



# State of Wyoming

## Next Generation 9-1-1 State Plan

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# 1. EXECUTIVE SUMMARY

This state plan provides the baseline strategies, goals, and initiatives to continue moving the planning and implementation of Next Generation 9-1-1 (NG9-1-1) forward for the benefit of the citizens of Wyoming.

Strategic plans are considered mid- to long-range planning documents that normally cover a period of multiple years. The development of a strategic plan includes identifying and evaluating the background information, status of the situation, a vision of the future, and then the development of a roadmap of how to get to that desired future state.

A strategic plan is routinely reviewed on an annual or semi-annual basis to evaluate whether changes to the plan are required. As such, the strategic plan is a living document that will typically change and evolve over time as the long-term strategies are implemented.

## Overall Approach

There are significant improvements in public safety effectiveness that can be achieved through the implementation of NG9-1-1. Those efficiency improvements should not only reduce response times, but they will also ultimately save lives. This document provides the overall path to pursue development of a comprehensive plan.

While that planning is critical to a successful NG9-1-1 implementation, it is only one facet of successful implementation. Leadership must execute the plan with some level of flexibility because this plan will undoubtedly be modified as the implementation progresses.

Also, because the implementation process will take place over several years, there must be a communication plan. Communicating on a regular basis with the NG9-1-1 stakeholders is necessary to maintain momentum and stakeholder commitment. Without both of those, the success of the overall project will be jeopardized.

## Consumer Demand for NG9-1-1

In response to advances in technology and consumer demand, traditional analog 9-1-1 service has had to commence a shift over to NG9-1-1. NG9-1-1 will create a faster, more resilient system that allows voice, photos, videos, and text messages to flow seamlessly from the public to the 9-1-1 network. Furthermore, those photos, videos and text messages can also be shared with responders to increase their situational awareness.

NG9-1-1 will improve the ability of the Public Safety Answering Point (PSAP) to manage call overload and downtime during disasters. It also allows the transferring of 9-1-1 calls and proper jurisdictional responses based on the exact location of the caller.

## Strategic Plan Approach

This NG9-1-1 Strategic Plan (the Plan) articulates the State of Wyoming's vision, goals, and actionable objectives to implement NG9-1-1. It aligns with the guiding principles, as well as existing and planned resources. The intent of this Plan is to guide operational, technical, resource, funding, and legislative decisions based on identified needs for advancing NG9-1-1 capabilities and services. From an overall perspective, it will provide guidance for the establishment and implementation of NG9-1-1 throughout the State.

### **Overview and Background of Wyoming 9-1-1**

In 2020, over 285,349 9-1-1 calls were placed in Wyoming. All areas of the state are served by 9-1-1 or E9-1-1, with 16 counties being able to receive text-to 9-1-1.

Substantially all control over 9-1-1 operations rests at the local or county level. As the transition to NG9-1-1 moves forward, the State will be responsible for overall NG9-1-1 coordination, however, control will be retained locally. To reduce the potential for inefficiencies, certain enhancements to overall governance will be required, because 9-1-1 is handled differently from city-to-city and county-to-county.

Local governments maintain all PSAP equipment and software. It is widely believed that the majority of these assets are at the end of their useful lives. Given that, there will be the need to inventory existing infrastructure and equipment to develop a plan for replacement.

### **Motivation for Development of this Strategic Plan**

Stakeholders met in Casper, Wyoming in late 2019 to discuss 9-1-1 and the incorporation of new technologies that included the migration to an Internet Protocol (IP)-enabled emergency network and the adoption and operation of NG 9-1-1 services. The stakeholders represented local communities across the state of Wyoming including public safety answering point (PSAP) managers, IT directors, county emergency managers, and county commissioners. The motivating factor that garnered strong attention from the group was the discussion of NG9-1-1 and the \$109 million in federal grant funds that could not be obtained to support jurisdictions in building NG9-1-1 technologies for their local communities.

The 9-1-1 Grant Program authorized by the Enhance 9-1-1 Act released funding that could have been used for the implementation and operation of 9-1-1 services, E9-1-1 services, migration to an IP-enabled emergency network, and adoption and operation of NG 9-1-1 services and applications. Grants were awarded to 33 states and territories in amounts ranging from \$200,000 to \$5.4 million. Wyoming did not qualify for the grants due to four factors. Grant applicants were required to:

- Have a designated 9-1-1 Coordinator
- Have an established governance board for NG9-1-1
- Provide a state 9-1-1 plan and project budget
- Certify that funds designated for 9-1-1 systems are not used for other purposes

The gathering of stakeholders was the first major action to make sure that Wyoming communities would not miss future opportunities for similar NG9-1-1 grant funding. The resulting actions have addressed most of the identified deficiencies:

- Stakeholders worked closely together to develop legislation for a 9-1-1 Planning Coordinator, and a designated 9-1-1 Coordinator has been installed.
- The Wyoming NG9-1-1 Plan is the result of the workgroups that were established in 2020 and were supported by the Wyoming 9-1-1 Coordinator and Planning Coordinator. This statewide plan will serve as the backbone for projects and priorities that the grant funds could be used for. A NG9-1-1 project implementation budget will be developed.
- Wyoming's collection and reporting of 9-1-1 funds are statutorily the responsibility of the local government. The disbursement of those costs is also controlled by the local jurisdictions as authorized by Wyoming State Statute 16-9-105. As a result, a consensus will need to be developed regarding the levy and collection of cell phone user fees and an affirmation that cell phone service fees would not be used for anything other than their designated purpose.

### **Current 9-1-1 Environment**

2019 is the latest year for which the Federal Communications Commission (FCC) has information available. The 29 primary and 6 secondary PSAPs in Wyoming answered 285,349 9-1-1 calls. As of July 1, 2020, Wyoming PSAPs were staffed by 342 full-time and 29 part-time dispatchers.

It is generally believed that the majority of the 9-1-1 system equipment is at the end of its useful life. Given that, there will be the need to inventory existing infrastructure and equipment to develop a plan for replacement. While there has been discussion about converting from the legacy network and moving onto a statewide Emergency Services IP Network (ESInet) with redundancy, there has been no investigation or estimation of the costs of doing so.

### **Current Governance**

As stated above, substantially all control over 9-1-1 operations rests at the local or county level. On March 25, 2022, Governor Mark Gordon signed SF0041 which amended the duties of the Public Safety Communication Commission (PSCC) as the governance board for NG911.

### **Current Funding Mechanisms**

The primary funding for the implementation and maintenance of the Wyoming NG9-1-1 system is expected to come from two (2) primary sources; the collection of 9-1-1 surcharge fees on telephone service, and federal grants. Until such time as the annual surcharge revenues and legacy 9-1-1 system spending are summarized and the costs of NG9-1-1 implementation and operating costs are estimated, it is impossible to determine how much additional funding will have to come from increased 9-1-1 surcharges, the Wyoming General Fund, or other sources.

### **Future Environment & State NG9-1-1 Vision**

The future 9-1-1 environment in Wyoming will look much different than the current one. The Wyoming NG9-1-1 system is envisioned to utilize evolving technology to enable all PSAPs to receive, process, and dispatch 9-1-1 requests for emergency services



effectively and efficiently to meet the needs of the citizens, public safety, and the service providers. The NG9-1-1 system will enable among other things:

- Transfer of 9-1-1 calls between geographically dispersed PSAPs, including across state lines with data capabilities
- Maximized public capital and operating cost savings for emergency communication services
- Promotion of increased coordination and partnerships within the emergency communication services community despite jurisdiction boundaries

### **Infrastructure, Equipment & Technology**

Wyoming PSAPs will achieve NG9-1-1 through a phased approach, including the development of local and regional intranets capable of supporting an IP-Based 9-1-1 system; the development of public and/or private networks capable of transferring IP data between and among local networks; the development of appropriate interlocal agreements and supporting legislation; the development and maintenance of seamless, statewide GIS data that meets national data standards; the technology to interconnect multiple networks seamlessly; and the replacement of PSAP Customer Premises Equipment (CPE) with equipment capable of receiving and processing IP data, resulting in a statewide interconnected and interoperable system of local, regional, and national emergency services networks. The key system components required for an effective NG9-1-1 system in Wyoming will include Originating Service Providers (OSPs), PSAPs, GIS systems, and radio networks.

### **GIS**

Geographic Information System (GIS) technology is the cornerstone of a NG9-1-1 system. GIS data produced at the local level forms the foundation upon which emergency call processing and call routing are successfully executed within Emergency Call Centers (ECC). Numerous aspects of the NG9-1-1 GIS ecosystem need to be planned, implemented, and managed in synchronicity to ensure program success. The data ecosystem begins with local data creation and maintenance, and migrates to standards and regulations development and implementation, outreach and training, statewide GIS database aggregation and ongoing maintenance, implementation planning and support for spatial data components, and long-term financial planning.

The state, counties, local jurisdictions and their PSAPs will need to work together to conduct a gap analysis to identify incomplete and/or missing data, which can also gauge the relative accuracy of existing GIS data throughout the state required for fully functional NG9-1-1 call routing. Finally, best practices related to the standardization and synchronization of GIS road centerlines, site structure/address points, and other data will be employed. This synchronization process will improve the accuracy of the locally sourced GIS, Master Street Address Guide (MSAG) and Automatic Location Identification (ALI) data as well as aiding in the accuracy and preparation of the data for NG9-1-1.

### **Operations, Staff & Training**

Applicable standards and best practices will be adopted as the most effective way to ensure successful NG9-1-1 implementation and excellent PSAP performance. Specific standards and best practices for Wyoming's NG9-1-1 system will be determined at a later date.

Because control over 9-1-1 is at the local level, 9-1-1 is handled differently from county-to-county and city-to-city. There is mandatory statewide training for dispatchers, but there is a lack of standardization between PSAPs/dispatch centers. Given this situation, there will need to be a comprehensive training program in connection with the implementation of the NG9-1-1 system.

### **State of Wyoming 9-1-1 Plan Objectives**

During 2019 & 2020, several planning sessions took place whereby a set of Goals and Objectives for the transition to NG9-1-1 were determined. Most of these Goals and Objectives have been in development for over a year; however, various internal and external factors have resulted in minimal progress being made on them. It is expected that the addition of the Statewide 9-1-1 Coordinator and establishment of the previously mentioned working groups will allow for progress to be made in their implementation.

- Goal 1: Ensure NG9-1-1 capabilities are accessible statewide
- Goal 2: Develop a conceptual network design
- Goal 3: Develop an outreach and education plan
- Goal 4: Apply for 9-1-1 Grant Program funds
- Goal 5: Utilize survey(s) to gather stakeholder input
- Goal 6: Identify technology standards
- Goal 7: Update the membership of the Public Safety Communications Commission (PSCC) to include 9-1-1 representation
- Goal 8: Conduct an inventory of primary PSAPs and back-up centers throughout Wyoming
- Goal 9: Formally establish Working Groups: 1) Outreach and Education; 2) Technology; 3) Strategic Planning; 4) Governance; and 5) GIS
- Goal 10: Identify sustainable funding, future needs, and costs to upgrade to NG9-1-1
- Goal 11: Establish statewide GIS standards

### **Plan Maintenance & Progress Tracking**

The purpose of this Plan is to establish a vision for statewide implementation of NG9-1-1 services. The Plan will provide directives with high-level goals and concise, specific, and measurable objectives. As goals and objectives are achieved, successes will also be documented.

The transition timeline to NG9-1-1 must include all aspects of the vision as outlined in this document. As expected, timing is highly dependent on NG9-1-1 standards maturation, the legislative process, and the available resources including both people and budget.



Because this document serves as a strategic planning guide, its implementation will be a dynamic and evolving process. As a result, the Plan is a living document that is intended to be updated periodically as more is learned in execution of this Plan.

## **2. INTRODUCTION**

This section will provide a brief history and background of Wyoming's 9-1-1 system and an introduction to the 9-1-1 Plan and its purpose.

### **2.1 National Overview of the History and Background of 9-1-1**

The concept of a nationwide emergency telephone number was first adopted in Great Britain in 1937. In the United States in 1967, President Johnson's Commission on Law Enforcement and Administration of Criminal Justice recommended a nationally uniform three-digit emergency telephone number. In November of that year, the Federal Communications Commission (FCC) met with the American Telephone and Telegraph Company (AT&T) and shortly thereafter AT&T announced it had reserved the numbers 9-1-1 for emergency use nationwide.

The nation's first 9-1-1 system was implemented by the Alabama Telephone Company in Haleyville, Alabama. On February 16, 1968, Alabama Speaker of the House, Rankin Fite, made the first 9-1-1 call from Haleyville City Hall. Congressman Tom Bevill answered the call on a red telephone located in the police department.

When 9-1-1 service was first introduced, 9-1-1 calls were sent to a single destination based on the caller's telephone exchange. Since there was little or no correlation between a telephone exchange boundary and the emergency responder's jurisdiction, a 9-1-1 call could end up at a PSAP that did not serve the caller's location. This early 9-1-1 service, now known as Basic 9-1-1, did not provide any telephone number or location information with the call. It was a voice service only; the caller had to provide his or her location and call back information.

Significant advancement in 9-1-1 technology occurred with the introduction of E9-1-1 in the 1980's. This level of service enabled a 9-1-1 call to be selectively routed to the PSAP serving the caller's location and delivered that call with Automatic Number Identification (ANI) and Automatic Location Identification (ALI). Other features, such as selective transfer, further streamlined the call handling process.

The pace of change in telecommunications technology continues to increase rapidly. Voice over Internet Protocol (VoIP), text messaging, and picture messaging are being enthusiastically adopted by consumers for their everyday communications – and these same consumers expect to be able to use these technologies to communicate with 9-1-1.

### **2.2 Overview and Background of Wyoming 9-1-1**

State-level oversight of the 9-1-1 system in Wyoming is the responsibility of the local government at the county level.

Responsibility for 9-1-1 is at the county level. As such, there is currently minimal guidance that can be provided on a statewide basis. On March 8, 2019, Governor Mark Gordon signed House Bill 161, which assigned the 9-1-1 Coordinator to be located within the Wyoming Department of Transportation (WYDOT). On May 10, 2019,

Governor Gordon, designated The State 9-1-1 Coordinator shall be a qualified elector of the state and whose duties may be removed by the Governor. The coordinator is responsible for coordinating with 9-1-1 local and state stakeholders to develop a statewide 9-1-1 plan and ensuring compliance with federal grant regulations.

In 2019, Wyoming PSAPs answered 285,349 9-1-1 calls. As of July 1, 2020, Wyoming had 29 primary and five secondary PSAPs, staffed by 342 full-time and 29 part-time dispatchers.<sup>1</sup>

Text to 9-1-1 is available in several counties, as of December 31, 2019, there were ten counties with the capability to accept text to 9-1-1, with another six that were scheduled to be implemented during 2020.

Wyoming Statutes, Title 16, Chapter 9, Article 1, also known as the Emergency Telephone Service Act, is the guiding legislation that authorizes the board of county commissioners of a county, city council or other governing body of a city, town, or county to manage and administrate 9-1-1 and emergency telephone services. Because control over 9-1-1 is at the local level, 9-1-1 is handled differently from county-to-county and city-to-city. There is mandatory statewide training for dispatchers, but there is a lack of standardization between PSAPs/dispatch centers.<sup>2</sup>

While the State of Wyoming does not currently have its own Enhanced 9-1-1 legislation, federal Enhanced 9-1-1 legislation has been signed affecting all U.S. companies. The President signed Bill H.R. 1625 that instructed the FCC to set the rules to ensure that the dispatchable location is conveyed with a 9-1-1 call, regardless of the technological platform used and including calls from multi-line telephone systems. This means every 9-1-1 call will require adequate location information, which typically means the street address of the calling party, and room and floor numbers.<sup>3</sup>

### **3. CURRENT 9-1-1 ENVIRONMENT**

#### **3.1 Current Legislative and Regulatory Environment and Program Structure**

As stated above, substantially all control over 9-1-1 operations rests at the local or county level. As the transition to NG9-1-1 moves forward, the State will be responsible for overall coordination, however, control will be retained locally. To reduce the potential for inefficiencies, certain enhancements to overall governance will be required and have been outlined later in this document.

The following are some of the other overall aspects related 9-1-1 in Wyoming and the transition to NG9-1-1:

- In late 2019, representation from WYDOT was appointed to the new position of Statewide 9-1-1 Coordinator
- There is limited support staff and no funding available for the 9-1-1 planning and the transition to NG9-1-1.
- By law, 9-1-1 user fee surcharges cannot exceed 75 cents per line (wired, wireless, and VoIP).<sup>1</sup> County Commissioners have the option to charge less. All 23 counties are reportedly charging the .75 cents per line.

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<sup>1</sup> [Wyoming Statutes 16-9-103\(b\)](#)

## 3.2 Current 9-1-1 Technology

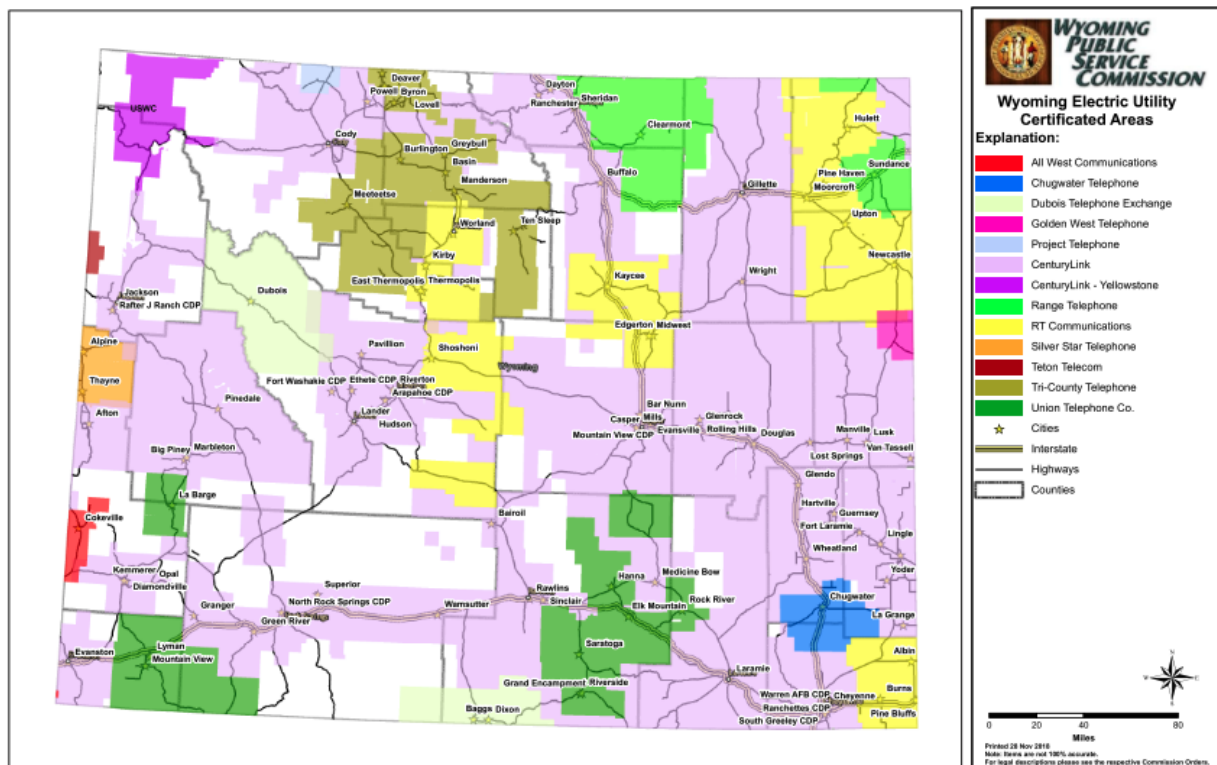
### 3.2.1 Overview

- Currently the local government is maintaining the equipment and software used inside an emergency communications center. The demarcation point is at the switch leading into the center.
- The current system is designed whereby those counties that are geographically the farthest away from selective routers pay higher charges. If costs continue to rise, there is a concern that migration to NG9-1-1 will be unaffordable to some of those counties.

### 3.2.2 Landline E9-1-1 Infrastructure

Currently, landline telephone service in Wyoming is provided by Lumen, (formerly Century Link), Chugwater Telephone Company, Silver Star Communications, Dubois Telephone Exchange, Embarq Corporation, Golden West Telecommunications, Project Telephone Company, Lumen QC, Range Telephone Coop, RT Communications, Tri County Telephone Association and World Network International Services. Lumen QC is the largest of those, and the largest wireless service provider in the state.

- The telephone service providers are depicted in Figure 1 provided by the Wyoming Public Service Commission below.
- Lumen (formerly Century Link) is the 9-1-1 service provider for the state.



### 3.2.3 PSAPs (Public Safety Answering Points)

In the most recent FCC annual report (2020), Wyoming stated that there are 29 Primary and five Secondary PSAPs operational in the State. Based on the results of the PSAP Manager survey, conducted in 2020, a total of 912,791 calls (266,615 9-1-1 calls and 646,176 Admin calls) were handled by all PSAPs annually.

Per the 2020 survey of PSAP managers, all subscribers are served by PSAPs capable of receiving Enhanced 9-1-1 calls. E9-1-1 identifies the location of the caller and routes the call to the appropriate local PSAP. It also provides the PSAP with the caller's location information to speed the response. PSAPs have identified the following:

- 9-1-1 Call Handling vendors:
  - Intrado Viper
  - Motorola Call Works
  - Motorola Vesta
- Computer Aided Dispatch (CAD) vendors:
  - Sun Ridge
  - Spillman
  - Central Square
  - Intellichoice
  - Tyler
  - Hexagon
  - Logisys
  - RIMS
- Local Exchange Carrier (LEC) 9-1-1 Selective Routers - PSAPs in Wyoming are connected to Lumen E9-1-1 Selective Router located in Cheyenne. The National Parks Service PSAP, located in Teton County, states that they are the only exception.

### 3.2.4 ALI Database

Lumen provides Automatic Location Information (ALI) to Wyoming PSAPs through their agreement with Intrado (formerly West Safety Services). Competitive Local Exchange Carriers (CLECs) in Wyoming (both facilities based and resellers) can enter into a formal agreement with Lumen.

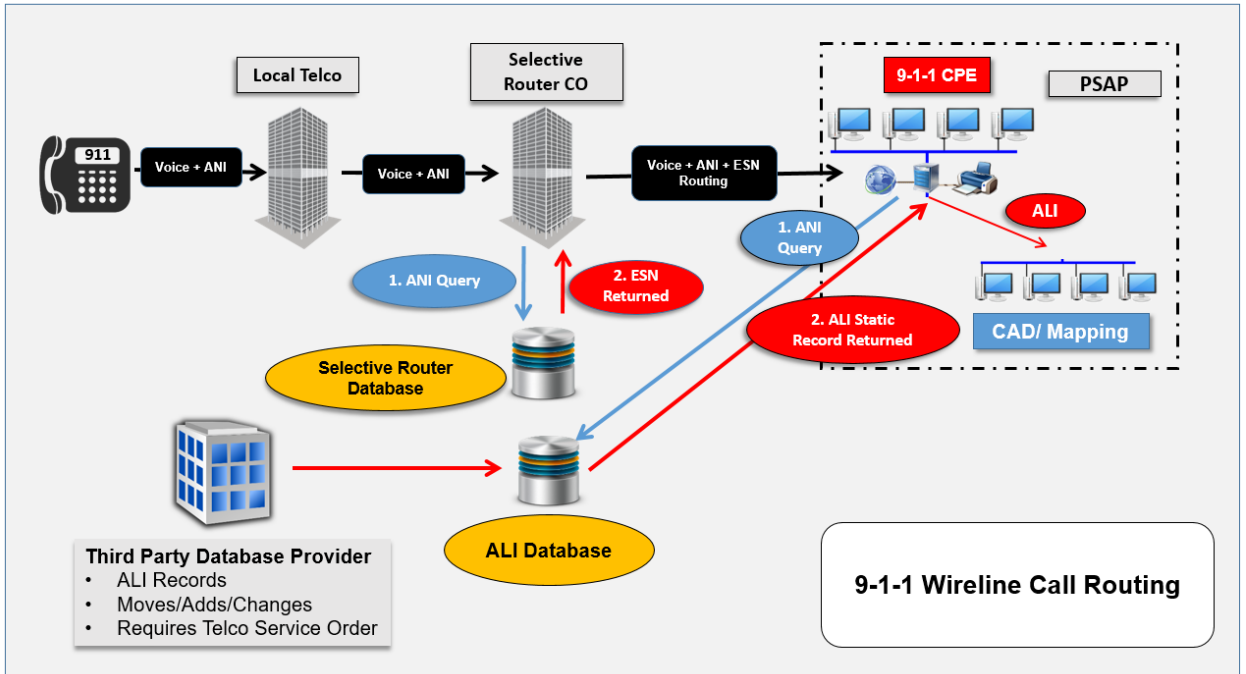


Figure 2 – 9-1-1 Wireline Call Routing Diagram

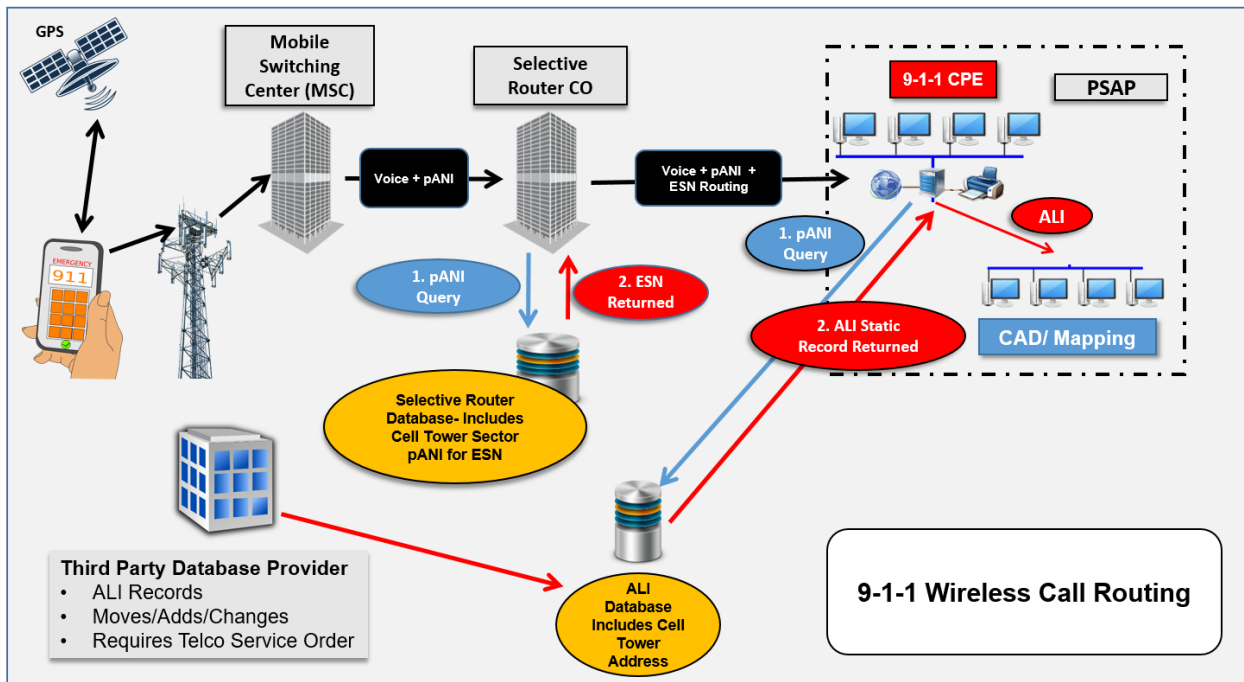


Figure 3 – 9-1-1 Wireless Call Routing Diagram

Detailed plans, applications, and pricing available to CLECs are available here:

<https://www.centurylink.com/wholesale/pcat/911.html>

### 3.3 Economics - Current Funding Mechanisms

The Goals and Objectives outlined in this Strategic Plan will provide for the efficient and effective transition to and implementation of NG9-1-1. However, their implementation will require a substantial level of financial investment.

Recognizing the need for comprehensive 9-1-1 system funding reform to help 9-1-1 evolve to support the technology needs of both the public and first responders, Congress directed National Highway Traffic Safety Administration (NHTSA) and National Telecommunications and Information Administration (NTIA) to complete a study to assess the costs, service requirements and specifications needed to implement NG9-1-1 across the country. The study team used publicly available data and sought input from vendors, associations and PSAPs to develop accurate estimates of the costs to implement and sustain NG9-1-1 throughout the country. The final report was submitted to Congress in October of 2018.<sup>1</sup>

As an indication of the importance of adequate funding, Goal 1.1 states the need to “Identify sustainable funding mechanism(s).” Using cost estimates, decisions can be made as to what funds will come from what sources, what changes in funding might be needed, etc.

The funding for the implementation and maintenance of the Wyoming NG9-1-1 system is expected to come from two (2) primary sources; the collection of 9-1-1 surcharge fees on telephone service, and federal grants. In this section, we will identify the nature and extent of each funding source.

- **9-1-1 Surcharge Fees** – Counties and other local jurisdictions have the authority to set the amounts of fees with a maximum of up to \$0.75 per month per wireless, wired or VoIP telephone line and 1.5% of the point-of-sale pricing of prepaid wireless services. The disbursement of those costs is also controlled by the local jurisdictions as authorized by Wyoming State Statute 16-9-105. The 9-1-1 surcharges collected and/or amount paid annually to maintain the 9-1-1 systems throughout the state are collected by the governing body at the local level. Each is required to file with the Wyoming Public Service Commission a statement of its gross receipts and expenditures for the prior fiscal year per Wyoming State Statute 16-9-103 to 105. As a result, research will have to be undertaken to first identify the fees collected by each jurisdiction and a mechanism for auditing the process that the fees are identified by the telecommunications companies. Until such time as that happens, it will be impossible to determine how much funding is available from this source, the potential for any increases in 9-1-1 surcharge fees and the amount of funding that is needed from outside sources such as federal grants.
- **Federal Grants** – The 9-1-1 Grant Program provides grant funding to support state and local jurisdictions, which may be used for the implementation and operation of 9-1-1 services, E9-1-1 services, migration to an IP-enabled emergency network, and adoption and operation of NG9-1-1 services and applications. The 9-1-1 Grant Program is authorized by the NG9-1-1 Advancement Act of 2012 (Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. 112-96, Title VI, Subtitle E (codified at 47 U.S.C. 942)). In the October 2019 grant awards, there were a total of 33 states and territories



that applied for and received funding. The average grant award per state was \$3.3 million, however, Wyoming was unable to apply for a grant at that time. One of the reasons that this Strategic Plan is being developed is to accompany a 9-1-1 Grant Program application in the near future.

The sources listed above are expected to provide primary funding for the transition from the Wyoming legacy 9-1-1 systems to NG9-1-1. Until such time as the surcharge revenues and legacy 9-1-1 system spending are summarized and the costs of NG9-1-1 implementation and operating costs are estimated, it is impossible to determine how much additional funding will have to come from increased 9-1-1 surcharges, the Wyoming General Fund, or other sources.

## **4. FUTURE NG9-1-1 ENVIRONMENT & STATE VISION**

### **4.1 Future Environment**

Public expectations and technology advancements necessitate the replacement of existing 9-1-1 networks. The public expects to communicate with 9-1-1 in the same way it communicates with others, using voice, video, text, and pictures. Nationwide, current 9-1-1 networks use equipment that is in some cases over 50 years old, limiting the ability to support anything beyond voice calls and TTY over the voice network.

For the 9-1-1 networks, upgrading to NG9-1-1 enables multimedia interaction between an emergency caller and the PSAP telecommunicators. The technology to be implemented for the NG9-1-1 network is built on the i3 Standard developed by NENA. The i3 architecture is Internet Protocol (IP) based, with gateways for transition. The i3 standard includes a defined set of software and hardware functional elements, as well as protocols and interfaces. This architecture is a network of networks that cities, counties, and states are deploying as the needs arise and as funding becomes available.<sup>11</sup>

The future 9-1-1 environment in Wyoming will look much different than the current environment. As you will see in Figure 4 below, the key system components required for an effective NG9-1-1 system in Wyoming will include:

- Originating Service Providers
- PSAPs
- GIS systems
- Extended Emergency Services
- Radio Networks

The most vital components, which unite the ESInet and the NG9-1-1 Core Services include:

- Emergency Services Routing Proxy (ESRP)
- Location Validation Function (LVF)
- Legacy Network Gateway (LNG)/Legacy Selective Router (LSRG)
- Legacy PSAP gateway (LPG)
- Emergency Call Routing Function (ECRF) & PSAP boundaries
- Security Functions



Figure 4 – NG9-1-1 System Components

## 4.2 Vision Statement

The vision for the Wyoming Next Generation 9-1-1 involves, by nature, services and stakeholders working together to achieve its full implementation. Wyoming NG9-1-1 is expected to be an extension of the interconnected system of local and regional emergency services networks across the US and Canada. The boundaries of emergency service networks may vary, depending on the local requirement and organizational frameworks. However, at the core, each local NG9-1-1 network would include one or more PSAPS and the corresponding public safety dispatching capabilities.

Wyoming shall utilize evolving technology to enable all PSAPs to receive, process, and dispatch 9-1-1 requests for emergency services effectively and efficiently to meet the needs of the citizens, public safety, and the service providers.

This vision was developed to help define what a successful implementation of a statewide NG9-1-1 network would look like. NG9-1-1 offers great promise in accomplishing each facet of the vision, while providing a platform to grow and expand as environmental factors change over time.

## 4.3 Services and Capabilities

Wyoming PSAPs will maintain their current excellent standard of 9-1-1 service delivery as they migrate to NG9-1-1. Historically, governance and control of 9-1-1 at the County level of government has proven effective in Wyoming, as County Boards of Commissioners are in the best position to understand the needs and operations of the

local emergency services providers and citizens. With migration to NG9-1-1, the ESInet will enable the public access to emergency services using communication devices and will enhance response by providing access to video, photographs, automatic crash notification data, and other data files.

The ESInet will also enable service arrangements by minimizing the need for some PSAPs to be in one physical location, promoting flexibility in the form of virtual PSAPs and virtual back-up PSAPs. While physical consolidation of PSAPs is often cost prohibitive, the flexibility to share services, equipment, and functions on an interconnected network will lead to more effective and efficient call processing.

#### **4.4 Infrastructure, Equipment and Technology**

The National Emergency Number Association (NENA) defines NG9-1-1 as “A system comprising Emergency Services IP networks (ESInet): IP-based Software Services and Applications, Databases and Data Management processes that are interconnected to Public Safety Answering Point premise equipment. The system provides location-based routing to the appropriate emergency entity. The system uses additionally available data elements and business policies to augment PSAP routing.

The system delivers geodetic and/or civic location information and the call back number. The system supports the transfer of calls to other NG9-1-1 capable PSAPs or other authorized entities based on and including accumulated data. NG9-1-1 provides standardized interfaces for call and message services, processes all types of emergency calls including non-voice (multi-media) messages, acquires and integrates additional data useful to call routing and handling for appropriate emergency entities. NG9-1-1 supports all E9-1-1 features, functions, and meets current and emerging needs for emergency communication from caller to Public Safety entities.

Wyoming PSAPs can best achieve NG9-1-1 through a phased approach, including the development of local and regional intranets capable of supporting an IP-Based 9-1-1 system; the development of public and/or private networks capable of transferring IP data between and among local networks; the development of appropriate Interlocal agreements and supporting legislation; the development and maintenance of seamless, statewide GIS data that meets national data standards, the technology to interconnect multiple networks seamlessly; and the replacement of PSAP Customer Premises Equipment (CPE) with equipment capable of receiving and processing IP data, resulting in a statewide interconnected and interoperable system of local, regional, and national emergency services networks.

Other considerations include:

- Infrastructure must be scalable and extendable.
- Infrastructure must be public safety grade, i.e., it must meet a higher level of availability, resiliency, reliability, security, and survivability than non-mission critical enterprise network infrastructure.
- Not all PSAPs/counties/regions will migrate at the same time. The legacy network and selective routers supporting the circuit switched network must continue to function. In concept, the legacy system would eventually connect to an ESInet gateway and convert legacy wireline/wireless 9-1-1 calls from analog into Session Initiation Protocol (SIP), attaching the caller’s location information and presenting the call to the ESInet.

- Local, regional, and state ESNets must avoid potential single points of failure. Lack of redundancy and diversity in the 9-1-1 network can impact the reliability of 9-1-1 systems.
- There must be sufficient bandwidth and speed for data sharing between PSAPs.
- A GIS plan must be created to develop processes and procedures to establish and maintain the required 98% data accuracy. Review the [“Geographic Information System Lifecycle Best Practices Guide for Next Generation 911”](#) for guidance.

## 4.5 GIS

Geographic Information System (GIS) technology is the cornerstone of a NG9-1-1 system. GIS data produced at the local level forms the foundation upon which emergency call processing and call routing are successfully executed within Emergency Call Centers (ECC). Numerous aspects of the NG9-1-1 GIS ecosystem need to be planned, implemented, and managed in synchronicity to ensure program success. The data ecosystem begins with local data creation and maintenance, and migrates to standards and regulations development and implementation, outreach and training, statewide GIS database aggregation, and ongoing maintenance, implementation planning, and support for spatial data components, and long-term financial planning.

Two of the core service components listed above are wholly supported by GIS data, those being the Location Validation Function (LVF) and Emergency Call Routing Function (ECRF). These contain the spatial data for PSAP boundaries, road centerlines, and address points (at a minimum). To enable geolocation services and geospatial routing through a fully functional LVF/ECRF, it will be necessary for the State and local PSAPs to begin working toward reconciling the legacy location validation and routing databases (the MSAG and ALI) with the GIS-based database. Governance and processes must also be in place to coordinate timely updates to future statewide aggregated GIS datasets. There are five primary steps the State should work through to reach the end goal of establishing and maintaining fully compliant and functional GIS data for provisioning into a fully functioning LVF/ECRF call-routing system.

1. GIS data GAP analysis
2. Establish Wyoming NG9-1-1 GIS Standards and Best Practices
3. GIS Stakeholder Education, Outreach, and Training
4. GIS Data Aggregation
5. Regular maintenance and updates to required GIS datasets

### 4.5.1 GIS Data GAP Analysis

Conducting a GAP analysis assessment provides a valuable baseline of incomplete and/or missing data, and it can also gauge the relative accuracy of existing GIS data throughout the State required for fully functional NG9-1-1 call routing.

Best practices call for the standardization and synchronization of GIS road centerlines, site structure/address points, and other data association with MSAG and ALI data. This synchronization process improves the accuracy of the locally sourced GIS, MSAG and ALI data as well as aids in the accuracy and preparation of the data for NG9-1-1.

#### **4.5.2 Establish Wyoming NG9-1-1 GIS Standards and Best Practices**

NENA's specialty is in setting standards focused on the creation, implementation, and management of GIS data for NG9-1-1 systems. The NG9-1-1 GIS Data Model standard as developed by NENA, provides the foundation for the establishment of any state level Best Practices document.

It is essential that the State and local PSAP stakeholders begin working together to coordinate the development of a Wyoming NG9-1-1 GIS Standards and Best Practices guidelines based on the NENA Standard for NG9-1-1 GIS Data Model.

Ongoing maintenance and quality control policies and procedures related to maintaining, updating, and continual improvements to the NG9-1-1 GIS data should be included in the standards and best practices developed in collaboration with stakeholders.

#### **4.5.3 GIS Stakeholder Education, Outreach and Training**

Upon the adoption of NG9-1-1 GIS Standards and Best Practices for Wyoming, it is incumbent to develop an education, outreach, and training program to ensure all stakeholders are well versed on the standards and the critical role they play in the transition to creating NG9-1-1 ready GIS data.

#### **4.5.4 GIS Data Aggregation**

A fully functioning LVF/ECRF call routing service in a NG9-1-1 system is dependent on accurate, seamless GIS data at its foundation. The GIS data is sourced and maintained at the local authoritative level, but it is ideally aggregated at a state level to provide interoperability for all PSAPs within the State.

Close cooperation and coordination between the local entities and the State of Wyoming is required to ensure the statewide aggregation process is consistent and accurate. A number of steps will create the framework for successful aggregation of the GIS datasets required for NG9-1-1 call routing functionality, including developing the initial Wyoming NG9-1-1 GIS Standards and Best Practices policies, creating and implementing a thorough outreach, education, and training program, and facilitating the baseline GIS GAP analysis effort.

#### **4.5.5 Regular maintenance and updates to required GIS datasets**

The NG9-1-1 system will require the aggregated GIS data as a core component used to validate address data and route 9-1-1 calls to the correct PSAP. The maintenance and upkeep of this seamless statewide GIS dataset is of critical importance.

The GIS data representing service area boundaries (PSAP and Emergency Service Boundaries) and address information (road centerlines and address points) will need to be up-to-date, accurate, and seamless across the state. It cannot be overstated how important data quality is (including accuracy, consistency, timeliness, and completeness). Sustainable data maintenance standards, processes and workflows are necessary and should not be overlooked in the development of a NG9-1-1 system.

The GIS data for NG9-1-1 will continue to be maintained by local entities, who will submit their data to the State (i.e., Wyoming Department of Enterprise Technology Services) or third-party vendor.

Local entities will upload their data using a managed process yet to be determined at the State level. Through this service, local entities will 'map' their data so it can be transformed into the State's established NG9-1-1 GIS standardized schema. The process will also report back to the local entity any data discrepancies identified during the data validation process prior to acceptance into the primary statewide dataset. The local entities would then be responsible for correcting any identified discrepancies, errors, or data validity issues.

It is incumbent upon the State and local entities to have a clear understanding of the critical nature and use of GIS data in an NG9-1-1 system and that they are prepared to identify the resources needed to meet the rigorous data creation and maintenance required for NG9-1-1 implementation.

## **4.6 Operations, Staff and Training**

### **4.6.1 Operations**

Wyoming citizens and visitors depend on 9-1-1 calls to be answered quickly and professionally so that fire, law enforcement, and medical emergency responders can be dispatched in a competent and expeditious manner. This requires not only modern, state-of-the-art public safety technology systems, but also well trained PSAP personnel who are available when needed. The public expects that PSAPs provide a superior level of service, regardless of the geographic location of the PSAP or the fiscal resources of the local community, and the public deserves this level of service.

Wyoming will adhere to nationally accepted standards and best practices as identified by the Association of Public-Safety Communications Officials (APCO), National Emergency Number Association (NENA), Alliance for Telecommunications Industry Standards (ATIS), FCC, National 9-1-1 Program, and the National Fire Protection Association (NFPA). Other applicable standards and best practices will also be adopted as the most effective way to ensure successful NG9-1-1 implementation and excellent PSAP performance. Specific standards and best practices for Wyoming's NG9-1-1 system will be determined at a later date. Once adopted, PSAP's, counties and Emergency Telephone Supervisory Boards (ETSBs), shall follow the recommendations and standards, and utilize the same when procuring NG9-1-1 components, PSAP call-handling equipment, NG9-1-1 GIS components, and cybersecurity systems to ensure secure, integrated, interconnected, and interoperable systems.

### **4.6.2 Training**

9-1-1 Telecommunicators provide the critical link for the public to access or request emergency services; these essential employees are the true first responders. It is well-established that training 9-1-1 Public Safety Telecommunicators is fundamental to the success of 9-1-1 service. The ability to maintain quality services for both the public



and emergency responders is dependent upon the training provided, both at initial hire and on-going. According to APCO, NG9-1-1 will provide a more immersive environment for 9-1-1 call-takers and dispatchers, who may see much of what responders see while on scene. While this additional information will ultimately improve or enhance emergency response, telecommunicators will be exposed to even more stress than they currently face. Both APCO and NENA have reiterated the importance of establishing a comprehensive stress management program. In 2013, NENA issued NENA Standard on 9-1-1 Acute/Traumatic and Chronic Stress Management, NENA-STA-002.1-2013 to provide awareness of the serious risks posed by work-related stress on the mental and physical health of 9-1-1 Telecommunicators in their role as the nation's first first-responders.

The NENA standard also establishes best practices for PSAP comprehensive employee stress management programs. It is essential for the long-term success of NG9-1-1 that state and local elected and appointed officials and PSAP authorities view training as a necessary and required investment to provide a consistent level of 9-1-1 service across the state. Without adequate training of PSAP personnel, even the best technical solution will fail. NG9-1-1 will require additional training of all 9-1-1 Telecommunicators to learn how to process different types of requests for assistance, such as texting, videos, social media, and other applications yet to be invented. Regardless of PSAP size, training across PSAPs in the state should include minimum baseline training so that 9-1-1 call-takers and dispatchers can proficiently answer, process, and dispatch calls from other jurisdictions in the NG9-1-1 environment, as well as maintain proficiency with legacy technology. Finally, because of the nature of the NG9-1-1 service itself, all PSAP personnel must receive basic training in cybersecurity.

#### **4.6.3 Executives and Support Staff**

As the state moves toward implementation of NG9-1-1, it will be necessary to expand training curricula across the spectrum, including frontline responders, telecommunicators, and PSAP management, as well as municipal and Public Service Commission (PSC) executive and support staff. Introductory training, as well as continuing education and retraining for executive and support staff is recommended. To fully realize the capabilities that can be achieved in a true NG9-1-1 system, local and State IT staff would benefit from training in NextGen Core Services (NGCS), wireless location technologies and integrity testing, public safety GIS, and related IP-based systems and interfaces.

#### **4.7 Governance**

On March 25, 2022, Governor Mark Gordon signed SF0041 which amended the duties of the Public Safety Communications Commission (PSCC) as the NG911 governance board.

State Statute 9-2-1104 was modified to read:

Commission; powers and duties; advisory capacity to promote system development; public meetings; clerical and administrative support.

(a) The commission shall:

(viii) Recommend guidelines and standards for the development, implementation and operation of next generation 911 emergency communications systems and interoperable public safety communications and data systems in the state, including strategies for improving Wyoming's current 911 system. As part of the recommendations developed under this paragraph, the commission may identify short-term and long-term technological and policy solutions that integrate existing legacy communications infrastructure into an interoperable system and may develop and submit recommendations for legislation or other state action to further develop and support next generation 911 operations in Wyoming;

(ix) Promulgate necessary rules and regulations governing next generation 911 system operation and participation.

The following are activities that need to be completed around Governance:

- Include the requirements for provisioning 9-1-1 services by Wireless Carriers, LEC and CLECs that have received authorization by the PSC to do business in the State of Wyoming
- Definition of NexGen 9-1-1, ESInet and NGCS and the new services these technologies will enable
- Definition of a “communications service provider” as established by the Wyoming Public Service Commission
- All telecommunications service providers are subject to 9-1-1 rules and regulations. Internet of Things (IoT) manufacturers or service providers wishing to connect to 9-1-1 services will need to be addressed
- Establish GIS standards and best practices for Wyoming

## 5. GOALS, OBJECTIVES & MEASURES

### 5.1 State of Wyoming 9-1-1 Plan Objectives:

During 2019 & 2020, several planning sessions took place whereby a set of Goals and Objectives for the transition to NG9-1-1 were finalized and have been included in Figure 5 below. Most of these Goals and Objectives have been in development for over a year, however, various factors have resulted in minimal headway being made on them. It is expected that the addition of the Statewide 9-1-1 Coordinator and establishment of the previously mentioned working groups will allow for progress to be made in their implementation.

<b>Goal 1: Ensure NG9-1-1 capabilities are accessible statewide</b>		
<b>#</b>	<b>Objectives</b>	<b>Estimated Completion Date</b>

1.1	Identify sustainable funding mechanism(s).	On Going
1.2	Conduct an inventory of existing equipment and infrastructure and determine future needs.	On Going
1.3	Identify the individual costs associated with upgrading to NG9-1-1.	TBD
<b>Goal 2: Develop a conceptual network design</b>		
<b>#</b>	<b>Objectives</b>	<b>Estimated Completion Date</b>
2.1	Develop an ESInet architecture e.g., 1-host, regional, etc.	TBD
2.2	Investigate the impact on existing networks.	TBD
2.3	Develop options for resiliency.	TBD
2.4	Conduct a cybersecurity and vulnerability assessment.	TBD
2.5	Determine PSAP connectivity to the unified network.	TBD
<b>Goal 3: Develop an outreach and education plan</b>		
<b>#</b>	<b>Objective</b>	<b>Estimated Completion Date</b>
3.1	Present and/or participate in panel discussions statewide to garner buy-in.	On Going
3.2	Identify champions.	1/20/2021
3.3	Conduct training and outreach from work groups to local entities.	On Going
3.4	Integrate Information Technology (IT).	10/1/2021
<b>Goal 4: Apply for 9-1-1 Grant Program funds</b>		
<b>#</b>	<b>Objective</b>	<b>Estimated Completion Date</b>
4.1	Submit Statewide NG9-1-1 Plan for certification.	11/1/2021

<b>Goal 5: Utilize survey(s) to gather stakeholder input</b>		
<b>#</b>	<b>Objective</b>	<b>Estimated Completion Date</b>
5.1	Conduct an initial survey.	8/1/2020
5.2	Conduct a follow-up survey.	5/1/2022
<b>Goal 6: Identify technology standards</b>		
<b>#</b>	<b>Objective</b>	<b>Estimated Completion Date</b>
6.1	Compile a list of lessons learned and best practices.	8/22/2021
6.2	Conduct meetings with vendors.	Ongoing
<b>Goal 7: Update the membership of the PSCC to include 9-1-1 representation</b>		
<b>#</b>	<b>Objective</b>	<b>Estimated Completion Date</b>
7.1	Review the existing statute and identify potential roadblocks.	8/1/2021
7.2	Propose a revision to the PSCC Legislation to include local 9-1-1 representation.	3/30/2022
<b>Goal 8: Conduct an inventory of primary PSAPs and back-up centers throughout Wyoming</b>		
<b>#</b>	<b>Objective</b>	<b>Estimated Completion Date</b>
8.1	Gather the following information: <sup>1</sup> <ul style="list-style-type: none"> <li>• Hardware (e.g., CPE, servers, radio consoles, etc.)</li> <li>• Software</li> <li>• CAD/RMS</li> <li>• GIS</li> </ul>	On Going

	<ul style="list-style-type: none"> <li>• Vendor preference (Spillman/Motorola, RIMS/Sun Ridge, Tyler New World, or EFORCE)</li> <li>• Call logging</li> <li>• 9-1-1 phone systems - Are they NG9-1-1 capable? Approximate age? Admin integration capable?</li> <li>• Data storage</li> <li>• Number of employees versus authorized FTEs, workstations, and physical locations</li> <li>• Telco and state connectivity methods - Number and size of lines? Cost? Vendor?</li> <li>• Total PSAP operating budget compared to surcharge for wired and wireless lines.</li> <li>• Interest-bearing account - How are funds spent?</li> <li>• Are 9-1-1 consoles connected to the statewide system, Unified Network, WyoLink? Through RF/hardline?</li> <li>• Training - Number of EMD, EPD, and EFD certifications</li> <li>• Life cycle of equipment</li> </ul>	
8.2	Educate public safety agencies on why this information needs to be gathered.	11/1/2022
<b>Goal 9: Formally establish: 1) Outreach and Education; 2) Technology; 3) Strategic Planning; and 4) Governance Working Groups</b>		
<b>#</b>	<b>Objective</b>	<b>Estimated Completion Date</b>
9.1	Working groups meet regularly and provide input to the Statewide NG9-1-1 Plan.	1/1/2021
9.2	Coordinate monthly and then quarterly meetings.	1/1/2021
9.3	Include tribal representation.	1/1/2021
<b>Goal 10: Identify sustainable funding, future needs, and costs to upgrade to NG9-1-1</b>		
<b>#</b>	<b>Objective</b>	<b>Estimated Completion Date</b>
10.1	Identify sustainable funding mechanism(s).	12/1/2022

10.2	Conduct an inventory of existing equipment and infrastructure and determine future needs.	12/1/2022
10.3	Identify the individual costs associated with upgrading to NG9-1-1.	1/1/2023
<b>Goal 11: Establish statewide GIS standards</b>		
<b>#</b>	<b>Objective</b>	<b>Estimated Completion Date</b>
11.1	Establish a Statewide GIS Coordinator position.	6/1/2020
11.2	Establish standards for required data layers.	6/1/2022
11.3	Build governance structure for GIS data.	1/1/2023
11.4	Create system architecture and secure software licensing to support GIS data management.	1/1/2023
11.5	Conduct GIS data QA/QC to get date to meet NENA standards.	1/1/2024
11.6	Implement system for statewide GIS data submission, QA/QC, aggregation, and dissemination.	11/2025

Figure 5 – NG9-1-1 Goals

## 6. PLAN MAINTENANCE / PROGRESS TRACKING

The purpose of this Plan is to establish a vision for statewide implementation of NG9-1-1 services. The Plan will provide directives with high-level goals and concise, specific, and measurable objectives. As goals and objectives are achieved, successes will also be documented.

The transition timeline to NG9-1-1 must include all aspects of the vision as outlined in this document. As expected, timing is highly dependent on NG9-1-1 standards maturation, the legislative process, and the available resources including both people and budget.

Because this document serves as a strategic planning guide, its implementation will be a dynamic and evolving process. As a result, the Plan is a living document that is intended to be updated periodically as more is learned in execution of this plan.

The PSCC and Statewide 9-1-1 Coordinator will monitor the individual components of this Plan to ensure that the objectives and overall goals are met. Stakeholders may propose changes through the Statewide 9-1-1 Coordinator for consideration. Changes will be adopted through an established monitoring and tracking process to achieve the desired end state of a NG9-1-1 network. Updates to this Plan should occur no less than



semi-annually and/or at the direction of the PSCC. Any changes to this Plan will be documented in the form provided in Table 1.

Version	Publication Date	Description of Change(s)	Other Comments/ Information

Table 1 – Documentation of Plan Maintenance

## 7. CONCLUSION

The passion and desire of statewide stakeholders is to advance Next Generation 9-1-1 across the state of Wyoming to provide the highest level of 9-1-1 service to the State’s residents and visitors through the information gathered and shared in this report. Given communications technology evolutions; the aging legacy 9-1-1 infrastructure; needed support for Wyoming’s 9-1-1 professionals; and changing expectations of the residents; the time for change is here. This change will be impossible without the technology, cybersecurity, staffing, oversight, and funding recommendations identified throughout this report.

This 9-1-1 Plan provides a road map for the future direction of Wyoming NG9-1-1. As each section has outlined, the process is accountable, proactive, and designed to move the 9-1-1 system forward.

The State 9-1-1 Plan recognizes that NG9-1-1 architecture supports an interconnected system of local, regional, and state emergency services networks, and will expand to cover the entire nation. Effective interconnection requires effective statewide planning and coordination, as well as effective interstate planning and coordination.

Strategic plans are considered mid- to long range planning documents that normally cover a period of multiple years. The development of a strategic plan includes identifying and evaluating the background information, current status of the situation, a vision of the future and then the development of a roadmap of how to get to that desired future state.

Upon adoption of the strategic plan, the actions necessary to implement the plan are initiated. As the implementation process progresses and time passes, circumstances will change.

There are significant improvements in public safety effectiveness that can be achieved through the implementation of NG9-1-1. Those efficiency improvements should not only

reduce response times, but they will also ultimately save lives. This document provides the overall path to get there through the development of a comprehensive plan.

While the planning is critical to a successful NG9-1-1 implementation, it is only one facet of successful implementation. Leadership must execute the plan with some level of flexibility because this plan will undoubtedly be modified as the implementation progresses.

Also, because the implementation process will take place over several years, there must be a communication plan. Communicating on a regular basis with the NG9-1-1 stakeholders is necessary to maintain momentum and stakeholder commitment. Without both of those, the success of the overall project will be jeopardized.

## APPENDIX 1: 9-1-1 TERMS & DEFINITIONS

Term	Definition
<b>9-1-1 (or 9-1-1)</b>	A three-digit telephone number to facilitate the reporting of an emergency requiring a response by a public safety agency.
<b>9-1-1 authority</b>	A state, county, regional, or other governmental entity responsible for 9-1-1 service operations. For example, this could be a county/parish or city government, a special 9-1-1 or emergency communications district, a council of governments, or other similar body.
<b>9-1-1 “call”</b>	A generic term used to include any type of request for emergency assistance (RFEA) and is not limited to voice. This may include a session established by signaling with two-way, real-time media and involving a human making a request for help. We sometimes use “voice call,” “video call” or “text call” when specific media is of primary importance. The term “non-human-initiated call” refers to a one-time notification or series of data exchanges established by signaling with, at most, one-way media, and typically does not involve a human at the “calling” end. The term “call” also can be used to refer to either a “voice call,” “video call,” “text call,” or “data-only call” since they are handled the same way by most of NG9-1-1 systems.
<b>9-1-1 fund</b>	The fund established by a state statute that is specifically used to fund 9-1-1 activities and/or infrastructure.
<b>9-1-1 service area</b>	The geographic area that has been granted authority by a state or local governmental body to provide 9-1-1 services.
<b>9-1-1 system</b>	A coordinated system of technologies used by a collaborative group of people to operate an efficient and effective network for accepting, processing, and delivering emergency information to facilitate an emergency response—a set of networks, software applications, databases, customer premises equipment (CPE), and operations and management procedures required to provide 9-1-1 service. This may include commercial, governmental, and human resources.
<b>Access provider</b>	An access provider is any organization that arranges for an individual or an organization to have access to the internet.
<b>Additional data</b>	Information that further describes the nature of how a call was placed, the person(s) associated with the device placing the call, or the location from which the call was placed. There are three types of additional data: 1) additional data for the call, 2) additional data for the caller, and 3) additional data for the Location.

<b>Agency</b>	In NG9-1-1, an organization that is connected directly or indirectly to the Emergency Services Internet Protocol Network (ESInet). Public safety agencies are examples of an “agency.” An entity such as a company that provides a service in the ESInet can be an “agency.” Agencies have identifiers and credentials that allow them access to services and data.
<b>Agent</b>	In NG9-1-1, an “agent” is an authorized person—an employee, contractor, or volunteer—who has one or more roles in an agency. An “agent” also can be an automaton in some circumstances (e.g., an interactive media response [IMR] system answering a call).
<b>Alternate routing</b>	The capability of routing 9-1-1 calls to a designated alternate location(s) if all 9-1-1 trunks are busy or out of service. May be activated upon request or automatically, if detectable, when 9-1-1 equipment fails or the PSAP itself is disabled.
<b>Automatic location Identification (ALI)</b>	The automatic display at the PSAP of the address/location of the telephone used to make the 9-1-1 call, as well as supplementary emergency services information related to the location from which a call originates.
<b>Automatic number identification (ANI)</b>	The automatic display at the PSAP of the caller’s telephone number associated with the access line from which a 9-1-1 call originates.
<b>Basic 9-1-1</b>	An emergency telephone system that automatically connects 9-1-1 callers to a designated answering point. Call routing is determined by the originating telephone central office only. Basic 9-1-1 may or may not support ANI and/or ALI.
<b>Call-taker</b>	An agent of a PSAP who answers and processes emergency calls. Synonymous with the term, “telecommunicator.”
<b>Call-taking</b>	The act of processing a call for emergency assistance up to the point that the call is ready for dispatch, including equipment usage, call classification, caller location, and determination of the appropriate response level for emergency responders.
<b>Call handling</b>	Functional element concerned with the details of call management of calls. It handles all communication from the caller. It includes the interfaces, devices, and applications utilized by agents to handle the call.
<b>Call routing</b>	The capability to selectively route the 9-1-1 call to the appropriate PSAP.
<b>Carrier</b>	A business entity that provides a communications service to a customer base, typically for a fee. Examples of carriers and associated services

	are public switched telephone network (PSTN) service by a local exchange carrier, voice over Internet Protocol (VoIP) service by a VoIP provider, and e-mail service provided by an internet service provider.
<b>Commercial Call Center</b>	A privately-operated call center that answers emergency and/or nonemergency calls.
<b>Commercial mobile radio service (CMRS)</b>	An FCC designation for any carrier or licensee whose wireless network is connected to the PTSN.
<b>CMRS connection</b>	Each mobile handset telephone number assigned to a CMRS subscriber with a place of primary use in-state.
<b>CMRS provider</b>	An entity (facilities-based or non-facilities-based) that is licensed by the FCC to provide CMRS or that resells CMRS within a state.
<b>Computer-aided dispatch (CAD)</b>	A computer-based system that aids PSAP telecommunicators by automating selected dispatching and record-keeping activities.
<b>Continuity of operations (COOP)</b>	The ability to continue operations during and after a service-impacting event. This is done through a specific set of procedures designed to reduce the damaging consequences of unexpected events resulting in the loss of 9-1-1 capabilities.
<b>Customer premise equipment (CPE)</b>	Communications or terminal equipment located in the customer's facilities; terminal equipment at a PSAP.
<b>Database</b>	An organized collection of information, typically stored in computer systems, comprised of fields, records (data), and indexes. In 9-1-1, such databases include Master Street Address Guide (MSAG), telephone number/emergency service number (ESN), and telephone customer records.
<b>Data exchange</b>	The process of exchanging 9-1-1 data between service providers and the database management system provider.
<b>Dispatch system</b>	The functional element used to assign appropriate resources (emergency responders) to an incident, monitor the response, and relay relevant information. It tracks and logs all transactions associated with the emergency response.
<b>Enhanced 9-1-1 (E9-1-1)</b>	A telephone system that includes network switching, database, and PSAP-premise elements capable of providing ALI data, selective routing, selective transfer, fixed transfer, and a call-back number. The term also includes any enhanced 9-1-1 service as designated by the

	FCC in its Report and Order in WC Docket Nos. 04-26 and 05-196, or any successor proceeding.
<b>Emergency medical services</b>	A service ranging from out-of-hospital acute care and transport to definitive care to patients with illnesses and injuries that the patient believes constitutes a medical emergency.
<b>Emergency services IP network (ESInet)</b>	An ESInet is a managed IP network that is used for emergency services communications, and which can be shared by all public safety agencies. It provides the IP transport infrastructure upon which independent application platforms and core services can be deployed, including, but not limited to, those necessary for providing NG9-1-1 services. ESInets may be constructed from a mix of dedicated and shared facilities. ESInets may be interconnected at local, regional, state, federal, national, and international levels to form an IP-based inter-network (network of networks). The term ESInet designates the network, not the services that ride on the network.
<b>First Responder Network Authority (FirstNet)</b>	Signed into law on February 22, 2012, the Middle-Class Tax Relief and Job Creation Act created the FirstNet. The law gives FirstNet the mission to build, operate, and maintain the first nationwide wireless broadband network dedicated to public safety. FirstNet will provide a single interoperable platform for emergency and daily public safety communications. <a href="http://www.firstnet.gov/">http://www.firstnet.gov/</a>
<b>Geographic information systems (GIS)</b>	A system for capturing, storing, displaying, analyzing, and managing data and associated attributes that are spatially referenced.
<b>i3 solution</b>	The National Emergency Number Association (NENA) i3 (third iteration) standards introduced the concept of an ESInet, which is designed as an IP-based inter-network (network of networks) shared by all agencies that may be involved in any emergency.
<b>Interlocal services agreement</b>	An agreement among governmental jurisdictions or privately-owned systems (or both) within a specified area to share 9-1-1 system costs, maintenance responsibilities, and other considerations.
<b>Internet Protocol (IP)</b>	The method by which digital data is sent from one computer to another over the internet or other networks.
<b>Interoperability</b>	The ability of disparate communications systems to seamlessly interconnect and work together as a collective system.
<b>Landline</b>	Colloquial term for PSTN access via an actual copper or fiber-optic transmission line that travels underground or on telephone poles. Used to differentiate the “wireless” connectivity of a cellular or personal communications system.



<b>Legacy network gateway (LNG)</b>	An NG9-1-1 functional element that provides an interface between a non-IP originating network and a Next Generation Core Services (NGCS)-enabled network.
<b>Legacy PSAP gateway (LPG)</b>	A signaling and media interconnection point between an ESN and a legacy PSAP. It plays a role in the delivery of emergency calls that traverse an i3 ESN to get to a legacy PSAP, as well as in the transfer and alternate routing of emergency calls between legacy PSAPs and NG9-1-1 PSAPs. The LPG supports an IP (i.e., Session Initiation Protocol [SIP]) interface towards the ESN on one side, and a traditional multi-function (MF) or enhanced MF interface (comparable to the interface between a traditional selective router and a legacy PSAP) on the other.
<b>Competitive Local exchange carrier (CLEC)</b>	A telecommunications provider company (sometimes called a carrier) competing with other, already established carriers, generally the incumbent local exchange carrier.
<b>Local exchange carrier (LEC)</b>	A telecommunications carrier under the state/local public utilities act that provides local exchange telecommunications services. Also known as incumbent local exchange carriers, alternate local exchange carriers, competitive local exchange carriers, competitive access providers, certified local exchange carriers, and local service providers.
<b>Location information server (LIS)</b>	A functional element in an IP-capable originating network that provides locations of endpoints (i.e., calling devices). LIS can provide location by-reference, or location-by-value, and, if the latter, in geographic or civic forms. An LIS can be queried by an endpoint for its own location or by another entity for the location of an endpoint. In either case, the LIS receives a unique identifier that represents the endpoint (for example, an IP address, circuit identification, or media access control [MAC] address) and returns the location (value or reference) associated with that identifier. The LIS is also the entity that provides a dereferencing service, exchanging a location reference for a location value.
<b>Master Street Address Guide (MSAG)</b>	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.
<b>Memorandum of agreement (MOA)</b>	A document written between parties to cooperatively work together on an agreed upon project or meet an agreed-upon objective.
<b>Memorandum of understanding (MOU)</b>	A document that expresses mutual accord on an issue between two or more parties

<b>Mutual-aid agreement</b>	There is a written agreement between agencies and/or jurisdictions in which they agree to assist one another, upon request, by furnishing personnel and equipment.
<b>National Information Exchange Model (NIEM)</b>	A community-driven, standards-based, national model for structured information sharing. <a href="http://www.niem.gov">www.niem.gov</a>
<b>National Incident Management System (NIMS)</b>	A standardized approach to incident management developed by the Department of Homeland Security (DHS). It is intended to facilitate coordination between all responders (including all levels of government with public, private, and non-governmental organizations). <a href="https://www.fema.gov/national-incident-management-system">https://www.fema.gov/national-incident-management-system</a>
<b>Next Generation 9-1-1 (NG9-1-1) services</b>	A secure, IP-based, open standards system comprised of hardware, software, data, and operational policies and procedures that: <ul style="list-style-type: none"> <li>a) Provides standardized interfaces from emergency call and message services to support emergency communications.</li> <li>b) Processes all types of emergency calls, including voice, text, data, and multimedia information.</li> <li>c) Acquires and integrates additional emergency call data useful to call routing and handling.</li> <li>d) Delivers the emergency calls, messages, and data to the appropriate public safety answering point (PSAP) and other appropriate emergency entities based on the location of the caller.</li> <li>e) Supports data, video, and other communications needs for coordinated incident response and management.</li> <li>f) Interoperates with services and networks used by first responders to facilitate emergency responses. REF: Agreed to by NENA, NASNA, and the Industry Council for Emergency Response Technologies (iCERT) as the NG9-1-1 NOW Coalition; and the National 9-1-1 Program on 01/12/2018.</li> </ul>
<b>Order of authority</b>	A formal order by the state or local authority which authorizes public agencies or public safety agencies to provide 9-1-1 service in a geographical area.
<b>Public Service Commission (PSC)</b>	A state agency that regulates public utilities that provide services to consumers in the state. The three main industries it regulates are electricity, natural gas, and telephone.

<b>Prepaid wireless telephone service</b>	Telephone service authorized by the purchase of CMRS, either exclusively or in conjunction with other services. This service must be paid for in advance and is sold in units or dollars whose number or dollar value declines with use and is known on a continuous basis.
<b>Private 9-1-1 emergency answering point</b>	An answering point operated by nonpublic safety entities with functional alternative and adequate means of signaling and directing response to emergencies. Includes training individuals intercepting calls for assistance that aligns with applicable local emergency telecommunications requirements. Private 9-1-1 emergency answering points are an adjunct to public safety response and, as such, must provide incident reporting to the public safety emergency response centers per local requirements.
<b>Proprietary information</b>	Subscriber lists, technology descriptions, technical information, or trade secrets that are developed, produced, or received internally by a voice communications service provider or by a voice communications service provider's employees, directors, officers, or agents.
<b>Public safety agency</b>	A functional division of a public agency that provides firefighting, police, medical, or other services to respond to and manage emergency incidents.
<b>Public safety answering point (PSAP)</b>	<p>An entity responsible for receiving 9-1-1 calls and processing those calls according to a specific operational policy.</p> <ul style="list-style-type: none"> <li>• Primary PSAP: A PSAP to which 9-1-1 calls are routed directly from the 9-1-1 control office</li> <li>• Secondary PSAP: A PSAP to which 9-1-1 calls are transferred from a primary PSAP</li> <li>• Alternate PSAP: A PSAP designated to receive calls when the primary PSAP is unable to do so</li> <li>• Consolidated PSAP: A facility where multiple public safety agencies choose to operate as a single 9-1-1 entity</li> <li>• Legacy PSAP: A PSAP that cannot process calls received via i3-defined call interfaces (IP-based calls) and still requires the use of Centralized Automatic Message Accounting (CAMA) or Integrated Services Digital Network (ISDN) trunk technology for delivery of 9-1-1 emergency calls</li> <li>• Serving PSAP: The PSAP to which a call normally would be routed.</li> <li>• NG9-1-1 PSAP: This term is used to denote a PSAP capable of processing calls and accessing data services as defined in NENA's i3 specification, NENA-STA-010, and referred to therein as an "i3 PSAP"</li> </ul>

<b>Service provider</b>	An entity providing one or more of the following 9-1-1 elements: network, CPE, or database service.
<b>Standards development organization (SDO)</b>	An entity whose primary activities are developing, coordinating, promulgating, revising, amending, reissuing, interpreting, or otherwise maintaining standards that address the interests of a wide base of users outside the SDO.
<b>State NG9-1-1 Plan</b>	A document prepared, maintained, implemented, and updated by a state that provides a comprehensive plan for operating a statewide 9-1-1 system that communicates 9-1-1 call information across networks and among PSAPs, addresses all aspects of the statewide 9-1-1 system, and describes the allowable uses of revenue in the 9-1-1 Fund.
<b>Subscriber</b>	A person who purchases a communications service and can receive it or use it periodically over time.
<b>Telecommunication</b>	The transmission between and among points specified by the user (or information of the user's choosing) without change in the form of content of the information sent and received, regardless of the facilities, equipment, or technology used.
<b>Telecommunicator</b>	Person employed by a PSAP and/or an emergency medical dispatch (EMD) service provider qualified to answer incoming emergency telephone calls and/or provides for the appropriate emergency response, either directly or through communication with the appropriate PSAP.
<b>Virtual PSAP</b>	An operational model directly enabled through NG9-1-1 features and/or network hosted PSAP equipment in which telecommunicators are dispersed geographically, rather than working from the same physical location. Remote access to the PSAP applications by the dispersed telecommunicators requires appropriate network connections, security, and workstation equipment at the remote location. Unified communications applications supporting voice, data, instant messaging, and video communications between telecommunicators may be used to enable the telecommunicators to work cooperatively from diverse locations. The virtual workplace may be a logical combination of physical PSAPs or an alternate work environment such as a satellite facility (or any combination of the above). Workers are connected and interoperate via IP connectivity.
<b>Voice communications service</b>	The transmission, conveyance, or routing of real-time, two-way voice communications to a point, between/among points, or through any electronic, radio, satellite, cable, optical, microwave, wireline, wireless, or other medium or method regardless of the protocol used, including interconnected VoIP service.

<b>Voice over Internet Protocol (VoIP)</b>	Technology that permits delivery of voice calls and other real-time multimedia sessions over IP networks.
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## APPENDIX 2: ASSOCIATIONS, ORGANIZATIONS & OTHER STAKEHOLDER ENTITIES RELEVANT TO 9-1-1

<u>Name/Acronym</u>	<u>Description</u>	<u>Website</u>
American National Standards Institute (ANSI)	Entity that coordinates the development and use of voluntary consensus standards in the U.S. and represents the needs and views of U.S. stakeholders in standardization forums around the globe.	<a href="http://www.ansi.org">www.ansi.org</a>
Association of Public-Safety Communications Officials (APCO)	The world's oldest and largest not-for-profit professional organization dedicated to the enhancement of public safety communications.	<a href="http://www.apcointl.org/">http://www.apcointl.org/</a>
American Registry for Internet Numbers (ARIN)	An organization that provides services related to the technical coordination and management of internet number resources.	<a href="https://www.arin.net/">https://www.arin.net/</a>
Alliance for Telecommunications Industry Solutions (ATIS)	A U.S.-based organization that is committed to rapidly developing and promoting technical and operational standards for communications and related information technologies industry worldwide.	<a href="http://www.atis.org">www.atis.org</a>
Commission on Accreditation for Law Enforcement Agencies (CALEA)	A credentialing authority created in 1979 through the joint efforts of the following law enforcement's major executive associations. <ul style="list-style-type: none"> <li>• International Association of Chiefs of Police (IACP)</li> </ul>	<a href="http://www.calea.org/">http://www.calea.org/</a>

	<ul style="list-style-type: none"> <li>• National Organization of Black Law Enforcement Executives (NOBLE)</li> <li>• National Sheriffs' Association (NSA)</li> <li>• Police Executive Research Forum (PERF) CALEA's accreditation programs improve the delivery of public safety services, primarily by maintaining a body of standards developed by public safety practitioners.</li> </ul>	
Communications Security, Reliability, and Interoperability Council (CSRIC) (formerly known as the Network Reliability and Interoperability Council [NRIC])	An advisory body of the FCC that provides recommendations to the FCC to ensure optimal security and reliability of communications systems, including telecommunications, media, and public safety.	<a href="https://www.fcc.gov/aboutfcc/advisory-committees/communications-securityreliability-and-interoperabilitycouncil-0">https://www.fcc.gov/aboutfcc/advisory-committees/communications-securityreliability-and-interoperabilitycouncil-0</a>
Emergency Services Interconnection Forum (ESIF)	An open, technical/operational forum, under the auspices of ATIS, with the voluntary participation of interested parties to identify and resolve recognized 9-1-1 interconnection issues.	<a href="http://www.atis.org/esif">www.atis.org/esif</a>
Federal Communications Commission (FCC)	An independent U.S. government agency overseen by Congress, the FCC regulates interstate and international communications by radio, television, wire, satellite, and cable in all 50 states, the District of Columbia, and U.S. territories.	<a href="https://www.fcc.gov/">https://www.fcc.gov/</a>
Federal Geographic Data Committee (FGDC)	The FGDC is an interagency committee that promotes the coordinated development, use, sharing, and dissemination of geospatial data on a national basis.	<a href="https://www.fgdc.gov/">https://www.fgdc.gov/</a>

<p>First Responder Network Authority (FirstNet)</p>	<p>Signed into law on February 22, 2012, the <a href="#"><u>Middle Class Tax Relief and Job Creation Act</u></a> created FirstNet, giving it the mission to build, operate, and maintain the first nationwide wireless broadband network dedicated to public safety. FirstNet will provide a single interoperable platform for emergency and daily public safety communications.</p>	<p><a href="http://www.firstnet.gov/">http://www.firstnet.gov/</a></p>
<p>Industry Council for Emergency Response Technologies (iCERT)</p>	<p>iCERT plays a vital role as the voice of companies on issues impacting the emergency response system.</p> <p>iCERT members believe that business leaders' expertise can assist public policymakers and government emergency communications professionals as they address complex choices regarding advanced communications technology alternatives in the years ahead. Through advocacy, research, and in coordination with the public sector, iCERT plays a vital role in the development and deployment of emergency response technologies.</p>	<p><a href="https://www.theindustryCouncil.org/">https://www.theindustryCouncil.org/</a></p>
<p>Internet Architecture Board (IAB)</p>	<p>The committee charged with oversight of the technical and engineering development of the Internet by the Internet Society (ISOC). It oversees numerous task forces including the Internet Engineering Task Force (IETF) and the Internet Research Task Force (IRTF). The body that eventually became the IAB originally was formed in 1979 by the Department of Defense Advanced Research Projects Agency (DARPA) under the name Internet Configuration Control Board.</p>	<p><a href="https://www.iab.org/">https://www.iab.org/</a></p>
<p>International Academies of Emergency Dispatch (IAED)</p>	<p>A non-profit standard-setting organization, formerly known as the National Academies of Emergency Dispatch (NAED), promoting safe and effective emergency dispatch services worldwide.</p>	<p><a href="http://www.emergencydispatch.org/">http://www.emergencydispatch.org/</a></p>

<p>Internet Assigned Numbers Authority (IANA)</p> <p>Internet Corporation for Assigned Names and Numbers (ICANN)</p>	<p>IANA is the entity that oversees global IP address allocation; Domain Name System (DNS) root zone management, and other IP assignments.</p> <p>Authority for public domain addresses and uniform resource locators (URLs), including related policies and databases.</p>	<p><a href="http://www.iana.org">www.iana.org</a></p> <p><a href="https://www.icann.org/">https://www.icann.org/</a></p>
<p>Institute of Electrical and Electronic Engineers (IEEE)</p>	<p>A publishing and standards-making body responsible for many telecommunications and computing standards.</p>	<p><a href="https://www.ieee.org/">https://www.ieee.org/</a></p>
<p>Internet Engineering Steering Group (IESG)</p>	<p>The IESG is a body composed of the IETF chair and area directors.</p>	<p><a href="https://www.ietf.org/about/groups/iesg/">https://www.ietf.org/about/groups/iesg/</a></p>
<p>Internet Engineering Task Force (IETF)</p>	<p>Lead standards-setting authority for internet protocols.</p>	<p><a href="https://www.ietf.org/">https://www.ietf.org/</a></p>
<p>Integrated Justice Information Systems (IJIS) Institute</p>	<p>The IJIS Institute, a 501(c)(3) nonprofit corporation, represents industry's leading companies that collaborate with local, state, tribal, and federal agencies to provide technical assistance, training, and support services for information exchange and technology initiatives. The mission of the IJIS Institute is to unite private and public sectors to improve critical information sharing for those who provide public safety and administer justice in U.S. communities.</p>	<p><a href="http://www.ijis.org">www.ijis.org</a></p>
<p>International Committee for Information Technology Standards (INCITS)</p>	<p>A U.S.-based standards development organization (SDO) dedicated to the creation of information technology (IT) standards.</p>	<p><a href="http://www.incits.org">www.incits.org</a></p>
<p>International Organization for Standardization (ISO)</p>	<p>An independent, non-governmental international organization with a membership of 161 national standards bodies.</p>	<p><a href="http://www.iso.org">www.iso.org</a></p>



International Telecommunication Union (ITU)	The telecommunications agency of the United Nations established to provide worldwide standard communications practices and procedures. Formerly the Consultative Committee for International Telephony and Telegraphy (CCITT).	<a href="https://www.itu.int/en/Pages/default.aspx">https://www.itu.int/en/Pages/default.aspx</a>
National 9-1-1 Program	The National 9-1-1 Program's mission is to provide federal leadership and coordination in supporting and promoting optimal 9-1-1 services. This federal "home" for 9-1-1 plays a critical role by coordinating federal efforts that support 9-1-1 services across the nation.	<a href="https://www.9-1-1.gov/">https://www.9-1-1.gov/</a>
National Suicide Prevention Lifeline (LIFELINE)	A national network of local crisis centers that provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.	<a href="https://suicidepreventionlifeline.org/">https://suicidepreventionlifeline.org/</a>
North American Network Operators Group (NANOG)	A governing body that provides guidance and instructions for the design of an IP network. NANOG is typically involved in the best current operational practices for IPv6 planning.	<a href="https://www.nanog.org/about/home">https://www.nanog.org/about/home</a>
North American Numbering Plan Administration (NANPA)	The organization that has overall administrative responsibility of the North American Numbering Plan (NANP), an integrated telephone numbering plan serving 20 North American countries that share its resources.	<a href="http://www.nationalnanpa.com">www.nationalnanpa.com</a>
National Association of Search and Rescue (NASAR)	Non-profit association dedicated to the advancement of professional, literary, and scientific knowledge and training in the field of search and rescue.	<a href="http://www.nasar.org/">http://www.nasar.org/</a>
National Association of State 9-1-1 Administrators (NASNA)	An association that represents state 9-1-1 programs in the field of emergency communications.	<a href="http://www.nasna9-1-1.org">www.nasna9-1-1.org</a>
National Center for Missing and Exploited Children (NCMEC)	NCMEC opened in 1984 to serve as the nation's clearinghouse on issues	<a href="http://www.missingkids.com">www.missingkids.com</a>

	related to missing and sexually exploited children.	
National Exchange Carrier Association (NECA)	A membership association of U.S.-based local telecommunications companies dedicated to keeping customers connected on state-of-the-art communications networks.	<a href="http://www.neca.org">www.neca.org</a>
National Emergency Number Association (NENA)	A not-for-profit corporation established in 1982 to further the goal of "One Nation-One Number." NENA promotes research, planning, and training, and strives to educate, set standards, and provide certification programs, legislative representation, and technical assistance for implementing and managing 9-1-1 systems.	<a href="http://www.nena.org">www.nena.org</a>
National Fire Protection Association	A global nonprofit organization, established in 1896, devoted to eliminating death, injury, property, and economic loss due to fire, electrical, and related hazards.	<a href="http://www.nfpa.org">www.nfpa.org</a>
National Highway Traffic Safety Administration (NHTSA)	NHTSA is an agency of the Executive Branch of the U.S. government, part of the Department of Transportation (DOT). It describes its mission as, "Save lives, prevent injuries, reduce vehicle-related crashes." The National 9-1-1 Program is housed under NHTSA.	<a href="http://www.nhtsa.gov">www.nhtsa.gov</a>
National Integration Center (NIC)	A unit of the Department of Homeland Security (DHS), responsible for managing the implementation and administration of the National Incident Management System (NIMS).	<a href="https://www.fema.gov/fema-technical-assistance-program">https://www.fema.gov/fema-technical-assistance-program</a>
National Information Standards Organization (NISO)	A non-profit association accredited by the American National Standards Institute (ANSI), NISO identifies, develops, maintains, and publishes technical standards to manage information in a digital environment. NISO standards apply both traditional and modern technologies to the full range of information-related needs,	<a href="http://www.niso.org">http://www.niso.org</a>

	including data retrieval, repurposing, storage, metadata, and preservation.	
National Institute of Standards and Technology (NIST)	Part of the Department of Commerce (DOC), NIST oversees the operation of the National Bureau of Standards. NIST works with industry and government to advance measurement science and to develop standards in support of industry, commerce, scientific institutions, and all branches of government. Its mission is to promote innovation and industrial competitiveness.	<a href="http://www.nist.gov">www.nist.gov</a>
National Joint Telecommunications or Emergency Response Taskforce (TERT) Initiative (NJTI)	A partnership between APCO and NENA that has worked to develop the many facets of a TERT program. TERT involves assistance to individual states in developing programs that would lead to the establishment of predetermined and selected trained teams of individuals who can be mobilized quickly and deployed to assist communications centers during disasters.	<a href="http://www.njti-tert.org">www.njti-tert.org</a>
National States Geographic Information Council (NSGIC)	NSGIC promotes the efficient development and management of location-based information resources, and advocates for innovative, strategic use of these assets to advance the interests of states, tribal communities, regions, local governments, and the nation.	<a href="http://www.nsgic.org/">http://www.nsgic.org/</a>
National Telecommunications and Information Administration (NTIA)	NTIA is an Executive Branch agency that is principally responsible for advising the President on telecommunications and information policy issues. NTIA's programs and policymaking focus on expanding broadband Internet access and adoption in the U.S., expanding the use of spectrum by all users, and ensuring that the Internet remains an engine for continued innovation and economic growth.	<a href="https://www.ntia.doc.gov/">https://www.ntia.doc.gov/</a>

Organization for Advancement of Structured Information Standards (OASIS)	An SDO that promulgates standards for data interchange.	<a href="http://www.oasis-open.org">www.oasis-open.org</a>
Open Geospatial Consortium (OGC)	An SDO that promulgates standards for the global geospatial community.	<a href="http://www.opengeospatial.org/">http://www.opengeospatial.org/</a>
Open Mobile Alliance (OMA)	An SDO that develops standards for the mobile phone industry.	<a href="http://www.openmobilealliance.org">www.openmobilealliance.org</a>
Packet Technologies and Services Committee (PTSC)	PTSC is an ATIS standards committee that develops standards related to services, architectures, signaling, network interfaces, next generation carrier interconnection, cybersecurity, and government emergency telecommunications service within next generation networks.	<a href="http://www.atis.org/PTSC">www.atis.org/PTSC</a>
Urban and Regional Information Systems Association (URISA)	A non-profit association of professionals using geographic information systems (GIS) and other information technologies to solve challenges in state and local government agencies.	<a href="http://www.urisa.org/">http://www.urisa.org/</a>

## APPENDIX 3: USEFUL RESOURCES

### Federal Rules, Regulations & Laws

- [Enhance 9-1-1 Service Act of 2004 \(PL 108-494\)](#)
- [Food, Conservation and Energy Act of 2008 \(“Farm Bill”\) \(PL 110-246\)](#)
- [Implementing Recommendations of the 9/11 Commission Act of 2007 \(PL 110-53\)](#)
- [Middle Class Tax Relief and Job Creation Act of 2012](#)
- [New and Emerging Technologies 9-1-1 Improvement Act of 2008](#)
- [Wireless Communications and Public Safety Act of 1999 \(PL 106-81\)](#)

### Reports

- FCC TFOPA [Adopted Final Report](#)
- TFOPA Working Group 1 Supplemental Report—[Optimal Cybersecurity Approach for PSAP’s](#)
- TFOPA Working Group 2 Supplemental Report—[Phase II Supplemental Report: NG9-1-1 Readiness Scorecard](#)
- TFOPA Working Group 3 Supplemental Report—[Funding Sustainment Model](#)
- GAO Report to Congressional Committees: [9-1-1 Services Most States Used 9-1-1 Funds for Intended Purposes, but FCC Could Improve Its Reporting on States’ Use of Funds](#)
- FCC Emergency Access Advisory Committee (EACC) Working Group 7 Report—[Recommendations on Timeline Alignment](#)
- Canadian Radio-television and Telecommunications Commission, [A Report on Matters Related to Emergency 9-1-1](#)
- Minnesota NG9-1-1 Strategic Plan, Updated 2017
- [Next Generation 9-1-1 Guide for 9-1-1 Authorities, April 2020](#)

### Guidance & Research Documents

- [Guidelines for State NG9-1-1 Legislative Language\\*](#)
- National 9-1-1 Program [State Assessment Handbook: A Guide for States Participating in the Statewide 9-1-1 System Assessment Process](#)
- National 9-1-1 Program [State Assessment Guidelines Synopsis Chart](#)
- National 9-1-1 Program [Next Generation 9-1-1 \(NG9-1-1\) Standards Identification and Review](#)
- [NG9-1-1 & FirstNet: Together Building the Future of Public Safety Communications \(A Guide for State & Local Authorities\)](#)
- [Guidelines for Minimum Training](#)
- National 9-1-1 Program [Next Generation 9-1-1 \(NG9-1-1\) Interstate Playbook, Chapter 1](#)
- National 9-1-1 Program [Next Generation 9-1-1 \(NG9-1-1\) Interstate Playbook, Chapter 2](#)

\*Hyperlink will be added once resource is published and posted for public distribution.

### Databases & Resource Repositories

- APCO [Standards to Download](#)
- NASNA [How to Start a State 9-1-1 Program](#)
- NASNA [State 9-1-1 Contacts](#)
- NASNA 9-1-1 [Regionalization—Tools and Information](#)
- National 9-1-1 [Program Documents & Tools](#)
- National 9-1-1 [Profile Database](#)
- NCSL [Key Enacted 9-1-1 Legislation Database](#)
- NENA [Company Identifier Program](#)
- NENA [Standards & Other Documents](#)
- [NENA website](#)
- [911.gov website](#)
- [Wyoming Legislature website](#)
- [Wyoming Public Utilities Commission](#)