

# PENNSYLVANIA STATEWIDE COMMUNICATION INTEROPERABILITY PLAN



**AUGUST 2019**

Developed with support from the  
Cybersecurity and Infrastructure Security Agency  
Emergency Communications Division  
Department of Homeland Security



## LETTER FROM THE STATEWIDE INTEROPERABILITY COORDINATOR (SWIC)

Greetings,

I am pleased to provide to you the 2019 Pennsylvania Statewide Communication Interoperability Plan (SCIP). This SCIP represents Pennsylvania's commitment to improving emergency communications interoperability and supporting our public safety practitioners throughout the state. In addition, this update meets the requirement of the recently released Fiscal Year 2018 Department of Homeland Security (DHS) grant guidelines.

Representatives from the Pennsylvania State Police, Pennsylvania Emergency Management Agency, Office of Attorney General, Department of Conservation and Natural Resources, as well as Pennsylvania counties collaborated to update the SCIP with actionable and measurable goals and objectives with owners and timelines assigned. These goals and objectives focus on Governance and Technology and are designed to support our state in planning for new technologies and navigating the ever-changing emergency communications ecosystem.

As we continue to enhance interoperability, we must remain dedicated to improving our ability to communicate among disciplines and across jurisdictions. With help from state and local public safety practitioners, we will work to achieve the goals set forth in this SCIP and become a nationwide model for statewide interoperability.

Sincerely,



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## INTRODUCTION



The Pennsylvania Statewide Communications Interoperability Plan (SCIP) is a stakeholder-driven, multi-jurisdictional, and multi-disciplinary strategic plan to enhance interoperable and emergency communications over the next three years. This document contains the following planning components:

- Introduction – Provides the context necessary to understand what the SCIP is and how it was developed.
- Interoperable and Emergency Communications Overview – Provides an overview of Pennsylvania’s current and future emergency communications environment.
- Vision and Mission – Articulates Pennsylvania’s three-year vision and mission for improving emergency communications operability, interoperability, and continuity of communications at all levels of government.
- Goals and Objectives – Outlines the goals and objectives aligned with the vision and mission of the SCIP as they pertain to Governance and Technology.
- Implementation Plan – Describes Pennsylvania’s plan to implement, maintain, and update the SCIP and enable continued evolution of and progress toward Pennsylvania’s interoperability goals.

To address interoperability, a framework was needed to identify and describe challenges and to continue improving interoperable public safety communications. The SAFECOM program of the Department of Homeland Security developed such a framework with its Interoperability Continuum. It is designed to assist public safety agencies and policy makers with planning and implementing interoperability solutions for communications across technologies. Figure 1 depicts the Interoperability Continuum.

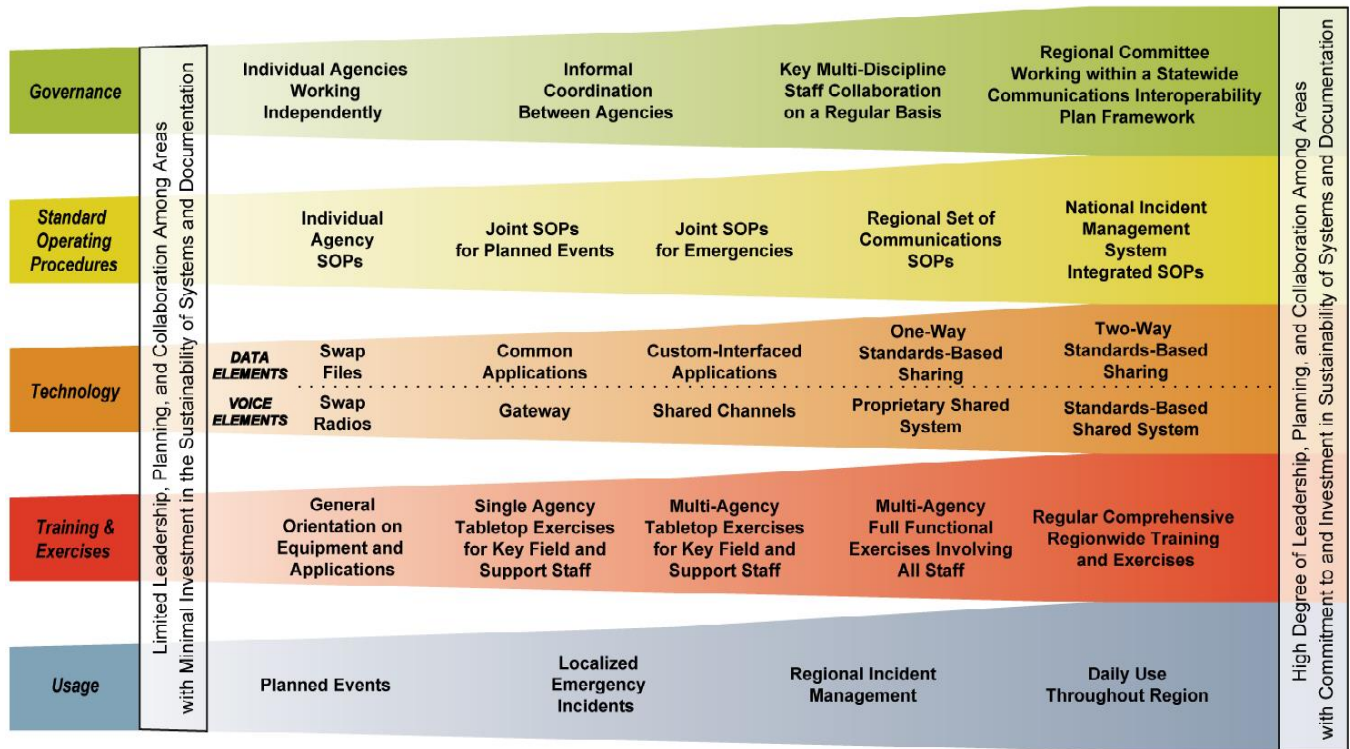


Figure 1: Interoperability Continuum

For a detailed description of the Interoperability Continuum, refer to Appendix B.

## INTEROPERABLE AND EMERGENCY COMMUNICATIONS OVERVIEW

Reliable, timely communications among first responders and between public safety agencies and citizens is critical to effectively carrying out public safety missions.

Traditional voice capabilities, such as land mobile radio (LMR) and landline 911 services, have long been and continue to be critical tools for communications. However, the advancement of internet protocol (IP) based technologies in public safety has increased the type and amount of information responders receive, the tools they communicate with, and the complexity of new and interdependent systems. New technologies increase the need for coordination across public safety disciplines, communications functions, and levels of government to ensure emergency communications capabilities are interoperable, reliable, and secure.

An example of this evolution is the First Responder Network Authority’s (FirstNet) implementation of the Nationwide Public Safety Broadband Network (NPSBN). With this new system, agencies can supplement existing LMR capabilities with expanded voice coverage, increased data speeds, and new mission apps. Its adoption and implementation will require close coordination with 911 administrators, dispatch supervisors, LMR systems managers, and managers of alert and warning systems to ensure interoperability and cybersecurity are not sacrificed as agencies adopt broadband cellular devices for daily operations.

Similarly, the transition of public-safety answering points (PSAPs) to Next Generation 911 (NG911) technology will enhance sharing of critical information in real-time through the use of

multimedia—such as pictures, video, and text—among citizens, PSAP call takers and dispatchers, and first responders. While the benefits of NG911 are tremendous, interfacing systems, along with governance, standard operating procedures, and training, are necessary to realize the expected benefits and ensure the security of emergency information.

## VISION AND MISSION

**Vision:** Effective interoperable communications among all public safety, service, and support agencies in Pennsylvania.

**Mission:** Offer guidance to decision makers at all levels and promote interoperable communications through comprehensive outreach and recommended standards and procedures to drive current and future communications investments.

## GOVERNANCE

Governance of the SCIP is the result of statewide collaboration, as depicted in Figure 2.

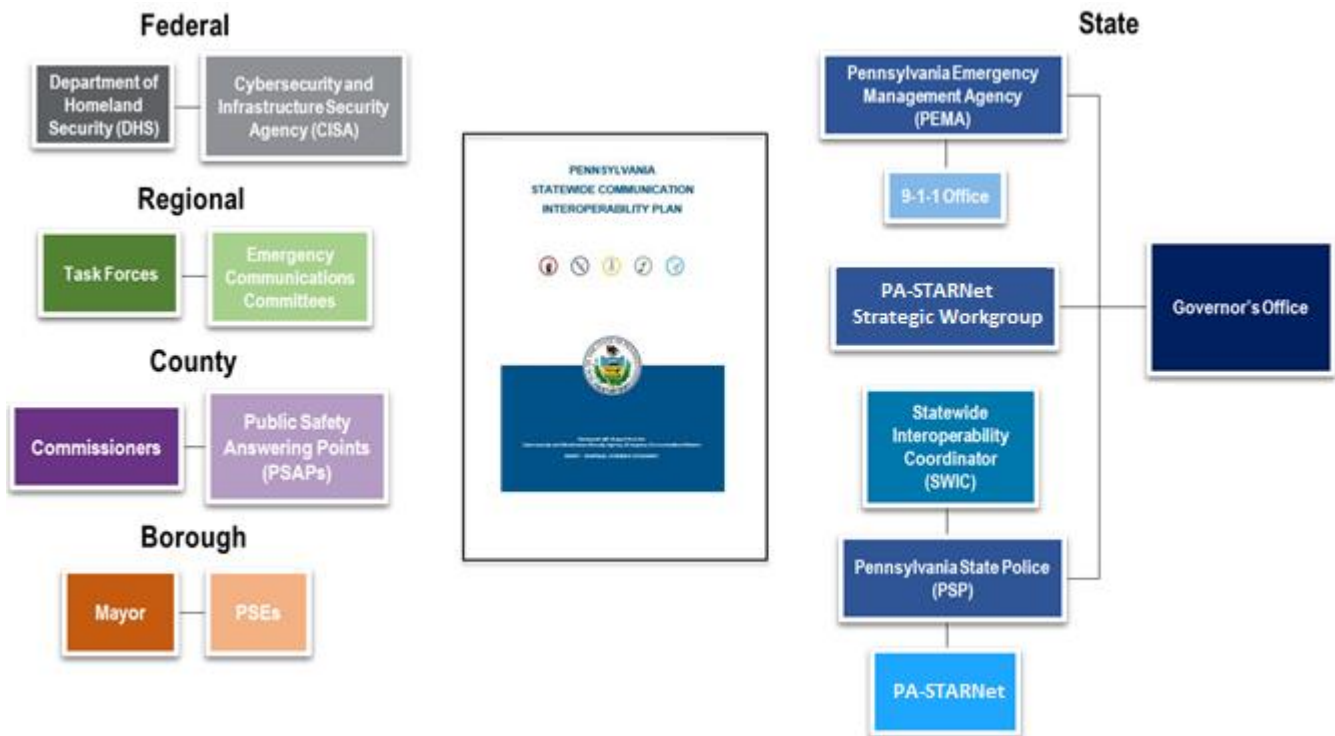


Figure 2: SCIP Collaboration

## PA-STARNet Strategic Workgroup

In [Management Directive 245-15, Pennsylvania Statewide Radio Network](#), the PA-STARNet Strategic Workgroup is established as the advisory body for statewide interoperability in the Commonwealth. In this governing body, senior managers in selected commonwealth agencies are responsible for providing guidance, planning, and strategic implementation recommendations to mitigate the challenges of interoperable communications for public safety and emergency communications.

At the local level, Pennsylvania uses its nine regional task forces to manage and coordinate emergency communications and interoperability issues. Because Pennsylvania is a commonwealth, the responsibility for providing services, including public safety, is delegated to municipal and county jurisdictions. In this environment, most police and fire department communication systems are county-wide in scope, including locally purchased subscriber equipment. As a result, the Commonwealth’s public safety communications environment includes numerous distinct systems under county control.

The establishment of working groups under the SWIC to address interoperability issues will complement the Commonwealth’s system of consensus-driven communications governance. The following working groups have been identified:

- SWIC, Policies and Procedures Working Group
- Technical Working Group
- Public Safety Broadband Working Group
- Cybersecurity Working Group

## Governance: Goals and Objectives

The following table identifies goals and objectives related to Governance:

Governance	
Goals	Objectives
1. Establish working groups under the SWIC.	1.1 Align working groups with interoperability priorities.
	1.1 Assign multi-jurisdictional and multi-disciplinary working group membership.
2. Conduct outreach and education on the roles and responsibility of the working groups.	2.1 Attend meetings and conferences to generate interest and participation in working group activities.

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## TECHNOLOGY

### Land Mobile Radio

The Pennsylvania Statewide Radio Network (PA-STARNet) is the Commonwealth's statewide network for public safety and emergency response communications. PA-STARNet is upgrading to the industry-standard P25 system; this will replace the proprietary OpenSky system. The P25 upgrade is expected to be completed by 2021. The Commonwealth of Pennsylvania has 67 counties across nine regions with unique LMR systems, so there is interest in exploring options to integrate disparate systems during both planned and unplanned events. The new P25 radio system represents an opportunity for counties to reduce their costs as well as significantly improve interoperability. To learn about PA-STARNet shared services opportunities, see Appendix C.

### Mobile Broadband

Pennsylvania accepted the FirstNet plan for AT&T to build out the NPSBN Radio Access Network (RAN) using the industry-standard technology for mobile broadband: Long Term Evolution (LTE). Subscribing to AT&T/FirstNet services is not mandated for individual jurisdictions or public safety agencies.

Rural central Pennsylvania has been identified as the most challenging area to implement the new network. As a result, AT&T, the selected FirstNet vendor, committed to constructing 25 new cell sites in addition to expanding access to remote areas.

In addition to the AT&T LTE network that provides service through RAN, AT&T/FirstNet provides access to a fleet of deployable mobile broadband systems. These deployable systems are made available to subscribing agencies, to support planned and unplanned events. They provide additional LTE coverage and capacity to support public safety users.

The FirstNet NPSBN built by AT&T has a separate LTE core network, dedicated to public safety. The RAN uses both AT&T's commercial spectrum, and the Band 14 spectrum licensed to FirstNet. Public safety users have priority and preemption over commercial users, on AT&T's LTE network, regardless of the spectrum that provides their network access.

### Next Generation 911

Working with county partners, Pennsylvania Emergency Management Agency (PEMA) coordinates and maintains Pennsylvania's E-911 telecommunication system. In 2015, Pennsylvania established a 911 Advisory Board to advise PEMA with technical, funding, and operations subcommittees. The 911 Advisory Board meets quarterly with representation from PEMA, the Pennsylvania General Assembly, county officials, and various public safety and



service entities. With the consultation of the 911 Advisory board, PEMA has put forth strategic plans to migrate all of Pennsylvania's 69 PSAPs to NG911 in the near future.<sup>1</sup>

To facilitate the implementation of NG911 in Pennsylvania, PEMA intends to procure a statewide Emergency Services Internet Protocol Network (ESInet) and Next Generation Core Services (NGCS) system as a service. The ESInet and NGCS system will include all systems, components, and functions necessary to deliver all 911 calls in Pennsylvania from the demarcation points of originating service providers to the designated terminating network point of interconnection (POI) using IP based infrastructure.

The initial focus of the NG911 solution is to upgrade Pennsylvania's dated 911 infrastructure for 911 call delivery. After 911 call delivery is established using the statewide ESInet, the focus can shift to incorporating additional statewide and regional 911 related systems and applications onto the statewide system where possible.

## Alerts and Warnings

Pennsylvania has several Alerts and Warnings tools available in support of federal, state, county, and municipal level notifications. PEMA owns the satellite-based Emergency Management Network (EMnet) that can push notifications out to counties, as well as television, radio stations, and consumer wireless devices across the state. The Pennsylvania State Police (PSP) primarily use the Emergency Alert System (EAS) to broadcast Amber and other alerts over commercial wireless broadband networks. Municipal authorities use their own discretion to disseminate alerts via the EAS/EMnet system as events arise.

As directed by Title 35, PEMA shall maintain an integrated communications capability designed to provide to all areas and counties weather advisories, river forecasts, warnings, and direction and control of all emergency preparedness functions within Pennsylvania. PEMA shall coordinate the commonwealth's emergency communication systems, sharing of information and weather emergency notification among the National Weather Service, contiguous state emergency management offices, municipal coordinators of emergency management, the Pennsylvania State Police, municipal police departments, private relief associations and other appropriate organizations.

In addition, PEMA shall establish, equip, and staff a commonwealth and area emergency operations center with a consolidated statewide system of warnings and provide a system of disaster communications integrated with those of federal, commonwealth and municipal agencies involved in disaster emergency operations.

PEMA has the authority and responsibility to provide appropriate commonwealth and municipal agencies, public officials, and the general public with precautionary notices, watches, and warnings relating to actual and potential disasters; and, to provide a flow of official information and instructions to the general public through all means available before, during, and after an emergency.

<sup>1</sup> The 2019 Pennsylvania Statewide 911 Plan is available here:

[https://www.pema.pa.gov/planningandpreparedness/Documents/911%20plans%20guides%20and%20templates/Commonwealth\\_of\\_Pennsylvania\\_%20Statewide\\_911\\_Plan.pdf](https://www.pema.pa.gov/planningandpreparedness/Documents/911%20plans%20guides%20and%20templates/Commonwealth_of_Pennsylvania_%20Statewide_911_Plan.pdf)

## Technology: Goals and Objectives

The following table outlines goals and objectives related to Technology:

Technology	
Goals	Objectives
3. Develop a P25 radio, talkgroup, and system ID scheme.	3.1 Review existing national, state, and local ID schemes.
	3.2 Investigate applicability of NPSTC interoperability talkgroups.
	3.3 Develop a plan that aligns with federal standards.
	3.4 Integrate new P25 ID scheme.
4. Develop an encryption scheme.	4.1 Review existing national, state, and local key management schemes.
	4.2 Evaluate the need to create statewide key management.
	4.3 Develop a plan that aligns with federal standards.
	4.4 Adopt and implement the key management scheme.
5. Develop a statewide interoperability ISSI strategy.	5.1 Conduct an inventory of existing P25 systems and other compatible systems.
	5.2 Develop an implementation plan, to include technical data, talk-groups shared, and any data required to operate an ISSI network.
	5.3 Identify methods for integrating non-P25 systems.
6. Develop a template for radio interoperability.	6.1 Review existing standard operating procedures (SOPs) (i.e. interoperability, programming, encryption).
	6.2 Establish SOPs.
	6.3 Develop and implement training on SOPs.

Technology	
Goals	Objectives
7. Develop Tactical Interoperable Communications Plan (TICP) and Field Operations Guide (FOG).	7.1 Request and take advantage of federal Technical Assistance (TA).
	7.2 Develop a TICP.
	7.3 Develop a FOG.
8. Develop a public safety broadband applications capability plan.	8.1 Create a needs assessment tool for PSEs to use.
	8.2 Identify emerging capabilities.
	8.3 Develop adoption roadmaps to close gaps.
	8.4 Educate and train stakeholders and decision makers.
9. Integrate alerts and warnings capabilities with other elements of the emergency communications ecosystem.	9.1 Identify alerts and warning capabilities and investigate the utility of integrating them into other systems, such as LMR, LTE, and 911/NG911.
	9.2 Recommend to stakeholders opportunities for integrating alerts and warnings in their systems.
10. Assess and mitigate cybersecurity threats to emergency communications systems.	10.1 Request and take advantage of federal Technical Assistance (TA).
	10.2 Align with cyber security industry best practices.
11. Support the development of statewide and regional ESInets for interoperability among public safety organizations.	11.1 Promote the development and adoption of statewide and regional ESInets.
	11.2 Identify high-value opportunities for interoperable communications among ESInets, LMR, and broadband wireless.

## IMPLEMENTATION PLAN

The SWIC coordinates efforts to implement the SCIP goals and objectives. These SCIP goals and objectives are intended to support the dissemination of best practices across the Commonwealth and can be amended as relevant stakeholders see fit. Additionally, the SCIP will be reviewed and updated annually, if needed, to track each year's progress and to ensure that it fulfills current and future grant funding requirements. The Emergency Communications Division at the Department of Homeland Security has a catalog of Technical Assistance service offerings available to assist in implementing the SCIP. Requests for Technical Assistance are coordinated through the SWIC.

Goals	Objectives	Owners	Projected Completion Date
1. Establish working groups under the SWIC.	1.1 Align working groups with interoperability priorities.	SWIC	May 2020
	1.2 Assign multi-jurisdictional and multi-disciplinary working group membership.	SWIC	
2. Conduct outreach and education on the roles and responsibilities of the working groups.	2.1 Attend meetings and conferences to generate interest and participation in working group meetings.	SWIC, Working Group Members	On-going
3. Develop a P25 radio, talk group, and system ID scheme.	3.1 Review existing national, state, and local ID schemes.	Technical Working Group	January 2021
	3.2 Investigate applicability of NPSTC interoperability talk groups.	Technical Working Group	
	3.3 Develop a plan that aligns with federal standards.	Technical Working Group	
	3.4 Integrate new P25 ID scheme.	Technical Working Group	
4. Develop an encryption scheme.	4.1 Review existing national, state, and local key management schemes.	Technical Working Group	January 2021
	4.2 Evaluate the need to create statewide key management.	Technical Working Group	

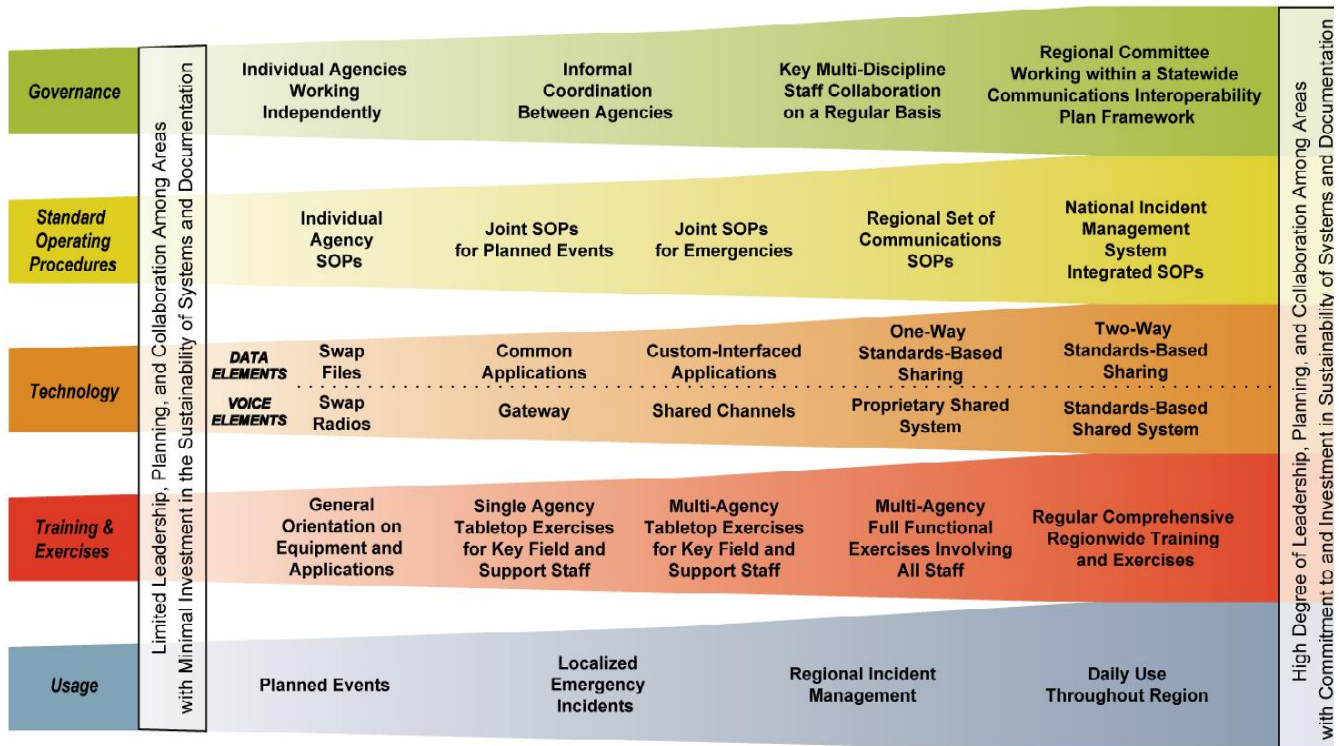
Goals	Objectives	Owners	Projected Completion Date
	4.3 Develop a plan that aligns with federal standards.	Technical Working Group	
	4.4 Adopt and implement the key management scheme.	Technical Working Group	
5. Develop a statewide interoperability ISSI strategy.	5.1 Conduct an inventory of existing P25 systems and other compatible systems.	Technical Working Group	January 2022, on-going
	5.2 Develop an implementation plan, to include technical data, talk-groups shared, and any data required to operate an ISSI network.	Technical Working Group	
	5.3 Identify methods for integrating non-P25 systems.	Technical Working Group	
6. Develop a template for radio interoperability.	6.1 Review existing standard operating procedures (SOPs) (i.e. interoperability, programming, encryption).	SWIC, Policies and Procedures Working Group	December 2020, on-going
	6.2 Establish SOPs.	SWIC, Policies and Procedures Working Group	
	6.3 Develop and implement training on SOPs.	Working Group Members	
7. Develop Tactical Interoperable Communications Plan (TICP) and Field Operations Guide (FOG).	7.1 Request and take advantage of federal Technical Assistance (TA).	SWIC	September 2020
	7.2 Develop a TICP.	Working Group Members	
	7.3 Develop a FOG.	Working Group Members	

Goals	Objectives	Owners	Projected Completion Date
8. Develop a public safety broadband applications capability plan.	8.1 Create a needs assessment tool for PSEs to use.	Public Safety Broadband Working Group	December 2019, on-going
	8.2 Identify emerging capabilities.	Public Safety Broadband Working Group	
	8.3 Develop adoption roadmaps to close gaps.	Public Safety Broadband Working Group	
	8.4 Educate and train stakeholders and decision makers.	Public Safety Broadband Working Group	
9. Integrate alerts and warnings capabilities with other elements of the emergency communications ecosystem.	9.1 Identify alerts and warning capabilities and investigate the utility of integrating them into other systems, such as LMR, LTE, and 911/NG911.	Technical, Policies and Procedures, and Public Safety Broadband Working Groups	On-going
	9.2 Recommend to stakeholders opportunities for integrating alerts and warnings in their systems.	Technical, Policies and Procedures, and Public Safety Broadband Working Groups	
10. Assess and mitigate cybersecurity threats to emergency communications systems.	10.1 Request and take advantage of federal Technical Assistance (TA).	Cybersecurity Working Group	September 2020, on-going
	10.2 Align with cyber security industry best practices.	Cybersecurity Working Group	
11. Support the development of statewide and regional ESInets for interoperability among public safety organizations.	11.1 Promote the development and adoption of statewide and regional ESInets.	Working Group Members	September 2020, on-going
	11.2 Identify high-value opportunities for interoperable communications among ESInets, LMR, and broadband wireless.	Working Group Members	

## APPENDIX A: LIST OF ACRONYMS

CAD	Computer Aided Dispatch
CISA	Cybersecurity and Infrastructure Security Agency
DHS	United States Department of Homeland Security
ECD	Emergency Communications Division
EAS	Emergency Alert System
EMnet	Emergency Management Network
FOG	Field Operations Guide
FirstNet	First Responder Network Authority
IP	Internet Protocol
ISSI	Inter-RF Subsystem Interface
LMR	Land Mobile Radio
LTE	Long-Term Evolution
NG911	Next Generation 911
NPSBN	National Public Safety Broadband Network
NPSTC	National Public Safety Telecommunications Council
P25	Project 25
PA-STARNet	Pennsylvania Statewide Radio Network
PEMA	Pennsylvania Emergency Management Agency
PSAP	Public Safety Answering Point
PSP	Pennsylvania State Police
RAN	Radio Access Network
SCIP	Statewide Communication Interoperability Plan
SOP	Standard Operating Procedure
SWIC	Statewide Interoperability Coordinator
TA	Technical Assistance
TICP	Tactical Interoperable Communications Plan

## APPENDIX B: SAFECOM INTEROPERABILITY CONTINUUM



**Governance:** A common governing structure for solving interoperability issues will improve the policies, processes, and procedures of any major project by enhancing communication, coordination, and cooperation, establishing guidelines and principles, and reducing any internal jurisdictional conflicts. This group should consist of local, tribal, state, and federal entities as well as representatives from all pertinent public safety disciplines within the identified region. A formal governance structure is critical to the success of interoperability planning.

**Individual Agencies Working Independently** - A lack of coordination among responding organizations.

**Informal Coordination Between Agencies** - Loose line level or agency agreements that provide minimal incident interoperability.

**Key Multidiscipline Staff Collaboration on a Regular Basis** - A number of agencies and disciplines working together in a local area to promote interoperability.

**Regional Committee Working with a Statewide Interoperability Committee** - Multidisciplinary agencies working together across a region pursuant to formal written agreements as defined within the larger scope of a state plan. Such an arrangement promotes optimal interoperability.

**Standard operating procedures (SOPs):** Formal written guidelines or instructions for incident response. SOPs typically have both operational and technical components.

**Individual Agency SOPs** - Uncoordinated procedures across agencies that can hinder effective multidiscipline/multiagency response.

**Joint SOPs for Planned Events** - The development of SOPs for planned events. This typically represents the first phase as agencies begin to work together to develop interoperability.



**Joint SOPs for Emergencies** - SOPs for emergency level response that are developed as agencies continue to promote interoperability.

**Regional Set of Communications SOPs** - Regionwide communications SOPs for multiagency/multidiscipline/multihazard responses; an integral step towards optimal interoperability.

**National Incident Management System Integrated SOPs** - Regional SOPs molded to conform to the elements of the National Incident Management System.

**Technology:** Although technology is a critical tool for improving interoperability, it is not the sole driver of an optimal solution. Success in each of the other elements is essential to its proper use and implementation, and should drive technology procurement. Technology is highly dependent upon existing infrastructure within a region. Multiple technology solutions may be required to support large events.

**Swap Radios** - Swapping radios, or maintaining a cache of standby radios, is an age-old solution that is time-consuming, management-intensive, and may only provide limited results due to channel availability.

**Gateway** - Gateways retransmit across multiple frequency bands providing an interim interoperability solution as agencies move toward shared systems. However, gateways are inefficient in that they require twice as much spectrum because each participating agency must use at least one channel in each band per common talk path, and because they are tailored for communications within the geographic coverage area common to all participating systems.

**Shared Channels** - Interoperability is promoted when agencies share a common frequency band, air interface (analog or digital), and are able to agree on common channels. However, the general frequency congestion that exists across the United States can place severe restrictions on the number of independent interoperability talk paths available in some bands.

**Proprietary Shared Systems and Standards-based Shared Systems** - Regional shared systems are the optimal solution to interoperability. While proprietary systems limit the user's choice of product with regard to manufacturer and competitive procurement, standards-based shared systems promote competitive procurement and a wide selection of products to meet specific user needs. With proper planning of the talk group architecture, interoperability is provided as a byproduct of system design, creating an optimal technology solution.

**Evolving Technology Opportunities** - In recent years, two important technologies for enhanced interoperability have emerged. One is the standards-based P25 ISSI, which allows network-level interconnection between P25 systems. This facilitates communication between adjacent jurisdictions (e.g. county-to-county) and overlapping jurisdictions (e.g. county-to-state). It also facilitates system-sharing, wherein public safety users can obtain radio access through a neighboring or overlapping system, while communicating back to their home group.

A second technology that is enabling enhanced interoperability is the multi-band radio. Unlike swapping radios, this technology enables users to operate their radios on adjacent or overlapping systems which may operate in different frequency bands.

In addition to Land Mobile Radio (LMR), broadband networks such as the Nationwide Public Safety Broadband Network (NPSBN), implemented by AT&T, provide PTT applications and services that enable nationwide interoperability. These solutions also support LMR-LTE interconnection, enabling PTT interoperability between users on LMR systems, and users that

obtain their network connection through a mobile broadband LTE network. During the planning period covered by this SCIP, LTE-based services will augment LMR systems and enhance interoperability but will not replace LMR as the primary mission critical voice capability.

Finally, a new technology is emerging that further enhances interoperability between LMR and LTE-based solutions – that is the multi-technology radio. These devices support network access via LMR and LTE; they provide a common user experience independent of the network access technology. In the same sense that multi-band radios facilitate interoperability across LMR systems operating on different frequency bands, the multi-technology radio facilitates interoperability across LMR and LTE-based solutions.

### **Training & Exercises:**

**General Orientation on Equipment** - Agencies provide initial orientation to their users with regard to their particular equipment. Multi-jurisdiction/multiagency operations are often an afterthought to this training, if provided at all.

**Single Agency Tabletop for Key Field and Support Staff** - Structured tabletop exercises promote planning and identify response gaps. However, single agency activities do not promote interoperability across disciplines and jurisdictions. Additionally, management and supervisory training is critical to promoting routine use of interoperability mechanisms.

**Multiagency Tabletop for Key Field and Support Staff** - As agencies and disciplines begin working together to develop exercises and provide field training, workable interoperability solutions emerge.

**Multiagency Full Functional Exercises Involving All Staff** - Once multiagency/multidiscipline plans are developed and practiced at the management and supervisory level, it is then critical that all staff who would eventually be involved in actual implementation receive training and participate in exercises.

**Regular Comprehensive Regional Training and Exercises** - Optimal interoperability involves equipment familiarization and an introduction to regional/state interoperability at time of hire (or in an academy setting). Success will be assured by regular, comprehensive, and realistic exercises that address potential problems in the region and involve the participation of all personnel.

**Usage:** Refers to how often interoperable communications technologies are used.

**Planned Events** - Events for which the date and time are known. Examples include athletic events and large conferences/ conventions that involve multiple responding agencies.

**Localized Emergency Incidents** - Emergency events that involve multiple intra-jurisdictional responding agencies. A vehicle collision on an interstate highway is an example of this type of incident.

**Regional Incident Management** - Routine coordination of responses across a region that include automatic aid fire response as well as response to natural and man-made disasters.

**Daily Use Throughout Region** - Interoperability systems that are used every day for managing routine as well as emergency incidents. In this optimal solution, users are familiar with the operation of the system and routinely work in concert with one another.

## **APPENDIX C: PA-STARNet SHARED SERVICES OPPORTUNITY**

The Commonwealth's new P25 radio system (Phase II TDMA) represents an opportunity for counties to reduce costs as well as significantly improve interoperability.

### Solution Highlights:

- Greater than 95% mobile coverage for all 67 counties
- Standards-based solution, fully APCO P25 compliant
- Geographically separated redundant M3 zone core
- Secure AES FIPS 140-2 encrypted communications
- Link Layer Authentication supports enhanced radio security
- All frequency bands supported
- Enhanced capacity and redundancy

### County Partnerships with PA-STARNet Advantages:

- Reduced capital and operational costs
- Greater competitive advantage in securing grant dollars
- Interoperability across federal, state, and local agencies
- Ability to maximize current and future investments at the state and local levels
- Use of existing robust microwave backhaul network
- Dedicated technical resources and maintenance team
- Spectrum efficiency
- Proven technology
- Autonomous operation

Note: Partner provides additional frequency/channel capacity.

### Partnership Types:

- Shared Master Site
- Inter-RF Subsystem Interface (ISSI) connection to PA-STARNet
- Inter-Zone connection with existing ASTRO 25 systems

### Contact:

Statewide Radio Network Division  
Bureau of Communications & Information Services  
Pennsylvania State Police  
8001 Bretz Drive, Harrisburg, PA 17112  
717-787-8596

## **APPENDIX D: TACTICAL INTEROPERABLE COMMUNICATIONS PLAN (TICP)**

To be incorporated at a later date.

## **APPENDIX E: FIELD OPERATIONS GUIDE (FOG)**

To be incorporated at a later date.