

Background:

Collaboration between and among jurisdictions is a vital component of success for developing GIS data for use in a NG911 environment and this collaboration must extend beyond Pennsylvania’s boundaries. In tandem with the Goal in 3.3.1, the focus is to develop a complete strategy for transfers to surrounding states with location information including governance, funding, and GIS responsibilities. Pennsylvania 911 and GIS stakeholders will need to work closely with our counterparts in neighboring states to develop the required GIS data, policies, and processes to support interstate call delivery in a NG911 environment.

Action Steps:

- Agree on a state boundary dataset to facilitate alignment with jurisdictions in New York, New Jersey, Delaware, Maryland, West Virginia, and Ohio
- Confirm an authoritative boundary dataset for the United States/Canada International Maritime Boundary between Pennsylvania and Ontario over Lake Erie and ensure existing relevant NG911 boundaries are snapped to this border
- Obtain NG911 GIS data from jurisdictions in neighboring states and compare topology against Pennsylvania PSAPs to ensure boundaries remain free of unintentional gaps and/or overlaps
- Define NG911 GIS standards with all surrounding states to include details such as frequency of data exchanges, requirements of attribute data, and minimum quality assurance criteria
- Define mechanisms and methods to share NG911 GIS data with all surrounding states
- Collaborate with county stakeholders on formalizing a policy that supports GIS data governance and boundary change management

Anticipated Results:

- Minimum GIS data requirements (datasets) and mechanisms for data sharing are established with all surrounding states
- Pennsylvania has seamless NG911 polygons consistent with corresponding polygons in neighboring out-of-state jurisdictions; All NG911 GIS data is aligned to support NG911 interoperability between states

3.4.4 Goal: Encourage adoption of the NENA NG911 GIS Data Model Standard across PSAP mapping platforms

Background:

Pennsylvania's PSAPs rely on Computer Aided Dispatch (CAD) and related mapping technologies to support and enhance 911 response. There are multiple CAD and related PSAP mapping solutions deployed throughout the Commonwealth that consume locally built GIS data. These systems often require local GIS data to conform to vendor specific data structures, which limits this data's potential for supporting additional functions. With the migration to NG911 service, Pennsylvania's counties are required to build and maintain NG911 GIS datasets that are aligned to the NENA NG911 GIS Data Model Standard. This has facilitated the development of accurate and current standardized statewide NG911 GIS datasets. However, many PSAPs are caught between competing needs to build and maintain GIS data that meets the NENA standard while also meeting CAD and mapping technology vendor-specific data structure requirements. This has led to jurisdictions maintaining multiple variants of the same GIS data layers or maintaining duplicative fields within layers. This is inefficient and adds to the possibility that errors could accidentally be introduced, creating discrepancies between ostensibly duplicate datasets.

The NENA standard provides a robust international standard that fosters efficiency and interoperability. The focus is to incorporate use of this standard in CAD systems and related PSAP mapping systems to facilitate greater efficiency, ease the overall GIS data stewardship burden placed on counties and PSAPs, and mitigate the possibility of new errors being introduced.

Action Steps:

- Conduct a statewide inventory of CAD and related PSAP mapping technologies and determine whether their data structure requirements conform to the NENA NG911 GIS Data Model Standard
- Provide education and outreach on NG911 GIS standards to discuss benefits and promote adoption to enable efficient GIS efforts within the counties
- Develop 911 Program policies, in consultation with the 911 Advisory Board and GIS stakeholders, to promote adoption of the NENA NG911 GIS Data Model Standard across various PSAP systems where applicable

Anticipated Results:

- Symmetry is achieved in the GIS data supporting all CAD and related PSAP mapping technologies operating within Pennsylvania PSAPs

- County/PSAP GIS data stewards have a reduction in overall data development and maintenance workloads
- The potential for errors being accidentally introduced is mitigated

3.5 Priority Area: Cybersecurity

3.5.1 Goal: Implement new minimum cybersecurity requirements

Background:

As Pennsylvania PSAPs increasingly rely on Internet Protocol infrastructure, cybersecurity becomes paramount to secure critical 911 systems and services. While Comtech is responsible for security of the NG911 system being deployed in Pennsylvania, its obligations end at the network demarcation equipment installed at the PSAP. Due to the ever-evolving threat landscape, it is necessary to ensure all PSAPs maintain a robust cybersecurity framework.

Action Steps:

- Define a plan and timeline to implement the minimum cybersecurity requirements for PSAPs that were developed by PEMA working with the 911 Advisory Board
- Publish a best practices document that provides best practices & examples to assist Pennsylvania PSAPs with meeting the adopted minimum cybersecurity requirements
- If applicable, develop a procurement strategy for cybersecurity support and services
- Implement a process to verify compliance with the minimum requirements

Anticipated Results:

- All PSAPs maintain a security plan, policies, and procedures that meet the minimum requirements

3.6 Priority Area: Operations

3.6.1 Goal: Support County telecommunicator recruitment and retention efforts

Background:

Pennsylvania's telecommunicators work around the clock as first responders to keep us safe and are responsible for performing multiple tasks, such as providing life-saving instructions to callers, coordinating resources for an incident response, and ensuring the safety of first responders in the field. Today, a critical issue facing PSAPs across the country is decreasing personnel levels to support 911 operations.

As NG911 is implemented across the country and additional forms of communication are introduced to the 911 system, Pennsylvania PSAPs will need to rethink their organizational structures, hiring practices, training regimens, and policies. This is to ensure that they can triage a significant increase in data

generated by citizens and a plethora of communications systems to determine what data is actionable and then identify the appropriate response. Common feedback received by PEMA is that it will take a variety of strategies in areas such as funding, technology, public recognition, and operations and engagement from a variety of stakeholders for counties to address current and future personnel needs.

Action Steps:

- Support legislative efforts to increase funding for the 911 system
- Support efforts to formally classify 911 telecommunicators as first responders
- Expand public recognition of 911 professionals
- Expand education and outreach efforts about the 911 profession and where employment opportunities exist
- Incentivize efforts to leverage technology to share workload among PSAPs
- Support counties with consolidation and regionalization efforts
- Implement methods to track staffing level data
- Compile and publish best practices for recruitment and retention
- Where possible, develop and implement strategies with partners to educate and train individuals interested in the 911 industry to create a pipeline approach of potential candidates

Anticipated Results:

- Multiple tools to assist PSAPs with recruit and retention

3.6.2 Goal: Support access to mental health resources for 911 personnel

Background:

The responsibility that comes with being a 911 telecommunicator makes the position extremely stressful. Every day, telecommunicators deal with individuals who may be having the worst day of their life. It is routine for telecommunicators to not just hear about traumatic events occurring; they speak to those directly involved in the events, and they are relayed graphic descriptions in real time. It is the primary duty of telecommunicators to process this information and respond as quickly as possible while remaining composed. Given the increased levels of trauma exposure that are expected to be placed on telecommunicators in the NG911 environment, a priority is to increase telecommunicator training opportunities and/or improve access to resources focused on post-traumatic stress disorder (PTSD) and other areas of mental health for first responders.

Action Steps:

- Evaluate minimum training requirements to determine any changes for mental health and wellness training
- Inventory currently available resources and best practices among PSAPs
- If applicable, develop a procurement strategy to support access to mental health and wellness training and resources for 911 telecommunicators

Anticipated Results:

- Ensure access to mental health training and resources for 911 personnel

3.6.3 Goal: Monitor 988 delivery model and alternative response methods addressing mental health and persons in crisis

Background:

Effective July 16, 2022, the 988 dialing code is available nationwide as a shortcut to the current National Suicide Prevention Lifeline phone number. Both 911 and 988 are critical, but separate, services: 911 is designed to enable quick access to emergency response (fire, police, emergency medical services, or other emergency resources) and 988 is designed to enable quick access to support services and resources for anyone experiencing a suicidal, mental health, and/or substance use crisis. Coordination and communication between 911 PSAPs and 988 crisis call centers (988 center) on operational and technical considerations will be critical as rules, regulations, and technology solutions are defined for 988 service and national standards or best practices for 911/988 interactions are published.

Action Steps:

- Participate in 988 Advisory Board, 911/988 Working Group, and 911/988 Regional Coordination meetings
- Promote regular communications and cross system planning efforts between PSAPs, their corresponding 988 center, and local field resources (fire, police, EMS, mobile crisis teams, behavioral health facilities, etc.) to discuss responses to mental health crises
- Promote the development of standard operating procedures between PSAPs and their corresponding 988 center to formalize roles and responsibilities and set expectations for service between the entities (Local standard operating procedures will be important to the success of both 911 and 988 services)
- Identify technology requirements and strategies to enable interoperability and collaboration between 911 and 988 services
- Evaluate opportunities to implement standard performance metrics for interactions between 911 and 988 services
- If applicable, identify an appropriate share of costs allocated to each service for any partnership on technology or services (Federal and state rules prohibit 911 fees from being used for non-911 purposes)

Anticipated Results:

- Promote coordination and integration between 911 and 988 services
- If/when location information becomes available for 988 service, promote coordination on technical and operational details to ensure systems have mutual capabilities to properly ingest call transfers with location information, and support feature-rich transfers (location, audio, video, language translation, etc.)

3.7 Priority Area: NG911 Public Education and Outreach

3.7.1 Goal: Build awareness of NG911 and new capabilities

Background:

The migration to NG911 will result in a multitude of technological and operational changes. It is critical to a successful NG911 implementation that stakeholders understand NG911, why the transition is necessary, its impact, and benefits. Of equal importance, the public will need to be aware of (and know how to use) new capabilities associated with NG911 service.

Action Steps:

- Initiate new (and expand existing) public awareness campaigns that explain NG911 capabilities and limitations, provide insight into the 911 call/dispatch process, and promote careers in public safety emergency communications
- Develop and maintain an interactive digital educational tool that demonstrates the process of contacting 911 for assistance
- Continue to engage with county partners through the Public Education and Outreach Work Group and support local outreach activities
- Establish an online repository for PEMA and county partners to upload and/or download files of various media types, such as printable flyers or videos, for use in outreach efforts
- Where possible, develop and implement strategies with partners to provide education about NG911 and promote adoption of NG911 technology or technologies that modernize workflows to permit more efficient operations

Anticipated Results:

- Achieve a universal understanding about the basics of 911 service in Pennsylvania through consistent messaging and branding
- Maximize community outreach capacity and capabilities for county partners
- Increase the number of applicants for telecommunicator positions

4 Summary of Strategic Goals

Serving as a charter for the future, the Statewide 911 Plan must remain flexible as circumstances and technologies change. The Summary of Strategic Goals table will be reviewed and updated annually to include additional action steps to achieve the goals in the Statewide 911 Plan. Regular updates on progress towards completing action steps and accomplishing goals in the Plan will be provided during 911 Advisory Board meetings. More information on GIS goals and associated action steps can be found in the [Statewide NG911 GIS Strategic Plan](#).

Goal/Priority	Action Step	Qtr.	Year
3.6.1 – Staffing	Air #IAm911 spots across Commonwealth media markets to support recruitment and retention	Q4	2023
3.6.3 – 988 Coordination	Participate in regional coordination meetings	Q4	2023
3.1.1 – Legislation	Chapter 53 of Title 35 reauthorized	Q1	2024
3.2.1 – Procurement	Release RFP for NG911 CHE systems	Q1	2024
3.2.2 – 15% Policies	Requirements & Eligibility criteria defined for shared system projects to achieve the LBFC recommendation to use technology to share workload	Q1	2024
3.2.2 – 15% Policies	15% funding policies defined for connectivity outside of the state ESnet	Q1	2024
3.2.4 – Formula	Implement new formula calculation (contingent on legislation reauthorization)	Q1	2024
3.3.1 – NG911 Addition	NG911 State-to-state transfer plan finalized - Delaware	Q1	2024
3.3.1 – NG911 Addition	NG911 State-to-state transfer plan finalized - Maryland	Q1	2024
3.2.2 – 15% Policies	Publish Best Practices for governance, SOPs, and resolving differences in procedures	Q2	2024
3.2.3 – NG911 Roadmap	Publish Initial NG911 Service Enhancement Roadmap	Q2	2024
3.2.3 – NG911 Roadmap	Publish initial multi-year 15% Funding Plan	Q2	2024
3.2.3 – NG911 Roadmap	NG911 Service Enhancement Request Due Date	Q2	2024
3.3.1 – NG911 Addition	Management Information System - Include visibility of planned work to the NG911 system	Q2	2024
3.3.1 – NG911 Addition	MIS - Include ingress network performance reporting	Q2	2024

Goal/Priority	Action Step	Qtr.	Year
3.3.1 – NG911 Addition	MIS - Introduce trend analysis functionality	Q2	2024
3.3.1 – NG911 Addition	MIS - Introduce ad-hoc reporting enhancements	Q2	2024
3.4.1 – GIS Addressing	Develop education and outreach program for addressing authorities	Q2	2024
3.6.1 – Staffing	Publish best practices document for recruitment and retention	Q2	2024
3.6.2 – Mental Health	Publish best practices & available resources	Q2	2024
3.7.1 – Education	Evaluate effectiveness of first round of #IAm911 advertising campaign	Q2	2024
3.7.1 – Education	Launch online site for PSAPs and PEMA to exchange various outreach materials	Q2	2024
3.7.1 – Education	Redesign 911 pages on PEMA website regarding public education of NG911	Q2	2024
3.7.1 – Education	Search for developer to build interactive digital educational tool to demonstrate how 911 works	Q2	2024
3.2.3 – NG911 Roadmap	PSAP Portal – Inventory and Planning Module enhancements are in production	Q3	2024
3.4.3 - GIS Interstate Interoperability	Agree on a state boundary dataset to facilitate alignment with jurisdictions in New York, New Jersey, Delaware, Maryland, West Virginia, and Ohio	Q3	2024
3.4.4 – GIS Standards	PEMA to conduct a statewide inventory of CAD and related PSAP mapping technologies and determine whether their data structure requirements conform to the NENA NG911 GIS Data Model Standard	Q3	2024
3.7.1 – Education	Expand telecommunicator awareness campaign to support employment at PSAPs	Q3	2024
3.1.1 – Legislation	Rescind 4 PA Code Chapters 120 b, c, and d	Q4	2024
3.1.1 – Legislation	Replace 4 PA Code Chapters 120 b, c, and d	Q4	2024
3.2.3 – NG911 Roadmap	Publish NG911 Service Enhancement Roadmap	Q4	2024
3.2.3 – NG911 Roadmap	Publish multi-year 15% Funding Plan	Q4	2024
3.3.1 – NG911 Addition	PRF – Enhancement to allow creation of new shutdown lists based on pre-approved alternates to provide PSAPs greater flexibility during an incident	Q4	2024

Goal/Priority	Action Step	Qtr.	Year
3.3.1 – NG911 Addition	PRF – Enhancement to allow PSAPs to establish a weighted list of alternates	Q4	2024
3.3.1 – NG911 Addition	PRF – Geofencing enabled for alternate routes	Q4	2024
3.3.1 – NG911 Addition	STIR/SHAKEN tokens from OSPs to increase security for SIP call flows	Q4	2024
3.3.1 – NG911 Addition	Integrate NENA standard, PSAP Credentialing Agency to ensure connections are from a known and trusted source	Q4	2024
3.4.1 – GIS Addressing	Publish best practices that promote coordination between local and county addressing stakeholders	Q4	2024
3.4.2 – GIS 3D	Define any changes to the PA NG911 GIS data model for 3D	Q4	2024
3.4.2 – GIS 3D	Complete gap analysis (schema, data, technology, and workflows)	Q4	2024
3.4.2 – GIS 3D	Publish plan and benchmarks to operationalize 3D data	Q4	2024
3.4.2 – GIS 3D	Define imagery strategy to support NG911 & 3D data development and maintenance	Q4	2024
3.5.1 – Cybersecurity	Define a plan and timeline to implement the minimum cybersecurity requirements that were developed by PEMA working with the 911 Advisory Board	Q4	2024
3.5.1 – Cybersecurity	Publish a best practices document that provides best practices & examples to assist Pennsylvania PSAPs with meeting the adopted minimum cybersecurity requirements	Q4	2024
3.6.2 – Mental Health	Evaluate minimum training requirements	Q4	2024
3.2.3 – NG911 Roadmap	NG911 Service Roadmap Process Training	Q1	2025
3.7.1 – Education	Launch interactive digital educational 911 tool	Q1	2025
3.2.3 – NG911 Roadmap	NG911 Service Enhancement Request Due Date	Q2	2025
3.4.3 - GIS Interstate Interoperability	Collaborate with county stakeholders to formalize a policy that supports GIS data governance and boundary change management	Q2	2025
3.5.1 – Cybersecurity	Implement a process to verify compliance with the minimum requirements (PSAP Portal)	Q2	2025

Goal/Priority	Action Step	Qtr.	Year
3.4.4 – GIS Standards	Provide education and outreach on NG911 GIS standards to discuss benefits and promote adoption to enable efficient GIS efforts within the counties	Q3	2025
3.4.4 – GIS Standards	Develop 911 Program policies, in consultation with the 911 Advisory Board, to promote adoption of the NENA NG911 GIS Data Model Standard across various PSAP systems where applicable	Q3	2025
3.2.3 – NG911 Roadmap	Publish NG911 Service Enhancement Roadmap	Q4	2025
3.2.3 – NG911 Roadmap	Publish multi-year 15% Funding Plan	Q4	2025
3.3.1 – NG911 Addition	NG911 State-to-state transfer plan finalized – New Jersey	Q4	2025
3.3.1 – NG911 Addition	NG911 State-to-state transfer plan finalized – West Virginia	Q4	2025
3.3.1 – NG911 Addition	NG911 State-to-state transfer plan finalized - Ohio	Q4	2025
3.6.2 – Mental Health	Evaluate minimum training requirements	Q4	2025
3.2.3 – NG911 Roadmap	NG911 Service Roadmap Process Training	Q1	2026
3.4.1 – GIS Addressing	Define requirements, roles, and responsibilities for addressing in legislation or regulation	Q1	2026
3.4.1 – GIS Addressing	Identify and address existing gaps and inconsistencies in attribute standardization across all fields within required NG911 layers and promote attribute standardization at the local level	Q1	2026
3.4.2 – 3D GIS	Publish best practices and provide training to assist counties with meeting anticipated 3D data requirements	Q1	2026
3.2.3 – NG911 Roadmap	NG911 Service Enhancement Request Due Date	Q2	2026
3.4.1 – GIS Addressing	Continue to develop, in partnership with county & state stakeholders, statewide sub-addressing standards and best practices for GIS data maintenance	Q2	2026
3.4.1 – GIS Addressing	Engage with PEMA, county stakeholders, the United States Postal Service (USPS) and other governmental partners on address validation and related issues	Q3	2026

Goal/Priority	Action Step	Qtr.	Year
3.2.3 – NG911 Roadmap	Publish NG911 Service Enhancement Roadmap	Q4	2026
3.2.3 – NG911 Roadmap	Publish multi-year 15% Funding Plan	Q4	2026
3.3.1 – NG911 Addition	NG911 State-to-state transfer plan finalized – New York	Q4	2026
3.6.2 – Mental Health	Evaluate minimum training requirements	Q4	2026
3.2.3 – NG911 Roadmap	NG911 Service Roadmap Process Training	Q1	2027
3.2.3 – NG911 Roadmap	NG911 Service Enhancement Request Due Date	Q2	2027
3.2.3 – NG911 Roadmap	Publish NG911 Service Enhancement Roadmap	Q4	2027
3.2.3 – NG911 Roadmap	Publish multi-year 15% Funding Plan	Q4	2027
3.6.2 – Mental Health	Evaluate minimum training requirements	Q4	2027
3.2.3 – NG911 Roadmap	NG911 Service Roadmap Process Training	Q1	2028
3.2.3 – NG911 Roadmap	NG911 Service Enhancement Request Due Date	Q2	2028
3.4.3 - GIS Interstate Interoperability	Obtain NG911 GIS data from jurisdictions in neighboring states and compare topology against Pennsylvania PSAPs	Q2	2028
3.2.3 – NG911 Roadmap	Publish NG911 Service Enhancement Roadmap	Q4	2028
3.2.3 – NG911 Roadmap	Publish multi-year 15% Funding Plan	Q4	2028
3.6.2 – Mental Health	Evaluate minimum training requirements	Q4	2028

5 Statewide 911 Plan Supplemental Resources

More information about Pennsylvania's 911 Program can be found in these documents located on the Pennsylvania Emergency Management Agency (PEMA) [website](#):

- **Document:** [Overview of 911 in Pennsylvania](#)
- **Document:** [Impact of Supportive Legislation & Stakeholder Coordination](#)
- **Document:** [Statewide NG911 GIS Strategic Plan](#)