

# **9-1-1 Service Board Meeting**

**December 9, 2021**

**12:30 – 1:00pm (Closed Meeting)**

**1:00 – 3:00pm (Open Meeting)**

## **Virtual Meeting**

**Join Via Computer:** <https://us06web.zoom.us/j/82955800989>

**Join Via Telephone:** +1 312 626 6799

**Meeting ID:** 829 5580 0989

## **AGENDA**

- I. **12:30pm Executive Committee - Closed Session** – Go into Closed Meeting under Section 610.021(1), (3) & (13), RSMo to discuss personnel matters (3) & (13)
- II. **Action Item:** Roll Call
- III. **Action Item:** Review/Approve Agenda
- IV. **Action Item:** Review/Approve Minutes
- V. **Action Item:** Consider any personnel action items as presented by the Executive Committee
- VI. **Action Item:** Consider any finance action items as presented by the Finance Committee
- VII. **Action Item:** C2C Government Affairs Support
- VIII. **Action Item:** Review/Approve Northeast, Missouri material project change
- IX. **Action Item:** Review/Approve NG911 Readiness Assessment Draft Report (Presentation by David Lucas, MCP)
- X. **Update Item:** 988 Update
- XI. **Update Item:** Federal NG911 Grant Update
  - a. **Action Item:** NG911 Southeast Project
- XII. **Discussion Item:** Director Update (Brian)
  - a. **Update Item:** GIS Project Update (Geocomm assessment & gap analysis project)
  - b. **Update Item:** Federal NG911 Funding Update
- XIII. **Discussion Item:** C2C Update (Scott & Kaycee)
  - a. **Update Item:** Grant/Loans
  - b. **Update Item:** Broadband & GIS (Efforts to secure funding for statewide Broadband and GIS implementation)
  - c. **Update Item:** 2022 Legislative Session

XIV. **Discussion Item:** Committee Updates

- a. Training Committee
- b. Legislative Committee
- c. Regionalization Committee
- d. NG911 Committee
- e. Nominations Committee
- f. Air Ambulance Committee
- g. Personnel Policy Committee
- h. AED Workgroup

XV. **New Business**

XVI. **Public Comment**

XVII. **Action Item:** Adjourn

*The 911 Service Board may go into closed session for any reason pursuant to 610.021 RSMo*

**Next Meeting:**



## Minutes: 911 Service Board Meeting

September 29, 2021

3:00 – 4:30pm

### Oasis Hotel and Convention Center

2546 North Glenstone Avenue Springfield, Missouri 65803

Room: Coco Ballroom

<https://us06web.zoom.us/j/84656952071>

Join Via Telephone: +1 312 626 6799, Access Code: 846 5695 2071

MOTION TO	MOTION MADE BY	SECONDED BY	APPROVED (Y/N)
Approve Agenda	Lisa Schlottach	Jason White	<b>Yes</b> Voice Vote
Approve August Board Meeting Minutes	Jason White	Chief Michael Snider	<b>Yes</b> Voice Vote
Adjourn	Lisa Schlottach	Jason White	<b>Yes</b> Voice Vote



**911 Service Board – Roll Call  
September 29, 2021**

<b>Appointee</b>	<b>Represents</b>	<b>Present</b>	<b>Absent</b>	<b>N/A</b>
Alan Wells, Chairman	1 <sup>st</sup> Class Counties Police Chiefs	✓		
Dr. Kenneth Scott, Vice-Chairman	2 <sup>nd</sup> , 3 <sup>rd</sup> , & 4 <sup>th</sup> Class Counties	✓		
Lisa Schlottach, Secretary	911 Directors Association	✓		
Jason White, Treasurer	Emergency Medical Services & Physicians	✓		
Chief James Person	Police Chiefs	✓		
Sheriff Stephen Korte	APCO	✓		
Sheriff Rodney Herring	Sheriffs	✓		
Chief Michael Snider	Fire Chiefs	✓		
Kevin Bond	Department of Public Safety Designee	✓		
Vacant	Governor’s Council on Disability			✓
Vacant	Municipalities			✓
Vacant	Wireless Telecommunications			✓
Vacant	Telecommunications			✓
Vacant	VOIP			✓
Vacant	MO-NENA			✓

## Missouri 911 Service Board – Material Project Change for Northeast Approved Grant

- **Original proposal:** At its August meeting, The Missouri 911 Service Board approved a grant in the amount of **\$884,258.27** for a Northeast regional 911 system including virtual consolidation for the counties of Schuyler, Scotland, Clark, Macon, Marion. This project would have brought three counties from a basic level of 911 to Phase II 911 on a legacy system.
  
- **Amended proposal:** An updated proposal would create a regional Northeast 911 system on a shared ESInet for the counties of Macon (incl. Knox), Marion (incl. Ralls and Lewis), Schuyler and Scotland. This project would bring two counties from a basic level to 911 to NG911 capable and seven counties onto a regional network for a grant amount of **\$745,069.78**.
  - Note: Macon and Knox counties are already consolidated and Marion, Ralls and Lewis are consolidated.



**MissionCriticalPartners**  
Because the Mission Matters

Next Generation 911  
Readiness Assessment

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Draft Report

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PREPARED NOVEMBER 2021 FOR  
THE STATE OF MISSOURI

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## Executive Summary

The Missouri 911 Service Board (Board) is a governor-appointed board established in statute to assist and advise the State of Missouri (State) in ensuring the availability, implementation, and enhancement of a statewide emergency telephone number. The Board is responsible for assisting the State in all jurisdictions through research, planning, training, and education.

Formerly the Advisory Committee for 911 Service Oversight, the Board's composition and responsibilities were updated in 2017 through legislation ([Senate Bill 503](#)), modifying the representative organizations (i.e., Board members) and expanding Board responsibilities. 2018 legislation ([House Bill 1456](#)) further expanded the Board's responsibilities in improving Missouri's 911 system in the most efficient and cost-effective manner possible.

The Board's executive director is the designated point of contact for Federal 911 initiatives and coordinates the Board's mandate to pursue Federal funding and ensure all requirements are fulfilled to maximize this and other funding opportunities.

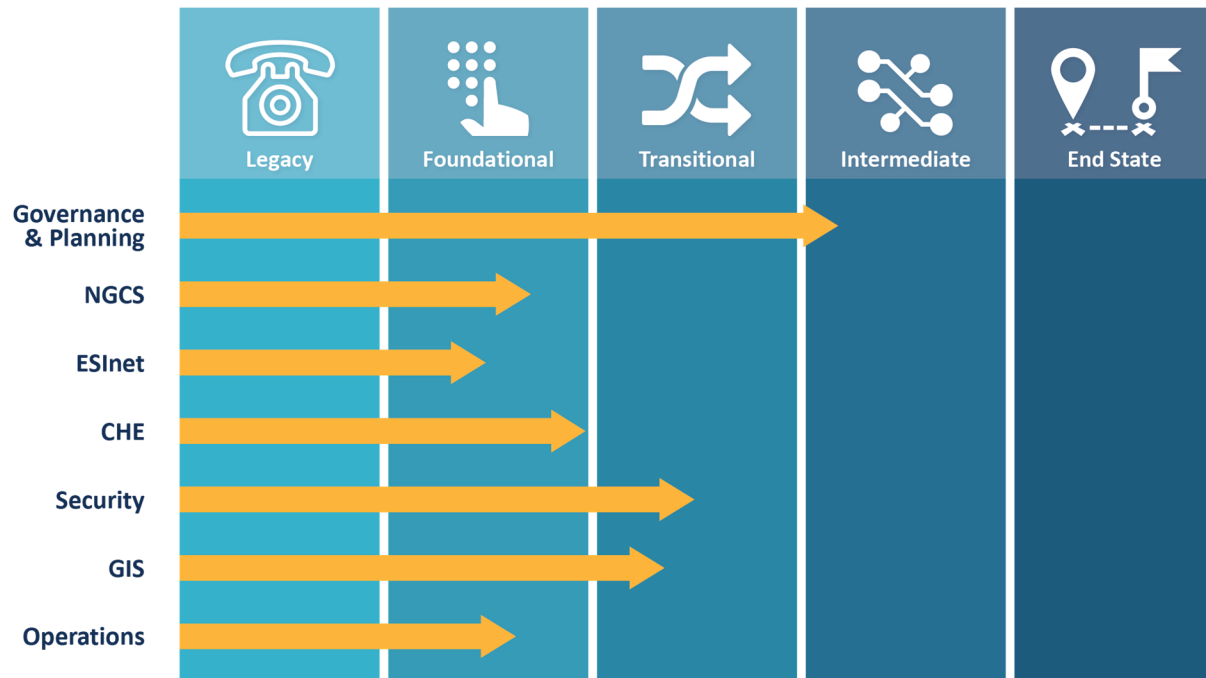
The Board is embarking on a transition to Next Generation 911 (NG911) and, in 2021, enlisted the assistance of Mission Critical Partners, LLC (MCP) to conduct an NG911 readiness assessment.

At the heart of the assessment were stakeholder interviews conducted using MCP's proprietary Model for Advancing Public Safety<sup>SM</sup> (MAPS<sup>®</sup>) tool. The MAPS tool helped provide insight into where Missouri 911 (MO911) is today and where it needs to be for a successful transition to NG911. Using criteria based on national standards, industry benchmarks, and best practices, feedback from Board staff and the Missouri public safety answering point (PSAP) community was translated into easy-to-understand scores and a heat map diagram, which can be used to build an NG911 strategic roadmap specific to Missouri.

Each initiative within this MAPS assessment will help set the course for the Board's evolution toward NG911 readiness. One can imagine NG911 readiness as a continuum from 1 to 10. The MAPS assessment assigned MO911 an overall score of 4.11. This indicates that Missouri is in a transitional stage where the migration to NG911 has begun in some geographic and technical areas. This level of readiness indicates that some technology is already in place and that Missouri is beginning to take the steps towards planning and implementing NG911.

The graphic below illustrates where MO911 is on the continuum in the following categories: Governance, NG911 Core Services (NGCS), Emergency Services Internet Protocol (IP) network (ESInet), Call-Handling Equipment (CHE), Security, Geographic Information System (GIS), and Operations.





# 1 Background

In 2017, pursuant to the Revised Statutes of Missouri (RSMo) 650.325, the Board was updated, and its responsibilities expanded. Changes in 2018 further expanded the Board's responsibilities in improving Missouri's 911 system in the most efficient and cost-effective manner possible.

The Board consists of 15 members representing various stakeholder interests of 911. The members are appointed by the Governor. The Board "*... is charged with assisting and advising the state in ensuring the availability, implementation and enhancement of a statewide emergency telephone number common to all jurisdictions through research, planning, training and education ...<sup>1</sup>*".

Currently, the Board has six vacancies, representing the following:

- Governor's Council on Disability
- Municipalities
- Wireless telecommunications service providers
- Telecommunications service providers
- Voice over IP (VoIP) service providers
- Association representing interests related to 911

An executive director oversees the Board's coordination and is supported by a contracted third-party company that also provides administrative support to the Board.

# 2 Approach and Methods

To holistically understand Missouri's readiness for NG911, MCP reviewed data collected by the Board to better understand the 911 landscape across all jurisdictions.

MCP conducted interviews with key staff members using its proprietary MAPS tool to assess MO911's readiness for an NG911 environment. Recognizing that the transition from legacy 911 is significant and goes beyond technology replacement, MCP's MAPS process focuses on understanding the current operational processes, staffing, governance (policies, procedures, and by-laws), funding models, and technical networking and architecture.

The MAPS tool includes customized questions that are grouped into topic-specific categories based on best practices and industry standards developed by organizations and workgroups such as the Federal Communications Commission's (FCC) Task Force on Optimal Public Safety Answering Point (PSAP) Architecture (TFOPA), the National Institute of Standards and Technology (NIST), the National Emergency Number Association (NENA), and the Association of Public-Safety Communications Officials (APCO) International.

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<sup>1</sup> <https://www.missouri911.org/statutes>

Board staff members were asked more than 70 conversational questions regarding seven NG911 readiness categories, shown below. Additional interviews of Board members, PSAP directors, and others within the Missouri 911 community were completed for greater insights regarding 911 in Missouri. The responses to the questions and additional information were scored, and the resulting heat map (refer to Section 3) provides a high-level view of the areas where prioritized focus is warranted.

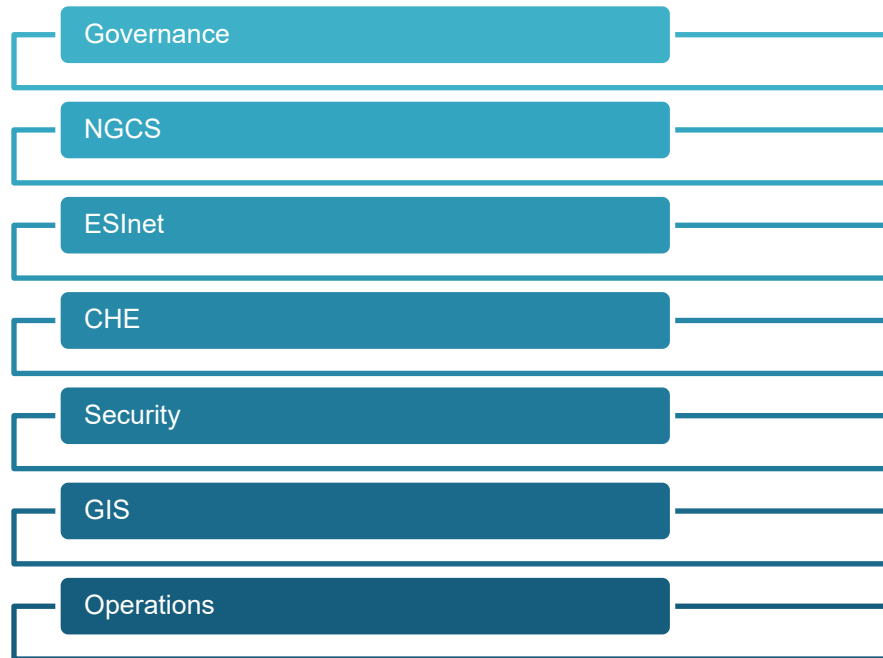


Figure 1: NG911 Readiness Categories

### 3 Current State

If one imagines NG911 readiness as a continuum from 1 to 10, where a rating of “1” represents “foundational,” “5” represents “transitional,” and “10” represents “NG911 ready,” the MAPS assessment assigned MO911 an overall score of **4.11**, as shown in the table below. This indicates that Missouri is in the initial transitional state of readiness for NG911 as the agency and some PSAPs have taken the beginning steps for the transition to NG911. This level of readiness is very common in the early stages of preparation and reflects strongly on an organization that is forward-focused and keen to identify gaps. There are still areas of improvement to be made before jumping headlong into the technical and operational waters of NG911. Notably, there were some areas in which Missouri is deeper into the transitional process than in others. In those areas, the goal would be to continue and maintain the good work and keep progressing to NG911 readiness.

# MAPS NG911 Readiness Assessment

## Missouri 911

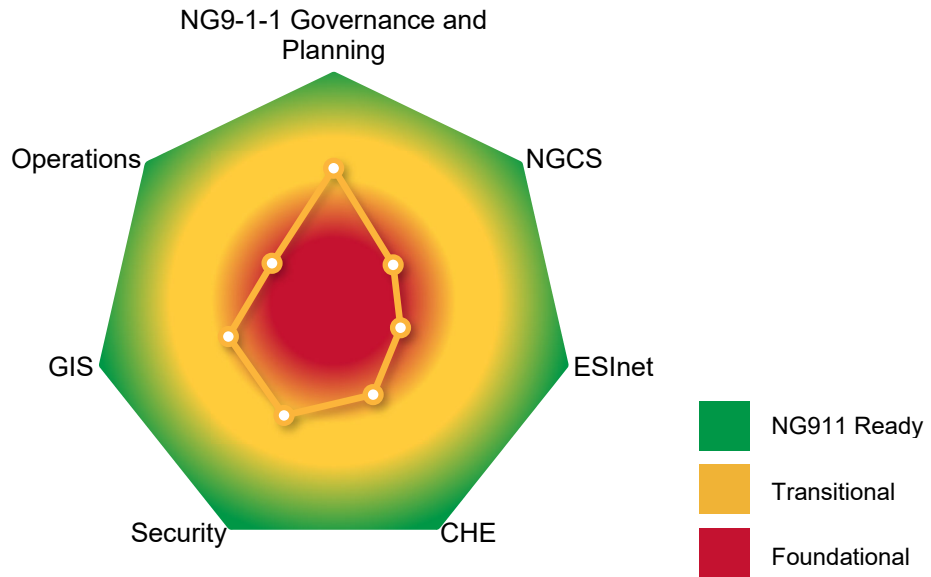


Figure 2: MAPS Readiness Assessment

Table 1: NG911 Readiness Scores

Lever	Overall Score	Question 1	Question 2	Question 3	Question 4	Question 5	Question 6	Question 7	Question 8	Question 9	Question 10
Governance	6.10	8.00	4.00	5.00	4.00	7.00	7.00	7.00	4.00	9.00	6.00
NGCS	3.22	5.00	3.00	4.00	3.00	4.00	3.00	2.00	3.00	2.00	
ESInet	2.90	4.00	2.00	3.00	2.00	2.00	4.00	3.00	4.00	2.00	3.00
CHE	3.86	5.00	6.00	4.00	2.00	4.00	2.00	4.00			
Security	4.83	4.00	4.00	4.00	6.00	5.00	6.00				
GIS	4.57	3.00	6.00	4.00	5.00	2.00	5.00	7.00			
Operations	3.33	2.00	4.00	6.00	2.00	2.00	4.00				
<b>Overall Score</b>	<b>4.11</b>										

### 3.1 Governance

Today's emergency communications environment is complex, and as new emergency communications technology is deployed, it will require even more planning and discussion between Board staff, PSAPs, technology and service providers, and emergency responders. A robust governance structure fosters stakeholder-engaged decision-making. It provides an opportunity for cross-jurisdictional and cross-functional discussions to take place—discussions that are essential for interoperable, functional, and operational success.

A strong governance structure is critical in the transition from legacy 911 to NG911 because the transition impacts every aspect of 911—from network technology changes outside the walls of the PSAP to the hardware and software used within the PSAP, including PSAP operations. It is critical that goals, objectives, tasks, and timelines, as well as impacts to the PSAP, are carefully communicated throughout the process. Every stakeholder must be aware of, and involved in, the transition process. Communication among MO911 staff and stakeholders is key to this transition.

[TFOPA](#) was created to provide a framework for readiness and maturation of the NG911 transition model from foundational to end-state NENA i3 (i.e., NG911). The MAPS assessment overlays the TFOPA framework, as well as industry standards and best practices, to develop a baseline from which to plan and coordinate transition strategies and procure technologies to improve NG911 readiness.

The MAPS tool examines ten key areas associated with or requiring governance to help assess NG911 readiness.

- |  |   |
|--|---|
| <ul style="list-style-type: none"><li>• Documentation</li><li>• Strategic Planning</li><li>• Communication</li><li>• Coordination</li><li>• Technology</li></ul> | <ul style="list-style-type: none"><li>• Budgeting</li><li>• Funding</li><li>• Staffing</li><li>• Procurement</li><li>• Standards and Best Practices</li></ul> |
|--|---|

Based on the MAPS assessment, a review of the documentation provided, and interviews with MO911 staff, MO911 achieved an overall score of **6.10** for governance—a transitional state on the NG911 readiness continuum.

# MAPS NG911 Readiness Assessment

## Missouri 911

### NG9-1-1 Governance and Planning



Table 2: Governance Readiness Scores

Lever	Overall Score	Documentation	Strategic Planning	Communication	Coordination	Technology	Budgeting	Funding	Staffing	Procurement	Standards and Best Practices
Governance	6.10	8.00	4.00	5.00	4.00	7.00	7.00	7.00	4.00	9.00	6.00

#### 3.1.1 Documentation

*Rating: 8.00*

The Board has detailed rules and regulations that outline the Board’s purpose and duties. Overall, the Board is charged with:

... taking immediate steps toward improving access to 911 emergency services<sup>2</sup> to protect Missouri residents in emergency situations, particularly in underserved areas of the state.

... required to set percentage rates of the prepaid wireless emergency telephone service charges deposited in the Missouri 911 service trust fund to reimburse 911 services authority for costs incurred to implement and operate Missouri 911 systems and for answering and dispatching emergency calls.

... establish and administer a grant and loan program to provide financing from the Missouri 911 service trust fund for costs of implementing 911 communications service projects.<sup>3</sup>

In addition, the Board “is charged with assisting and advising the state in ensuring the availability, implementation and enhancement of a statewide emergency telephone number common to all jurisdictions through research, planning, training, and education, but shall have no authority over communications service providers.”<sup>4</sup>

In addition, the Board has detailed by-laws covering membership, conflicts of interest, ethics, and administrative details of Board meetings and records.<sup>5</sup>

Documentation includes references to the *NENA Detailed Functional and Interface Standards for the NENA i3 Solution* (NENA-STA-010.2-2016)<sup>6</sup> and defines Next Generation 911” or “NG9-1-1” as “a system comprised of managed IP-based networks, gateways, functional elements and databases that augment or replicate present day E9-1-1 features and functions and provide new capabilities. NG9-1-1 is designed to provide access to emergency services from all sources, and to provide multimedia data capabilities for PSAPs and other emergency service organizations.”<sup>7</sup>

### 3.1.2 Strategic Planning

**Rating: 4.00**

The Board does not have a strategic plan. Board staff identified that this is a crucial element missing from Board operations and are beginning to develop a strategic plan that addresses NG911. The Board will use

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<sup>2</sup> Access to emergency services includes the availability of text-to-911

<sup>3</sup> Title 11 Department of Public Safety, Division 90 Missouri 911 Service Board, Chapter 1 Board Operations, 11 CSR 90-1.010 Overview. [v45n12a.pdf \(squarespace.com\)](#)

<sup>4</sup> RSMo 650.325 Missouri 911 service board established. <https://revisor.mo.gov/main/OneSection.aspx?section=650.325>

<sup>5</sup> State of Missouri. By-laws: Missouri 911 Service Board [https://static1.squarespace.com/static/5dd41599eefcb7babf27472/t/5f5fd5d6b48880567f7e6c76/1600116183465/Amended-ByLaws+Missouri+911+Service+Board\\_8\\_20DOCX.pdf](https://static1.squarespace.com/static/5dd41599eefcb7babf27472/t/5f5fd5d6b48880567f7e6c76/1600116183465/Amended-ByLaws+Missouri+911+Service+Board_8_20DOCX.pdf)

<sup>6</sup> There is a newer version ([NENA-STA-010.3a-2021](#)). The referenced version can be found here: [NENA-STA-010.2 \(ymaws.com\)](#).

<sup>7</sup> Title 11 Department of Public Safety, Division 90 – Missouri 911 Service Board, Chapter 2 911 Financial Assistance Program, 11 CSR 90-2.010 Definitions (N). <https://static1.squarespace.com/static/5dd41599eefcb7babf27472/t/5ef650780ba9554bdc401e19/1593200765180/v45n12a.pdf>

the findings from this MAPS assessment to assist in developing its road map for the next three to five years.

### 3.1.3 Communication

*Rating: 5.00*

While the Board does not have a formal communications plan, it has accomplished a lot in the last 18 months and has established a path to provide regular updates consistently. In addition to a quarterly newsletter to PSAPs, Board representatives regularly present to Missouri professional public safety organizations (i.e., NENA, APCO, and State 911 Directors).

The Board meets monthly. The Board's objective is to provide representation for all 911 stakeholders.

The Board hosts regional in-person/virtual meetings quarterly. These meetings provide Board staff the ability to keep stakeholders abreast of Board activities, as well as hear from the stakeholder community. Board staff attend and present at the Missouri Public Safety Communications Conferences (MPSCC).

The Board's website is up to date and contains accessible information on meeting dates and times, agendas, and minutes.

### 3.1.4 Coordination

*Rating: 4.00*

MO911 has begun preliminary talks with neighboring states as staff and PSAPs recognize that state boundaries are a complex issue. The Board recognizes the complexities of coordinating with eight adjacent states while understanding that multiple solutions are viable to ensure interstate connectivity solutions that are currently unavailable in the legacy 911 system.

As the Board moves towards NG911, coordination with neighboring states and ESInet and NGCS providers will be needed.

### 3.1.5 Technology

*Rating: 7.00*

An NG911 stakeholder group comprised of representatives from the 911 community with both operational and technical expertise has been established.

Technical planning is a charge of the Board. The technical minimums required for NG911 (and E911) are not laid out or discussed in detail but are acknowledged as an aspect that needs to be included.



### 3.1.6 Budgeting

*Rating: 7.00*

The Board funds its current operational costs within its allocated budget and is fully transparent with the 911 community on financial issues. Board staff have a small budget to fund their minimal expenses and have kept overhead expenditures below 6% annually.

Budgeting is focused on the implementation of 911 services where it does not exist, ensuring texting abilities to 911 services, implementation of an ESInet for public safety agencies, and several other key initiatives identified within legislation.

### 3.1.7 Funding

*Rating: 7.00*

Missouri counties and the City of St. Louis<sup>8</sup> can collect 911 funds in several manners, including a landline levy, sales tax, or all device methods. Local 911 fees are collected by each jurisdiction, which can set its own rates and collection method within limits set by Missouri legislation. Each county may decide how to fund its 911 services.<sup>9</sup>

Locally, 911 fees have traditionally been placed on landline phones (including VoIP) but cannot be levied upon prepaid wireless service by local jurisdictions. Missouri statute outlines that the prepaid wireless 911 fee rates, collection, and disbursement method are the responsibility of MO911.

The revenue generated by local and prepaid 911 fees does not cover all local 911 expenses. Many jurisdictions must provide additional funds through general fund contributions and other methods to support 911 services, which may result in disparities of service. Funding will be needed not just for NG911 implementation but ensuring current 911 systems are maintained through the transition period.

*“The board is required to set percentage rates of the prepaid wireless emergency telephone service charges deposited in the Missouri 911 service trust fund to reimburse 911 services authority for costs incurred to implement and operate Missouri 911 systems and for answering and dispatching emergency calls.”<sup>10</sup>*

The Board has authority to *“set the percentage rate of the prepaid wireless emergency telephone service charges to be remitted to a county or city is provided under subdivision (5) of subsection 3 of section 190.460.”<sup>11</sup>*

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<sup>8</sup> County Funding Options, Missouri 911 Service Board. <https://www.missouri911.org/county-funding-options>

<sup>9</sup> Ibid.

<sup>10</sup> Title 11 Department of Public Safety, Division 90 Missouri 911 Service Board, Chapter 1 Board Operations, 11 CSR 90-1.010 Overview. <https://static1.squarespace.com/static/5dd41599eefcb7babf27472/t/5ef650780ba9554bdc401e19/1593200765180/v45n12a.pdf>

<sup>11</sup> Authorizing Statute, Missouri 911 Service Board. 650.330 4.(18). <https://www.missouri911.org/statutes>

### 3.1.8 Staffing

*Rating: 4.00*

The Board's executive director is directly employed by the Board. The Board augments all administrative staff services through a third party. This staffing will need to expand as MO911 progresses towards NG911 to support the administration and monitoring of NG911 services and/or support the distribution of future federal grant funds specified for the State 911 Board administration.

In support of the Board's goals of migrating to NG911, staff or staff services with specific NG911/911 technical and/or GIS expertise will be needed to migrate, implement, and support Missouri's NG911 system.

### 3.1.9 Procurement

*Rating: 9.00*

The Board has an independent procurement process that has been used to solicit professional services. The ability to purchase specific NG911 hardware, software, and related products is not fully documented (to date) but is well within the Board's authority and operational capabilities.

### 3.1.10 Standards and Best Practices

*Rating: 6.00*

The Board has the authority to provide recommendations to both primary and secondary PSAPs regarding technical and operational standards for 911 service<sup>12</sup> as well as establish criteria for consolidation prioritization of PSAPs.

Today, the Board conducts an annual PSAP survey to evaluate the potential for improved services and coordination. The survey forms the basis for the Board to complete the National 911 Program's annual survey requested of each state's designated 911 point of contact.

## 3.2 Next Generation 911 Core Services

NGCS are the functional elements responsible for NG911 call-routing capabilities. The NENA i3 standard for these functional elements is defined in [NENA-STA-010.2-2016](#), *NENA Detailed Functional and Interface Standards for the NENA i3 Solution* (as well as its successor and related documents). Given the often-transitional nature of NG911 routing solution implementations, it is common for agencies to have some or all routing technologies in place for the transition to NG911 while still integrated with legacy call-

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<sup>12</sup> Ibid. 650.330 4. (2)

routing elements. The result is a broad spectrum of readiness ranging from foundational to end-state NG911.

The MAPS tool examines nine key areas associated with NGCS to help assess NG911 readiness.

- Technology Procurement
- Functional Elements
- Routing Solutions
- Automatic Location Identification (ALI) Database Management System (DBMS) and Location Information Services (LIS)
- Service Level Agreements (SLAs)
- Reporting and Management Information Systems (MIS)
- Interoperability
- Call Transfer Capabilities
- Additional Data Repositories (ADR)

Based on the MAPS assessment, a review of the documentation provided, and interviews with Board staff, MO911 achieved an overall score of **3.22** for NGCS—a foundational state on the NG911 readiness continuum.

The foundational rating for this portion of the assessment highlights an opportunity to acquire a statewide, standards-based solution that supports the long-term operational needs of the State and its PSAPs. By defining a statewide set of baseline requirements and capabilities for this critical infrastructure, the Board has a tremendous opportunity to raise the bar and level the playing field for all PSAPs and all users across Missouri.

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# MAPS NG911 Readiness Assessment

## Missouri 911

### NGCS

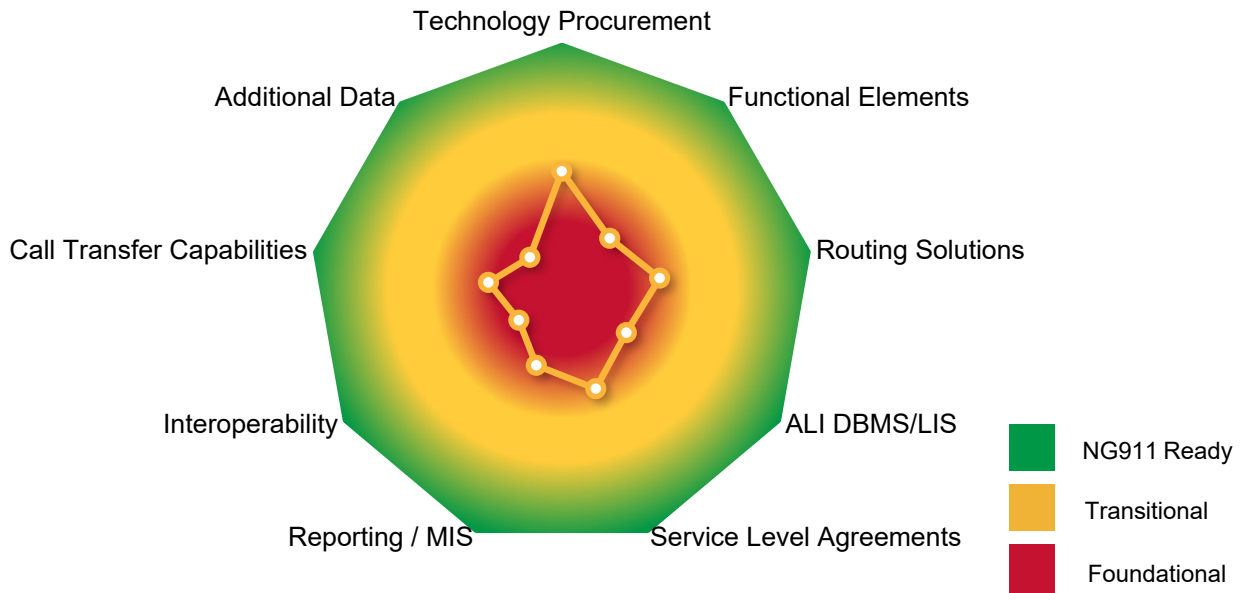


Figure 4: NGCS MAPS

Table 3: NGCS Readiness Scores

Lever	Overall Score	Technology Procurement	Functional Elements	Routing Solutions	ALI DBMS and LIS	SLAs	Reporting and MIS	Interoperability	Call Transfer Capabilities	ADR
NGCS	3.22	5.00	3.00	4.00	3.00	4.00	3.00	2.00	3.00	2.00

### 3.2.1 Technology Procurement

*Rating: 5.00*

MO911 is conducting an NG911 needs assessment. The Board has created an NG911 committee. However, no requirements for NGCS have been identified at this time.

### 3.2.2 Functional Elements

*Rating: 3.00*

While PSAPs are at various levels of deploying NG911 technology and the functional elements associated with NGCS implementation, currently, there is no coordinated effort to deploy NGCS across the state.

### 3.2.3 Routing Solutions

*Rating: 4.00*

Based on [NENA 03-002](#), *NENA Standard for the Implementation of Enhanced MF Signaling, E9-1-1 Tandem to PSAP*; [NENA 03-005](#), *NENA Standard Generic Requirements for an Enhanced 9-1-1 Selective Routing Switch* (archived); and [NENA-STA-010.2-2016](#), the current routing technologies used by PSAPs in Missouri are rated as foundational. This is because PSAPs within the state are currently supported by legacy 911 solutions provided by the local exchange carriers (LECs) and 911 system service providers.

### 3.2.4 ALI DBMS and LIS

*Rating: 3.00*

PSAPs within the state are currently all supported by legacy 911 solutions. The functional elements required for NG911 include a Location Validation Function (LVF) and LIS in the end-state i3 solution. PSAPs will likely need to implement a transitional solution for a period before these functional elements are in production usage. A transitional solution should support both legacy and i3 data needs and is commonly referred to as a location database (LDB).

### 3.2.5 SLAs

*Rating: 4.00*

Service level agreements (SLAs) are a vital tool in holding solution and service providers accountable to their contractual commitments. Currently, such performance criteria are largely developed at the local level and are dependent on the solution a PSAP has in place. 911 in Missouri is operated by legacy solution providers and supported through legacy agreements for services through incumbent LECs. These disparities can lead to different service levels in each jurisdiction. However, procuring a statewide NG911 system or setting minimum standards for Board-funded NG911 solutions with a common set of service-level requirements could substantially improve each PSAP's ability to dictate and enforce the terms of any SLA.

### 3.2.6 Reporting and MIS

*Rating: 3.00*

Annually, PSAPs are required to self-report call volume to the Board. The Board has no insight into the performance or activity within the call-routing infrastructure. For example, there is no data to show if a 911 call was delivered to a PSAP or if there were any issues affecting how long call delivery takes. It could benefit Missouri to implement a statewide reporting or MIS program to automate the collection of data. This would support the Board in its charge of ensuring the availability of 911.

### 3.2.7 Interoperability

*Rating: 2.00*

Inter-tandem transfer capabilities in legacy 911 solutions are often limited to local access and transport area (LATA) boundaries and/or interoperating agreements with LECs. In many cases, the LECs do not employ systems that can support the full functionality of E911 in a transfer scenario. Currently, Missouri is rated as legacy.

### 3.2.8 Call Transfer Capabilities

*Rating: 3.00*

Local PSAPs can transfer 911 calls through the legacy selective router for ANI<sup>13</sup>/ALI within the limitations of their local exchange provider and 911 system service provider coverage area. This is the minimum expected service level in the legacy 911 environment.

### 3.2.9 ADR

*Rating: 2.00*

In the current 911 environment, there is limited functionality for integrated additional data repositories (ADR). Access to these solutions is through third-party connectivity and/or out-of-band network connections at the local PSAP CHE level; however, PSAPs are only beginning to leverage these resources.

## 3.3 Emergency Services IP Network

Per [NENA-INF-016.2-2018](#), *Emergency Services IP Network Design (ESIND) Information Document*, an “ESInet is a specialized IP network designed and implemented ... to allow connectivity between public safety agencies. ESInets lay the groundwork for NG9-1-1 configurations by providing the common routed

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<sup>13</sup> Automatic number identification

*infrastructure to deliver critical information. ESInets provide transport, interoperability, security, and related services.”<sup>14</sup>*

Given the transitional nature of some ESInet implementations, it is common for agencies to have ESInet facilities in place to support NG911-ready CHE and other IP-based mission-critical network services. The level of redundancy in ESInet implementations across the country varies widely, representing the full range of categories from foundational (single point-to-point connections between sites) to fully redundant, resilient, and highly secure rings and mesh networks (end state).

MO911 recognizes the ESInet of the future is meant to be a wholly separate network solution—designed and implemented for the purpose of supporting NGCS—and may be implemented in tandem with i3-compliant call-handling solutions, i3-compliant radio networks, or other IP-based and data-driven public safety network projects. These design decisions will be addressed at a future date and incorporated into the NG911 procurement requirements.

The MAPS tool examines ten key areas associated with the current state of networking infrastructure among public safety agencies in the state to help assess NG911 readiness.

- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>• Carrier Ingress</li><li>• Interconnectivity</li><li>• Survivability</li><li>• Monitoring</li><li>• Change Management</li></ul> | <ul style="list-style-type: none"><li>• Reporting and MIS</li><li>• Bandwidth</li><li>• Nclock<sup>15</sup></li><li>• Quality of Service (QoS)</li><li>• Documentation</li></ul> |
|--|--|

Based on the MAPS assessment, a review of the documentation provided by the PSAPs, and interviews with Board staff and 911 stakeholders, MO911 achieved an overall score of **2.90** for the ESInet—a foundational state on the NG911 readiness continuum. This was anticipated given the lack of ESInet deployments across the state.

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<sup>14</sup> *Emergency Services IP Network Design (ESIND) Information Document*, NENA-INF-016.2-2018. National Emergency Number Association, April 5, 2018, section 2.1.

<sup>15</sup> Network clock

# MAPS NG911 Readiness Assessment

## Missouri 911

### ESInet

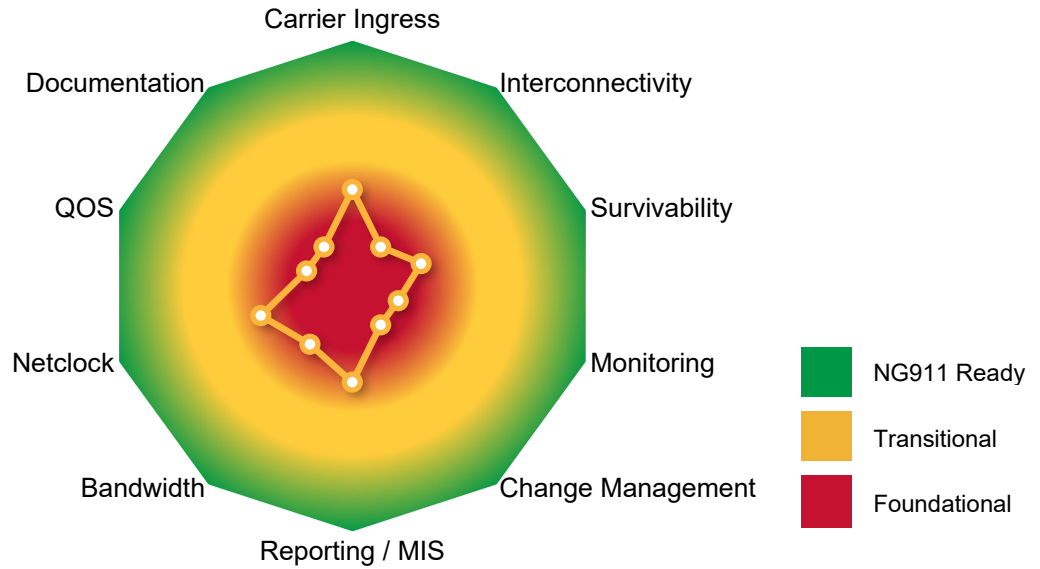


Figure 5: ESInet MAPS

Table 4: ESInet Readiness Scores

Lever	Overall Score	Carrier Ingress	Interconnectivity	Survivability	Monitoring	Change Management	Reporting and MIS	Bandwidth	Netclock	QoS	Documentation
ESInet	2.90	4.00	2.00	3.00	2.00	2.00	4.00	3.00	4.00	2.00	3.00

### 3.3.1 Carrier Ingress

*Rating: 4.00*

Currently, all PSAPs are supported by legacy centralized automatic message accounting (CAMA) circuits for 911 call delivery. Although some jurisdictions are developing non-CAMA solutions and have procured solutions to migrate to IP-based solutions, at the time of this report, implementation of a non-CAMA system has not been completed.



### 3.3.2 Interconnectivity with Neighboring ESInets

*Rating: 2.00*

Missouri does not currently have interconnectivity with neighboring ESInets. The Board has recognized that this is a challenge, especially between states, as in some areas, different LECs and state boards have made transferring 911 data almost impossible. The Board seeks to improve upon this and desires to use a standards-based approach to ensure interoperability between ESInets.

### 3.3.3 Survivability

*Rating: 3.00*

The implementation of CHE host/remote solutions and other IP-based services to individual PSAPs has increased and created diverse connections to PSAPs. However, many locations are sustaining traditional single-path services instead of requiring geographic diverse, multipath builds for network access. A handful of PSAPs have developed geodiverse, ring-style networks for data centers and/or critical PSAP facilities, but these are limited to the more urban areas with many carrier options.

### 3.3.4 Monitoring

*Rating: 2.00*

As noted, there is a lack of visibility into the health and performance of the current call delivery infrastructure. PSAP metrics are self-reported to MO911 annually. The data-based nature of an ESInet naturally lends itself to more transparency and visibility.

### 3.3.5 Change Management

*Rating: 2.00*

Each PSAP is responsible for establishing change management policies with its respective LEC. There is no common methodology to coordinate changes across the state.

### 3.3.6 Reporting and MIS

*Rating: 4.00*

There is no requirement or formal agreement for 911 system service providers and LECs to provide health and performance reports to the Board or local PSAPs. The Board would have to request these reports from each PSAP or service provider in the current environment.

### 3.3.7 Bandwidth

*Rating: 3.00*

Currently, all PSAPs are supported through CAMA or CAMA-like connections to deliver 911 calls, which are sized at one trunk per call path. Typically, these legacy circuits have very low capacity (64 kilobits per second [kbps] per trunk) and very basic data-carrying capability (usually limited to ANI only). By comparison, the IP circuits specified in i3 can be built with a broad spectrum of bandwidth and can deliver a practically unlimited variety of data types and formats. This flexibility (in capacity and capability) makes such circuits virtually future proof, as they may be reconfigured and resized relatively easily as ESInet requirements evolve.

### 3.3.8 Netclock

*Rating: 4.00*

To reconcile timestamped log data from disparate elements in a network-based infrastructure, it is critical that all elements reference a common timing source. Taking time signals from the global positioning system (GPS) satellite constellation is an easy and cost-effective way to synchronize systems separated by vast distances. Furthermore, a GPS time reference is widely considered to be legally defensible if records are to be used in court.

GPS satellites are considered Stratum 0 (essentially the original source). As devices receive GPS signals and forward them to other devices, each hop in that chain increases the stratum number, indicating a potential loss in traceability, reliability, and accuracy. In public safety, it is considered best practice to have every physical facility where system elements are housed have its own Stratum 1-time source, meaning an onsite netclock that receives signals directly from the GPS network via a GPS antenna connected directly to the netclock.

Since there is no common network in the state, MO911 must rely upon timestamps provided by the LECs, system service providers, and CHE vendors. There is no best practice guideline or requirement that PSAPs use time signals from a GPS satellite constellation. Netclock decisions are made locally.

### 3.3.9 QoS

*Rating: 2.00*

QoS is a mechanism for defining and enforcing relative priorities between different types of data traversing the same network. In an ESInet QoS scheme, the packetized voice traffic for 911 “calls” is generally considered to be of the highest priority for delivery, as compared to the exchange of inter-agency emails or even updated GIS data, for example.

QoS rules not only mark different packets based on their priority but also enforce those priorities by delaying or even dropping lower-priority data, when and if necessary, to ensure the timely delivery of higher-priority data. A QoS scheme based on industry best practices can greatly improve the perceived

quality of the voice (also known as the Mean Opinion Score [MOS] for VoIP), leading to clearer communication and understanding between all parties on the call. QoS only applies to call delivery (prioritization and signal quality) over data networks, which the PSAPs do not employ today. MO911 will need to provide clear requirements in this area for any NG911 procurement.

### 3.3.10 Documentation

*Rating: 3.00*

The Board does not have records or network diagrams of the 911 infrastructures currently used to process 911 voice and/or data traffic within the state. Some individual PSAPs working directly with network providers have access to limited infrastructure documentation, although it is inconsistent statewide.

Moving to an i3 ESInet will make it easier to develop a common operating picture of the 911 environment. The required documentation should be available to individual PSAPs or regional authorities, at a minimum. Furthermore, the requirements for the procurement of NG911 solutions may be written to include the delivery and regular updates of such documentation.

## 3.4 Call-Handling Equipment

CHE is a key component in the NG911 environment. Analog technologies are rapidly becoming a thing of the past as the nation's major telephone carriers migrate away from copper-line networks. This key component of 911 call delivery can be a stumbling block for many jurisdictions financially, technologically, and/or operationally when implementing NG911. Older analog technology may not be capable of processing the available features of an NG911 call, thus eliminating much of the information that may be available to a telecommunicator.

Given the cyclic nature of hardware refreshes, it is common for states to have a mix of call-handling capabilities in place, ranging from foundational to regional end-state NG911.

The MAPS tool examines seven key areas associated with call-handling to help assess NG911 readiness.

- i3-capable Call Handling
- Text-to-911
- Text-from-911
- Logging and Recording
- Mapping
- MIS
- ADR

Based on the MAPS assessment, a review of the documentation provided, and interviews with Board staff and the PSAP community, MO911 achieved an overall score of **3.86** for the CHE—a transitional state on the NG911 readiness continuum.

# MAPS NG911 Readiness Assessment

## Missouri 911

### Call-Handling Equipment

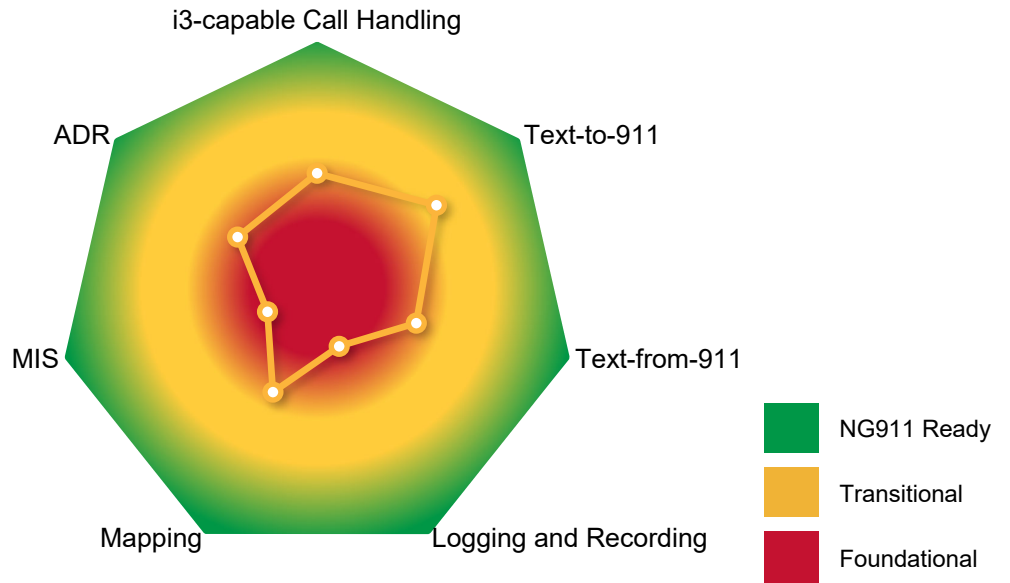


Figure 6: CHE MAPS

Table 5: CHE Readiness Scores

Lever	Overall Score	i3-capable Call Handling	Text-to-911	Text-from-911	Logging and Recording	Mapping	MIS	ADR
CHE	3.86	5.00	6.00	4.00	2.00	4.00	2.00	4.00

#### 3.4.1 i3-capable Call Handling

*Rating: 5.00*

Based on information collected from the annual PSAP survey, 47% of PSAPs (52) report that their CHE equipment is NG911-compliant, and there are no requirements outside of the grant guidelines that

equipment should be NG911-compatible<sup>16</sup>. MO911 will need to closely monitor the deployment of i3-capable CHE to ensure that when NG911 is deployed PSAPs will be able to operate.

#### 3.4.2 Text-to-911

*Rating: 6.00*

The Board is charged with ensuring that disabled residents have access to text-to-911 services.<sup>17</sup> Forty-six percent of PSAPs (51) report that they have received a text message.

The Board provides grant funding to support deploying text-to-911, which it defines “*as the ability to send a text message to reach 911 emergency call takers from a mobile phone or device.*”<sup>18</sup> The grant rules do not specify how text-to-911 should be deployed (i.e., integrated into CHE or an over-the-top solution), only that grant funding is available; localities make the decision.

#### 3.4.3 Text-from-911

*Rating: 4.00*

Text-from-911 is a useful tool within a PSAP, but there are no national standards or best practices associated with this service. Text-from-911 allows non-verbal communications initiated by the PSAP to re-engage callers and/or validate abandoned calls. Many PSAPs within Missouri have implemented this service directly or via third-party providers with success. Text-from-911 is not reliant upon operational text-to-911 service to operate. This service should not be a substitute for providing text-to-911.

#### 3.4.4 Logging and Recording

*Rating: 2.00*

There are no requirements that PSAPs have logging recorders. Logging recorders can qualify as equipment that can be funded via the grant guidelines. In the 2020 PSAP survey, 44% of PSAPs (49) reported that they had upgraded their logging recorder to be NG911-compatible. Fifteen PSAPs reported that they share recording equipment with another PSAP.

Absent basic i3 compliance, legacy recording solutions that are in place may be unable to capture even basic (now IP-based) audio from i3 CHE, much less the rich metadata as well as short message service (SMS), multimedia, and other content that the i3 specification defines.

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<sup>16</sup> Missouri 911 Service Board's Financial Assistance Program. *Description and Application Instruction*. <https://static1.squarespace.com/static/5dd41599eefcb7babf27472/t/5fbc26dc4a08301495c899d9/1606166236423/Application+Description+and+Instructions+Winter+2020.pdf>

<sup>17</sup> Authorizing Statute, Missouri 911 Service Board. <https://www.missouri911.org/statutes>

<sup>18</sup> Missouri 911 Service Board's Financial Assistance Program. *Description and Application Instruction*. <https://static1.squarespace.com/static/5dd41599eefcb7babf27472/t/5fbc26dc4a08301495c899d9/1606166236423/Application+Description+and+Instructions+Winter+2020.pdf>

### 3.4.5 Mapping

*Rating: 4.00*

Missouri has taken the initial steps in analyzing the availability and viability of GIS data within the state that is related to the database requirements within an NG911 solution. As such, almost all PSAPs have provided GIS and master street address guide (MSAG) data samples to the Board's selected reviewer, who is developing a gap analysis and future needs assessment.

The GIS gap analysis will identify the PSAPs that have met or are moving towards GIS-compliant datasets while also locating locations that need supplemental support and assistance.

The Board has adopted GIS standards for data formats based on NENA i3 requirements but has not extended these to guidelines for PSAP mapping solutions that support needed i3 functionality such as zooming, depicting circles of uncertainty, and imagery. Statewide coordination of this effort is progressing. Locally though, PSAPs admit that due to a lack of resources, they sometimes struggle to keep data current and updated.

### 3.4.6 MIS

*Rating: 2.00*

All call volume is self-reported annually as part of the Board's PSAP survey, which is required for each grant awardee. Localities are requested to break out call metrics to measure the number of wireless, VoIP, and landline 911 calls received. Various platforms are used, and there is no requirement that equipment is to be ready to capture i3 log events.

### 3.4.7 ADR

*Rating: 4.00*

When data is made available to telecommunicators early and throughout the 911 call, situational awareness improves—which can result in quicker and more appropriate emergency response. The concept of additional data was introduced in the second version of the NENA i3 standard ([NENA-STA-010.2-2016](#)). Since the concept was announced, the industry has seen incremental and important steps being made to provide more data to telecommunicators during requests for emergency assistance. This data, in most cases, is provided through over-the-top (OTT) or out-of-band solutions that leverage queries directly from the call-handling solution to provide access to additional data, when available, for a call.

A majority of PSAPs (74) use OTT solutions (e.g., RapidSOS) to receive supplemental location data.

## 3.5 Security

Cybersecurity is of great importance for all broadband-enabled devices and networks. NG911 systems, particularly the ESInet, are no different and, in fact, command greater importance regarding cybersecurity.

The number of cyberattacks already perpetrated against corporations and public safety entities the world over is staggering; with each passing year, the number of these attacks continues to grow, as does the severity of the attacks.<sup>19</sup>

Public safety agencies are encouraged to follow both TFOPA and NIST standards and recommendations as a framework to build a successful cybersecurity management process.

The NIST [Cybersecurity Framework](#) provides a framework and methodology for improving and protecting the public safety infrastructure from cyberthreats. The framework suggests a five-phase approach to cybersecurity preparedness:

1. Identify—develop an organizational understanding of how to identify cybersecurity risks
2. Protect—develop and implement appropriate safeguards to protect against known and unknown threats
3. Detect—develop and implement activities to detect a cybersecurity event if protection fails
4. Respond—develop and implement activities to mitigate a detected cybersecurity incident
5. Recover—develop and implement plans for restoring services due to an incident

TFOPA's [NG9-1-1 Readiness Scorecard](#), Section 4.4, *Security*, identifies six comprehensive steps for creating a cybersecurity plan that complements the NIST phases:

1. Identification/Discovery—inventory all existing systems and applications
2. Assess/Prioritize—conduct risk assessments and establish security controls
3. Implement/Operate—document policies, procedures, and controls and administer security controls
4. Monitor and Evaluate—monitor and examine operational environments
5. Test/Evaluate—audit and verify findings
6. Improve/Evolve—reassess and reevaluate policies, procedures, and security controls<sup>20</sup>

As noted earlier, the MAPS assessment relies on the TFOPA framework, as well as NIST and other standards, to develop a baseline from which to plan and coordinate transition strategies and operational effectiveness to improve security for NG911 readiness. The MAPS tool examines six key areas associated with security to help assess NG911 readiness.

- |  |   |
|--|---|
| <ul style="list-style-type: none"><li>• Cybersecurity Plan/Policy</li><li>• Proactive Monitoring</li><li>• Risk Assessment</li></ul> | <ul style="list-style-type: none"><li>• Network Security</li><li>• Physical Security</li><li>• Staff Security</li></ul> |
|--|---|

Based on the MAPS assessment, a review of the documentation provided, and interviews with Board staff and local stakeholders, MO911 achieved an overall score of **4.83** for security—a transitional state on the NG911 readiness continuum.

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<sup>19</sup> “110 Must-Know Cybersecurity Statistics for 2020.” Varonis. <https://www.varonis.com/blog/cybersecurity-statistics/>

<sup>20</sup> [TFOPA WG2 Supplemental Report-120216.pdf \(fcc.gov\)](#)

# MAPS NG911 Readiness Assessment

## Missouri 911

### Security

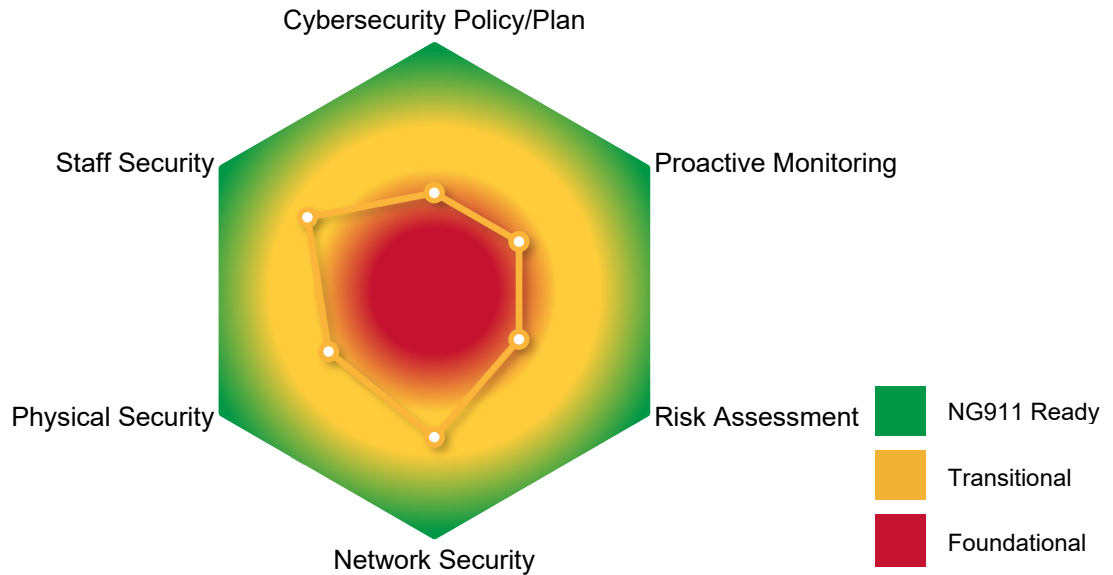


Figure 7: Security MAPS

Table 6: Security Readiness Scores

Lever	Overall Score	Cybersecurity Plan/Policy	Proactive Monitoring	Risk Assessment	Network Security	Physical Security	Staff Security
Security	4.83	4.00	4.00	4.00	6.00	5.00	6.00

#### 3.5.1 Cybersecurity Plan/Policy

*Rating: 4.00*

MO911 is guided by State policy for cybersecurity. There are no connections between MO911 and localities—other than the National Crime Information Center (NCIC). Localities manage their networks. While one-third of PSAPs report that they have undertaken some type of cybersecurity planning, there are no specific requirements on what those plans entail. This leaves two-thirds of the PSAPs more vulnerable to cybersecurity attacks. While there is no way to 100% safeguard systems, cybersecurity assessments and planning can reduce the risk.



There is no overarching entity responsible for a state plan to include individual PSAPs. The Board recognizes the need for cybersecurity and has stated a desire to ensure that cybersecurity policies and best practices are adopted as part of future NG911 component implementations. Currently, the Board directly supports cybersecurity educational and awareness initiatives for PSAPs and individual telecommunicators.

### 3.5.2 Proactive Monitoring

*Rating: 4.00*

Today, there are PSAPs operating in both legacy and regionalized ESInet environments. Legacy systems do not provide MO911 the ability to proactively monitor the system. And while an ESInet environment does, there is no statewide coordinated effort to monitor for cyberthreats.

### 3.5.3 Risk Assessment

*Rating: 4.00*

Each locality is responsible for conducting and performing risk assessments. Some PSAPs have conducted risk and vulnerability assessments. The Board has a vested interest in cybersecurity planning and has awarded grant funds for such initiatives, but the State has not set local cybersecurity policies or requirements.

### 3.5.4 Network Security

*Rating: 6.00*

Current MO911 information technology (IT) is managed by the Missouri Information Technology Services Division (ITSD). For equipment and NG911 solutions, the Board should require the service provider to be NG911 security-compliant for all personnel and equipment. These protections and/or an increased security posture must be in place for all future NG911 systems procured with Board funds. These requirements should align with Board-defined policies and procedures or a legislated mandate for all systems interfacing with the NG911 solution in Missouri.

### 3.5.5 Physical Security

*Rating: 5.00*

The Board does not have a permanent facility or office space.

Locally, PSAPs that access NCIC and/or the Missouri Uniform Law Enforcement System (MULES) must follow specifications for physical and network security. This includes limiting access to secure areas of buildings or escorting and logging guest access.

### 3.5.6 Staff Security

*Rating: 6.00*

The Board does not have a permanent facility or office space.

Individual PSAPs have a range of security requirements for full- and/or part-time employees and contractors. PSAPs that received an onsite inspection limited visitor access and required escorts to transverse the facility.

## 3.6 Geographic Information System

Technological advancements over the last 50 years necessitate a long-overdue fundamental change in the technology used to connect emergency callers to 911 centers. NG911 is meant to bridge the disparity between the communications technology used today and the antiquated systems implemented to support 911 operations dating back to the 1960s.

At the core of NG911 is GIS data. Spatially enabled GIS datasets drive the analytics that find the 911 caller (e.g., LVF) and determine the appropriate 911 center to which the emergency call should be routed (e.g., emergency call routing function [ECRF]). GIS datasets employed to fulfill these functions must be refined to public-safety-grade with exact geospatial accuracy and complete attribution of all information necessary for completing the complex queries.

There are seven core GIS datasets required for NG911 operation: address points, road centerlines, PSAP boundary, provisioning boundary, and emergency service (fire, law, EMS<sup>21</sup>) boundary polygons. These data will interact within the GIS to provide location validation and 911 call routing functions. Errors in any of these datasets potentially could delay 911 call delivery or result in the call being routed to the incorrect PSAP. In addition to complete and accurate attribution of every GIS dataset, geospatial accuracy is vital to proper functionality of the NG911 system.

In addition to meeting the requisite match rates between the GIS data and the legacy 911 tabular ALI and MSAG, Missouri jurisdictions also must improve the GIS data internally and with neighboring jurisdictions. Overlaps and gaps in individual polygonal datasets must be eliminated. Address points and road centerlines must be wholly contained within the provisioning polygon.

Although the migration to NG911 is being coordinated by the Board, the most accurate GIS data is developed and maintained by local jurisdictions. The further implementation of a large-scale, enterprise-wide capability such as geospatial data collection, aggregation, validation, and dissemination will require a tremendous effort through a phased approach, significant stakeholder coordination and collaboration, and adequate and sustained funding streams. However, by cooperatively implementing a program in adherence to nationally accepted standards, Missouri will position itself in a forward-thinking mode by

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<sup>21</sup> Emergency medical services

facilitating interoperable data-sharing practices that create flexibility and sustainability within its 911 program.

The MAPS tool examines seven key areas associated with GIS to help assess NG911 readiness.

- Production Environments
- Policy and Process
- Regional Coordination
- Training
- Support
- Addressing
- Data Readiness

Based on the MAPS assessment, a review of the documentation provided, and interviews with Board staff and GIS stakeholders in Missouri, MO911 achieved an overall score of **4.57** for GIS—a transitional state on the NG911 readiness continuum.

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# MAPS NG911 Readiness Assessment

## Missouri 911

### GIS

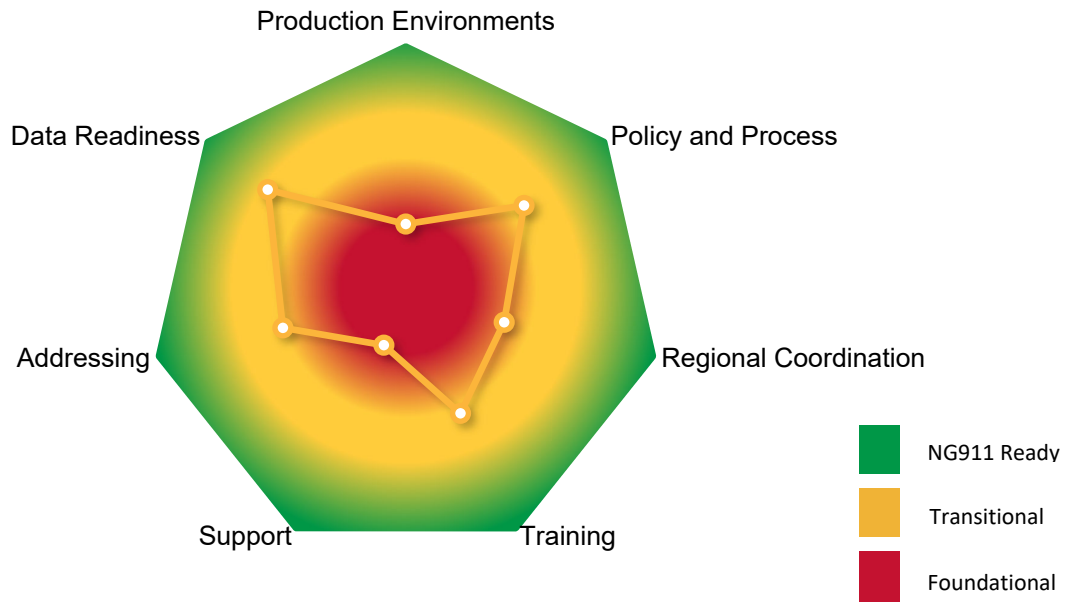


Figure 8: GIS MAPS

Table 7: GIS Readiness Scores

Lever	Overall Score	Production Environments	Policy and Process	Regional Coordination	Training	Support	Addressing	Data Readiness
GIS	4.57	3.00	6.00	4.00	5.00	2.00	5.00	7.00

### 3.6.1 Production Environments

*Rating: 3.00*

The Board has embarked on a statewide GIS assessment to evaluate the readiness of locally produced GIS layers to integrate into a future NG911 solution.

Production of datasets is locally focused by resources most familiar with daily changes, assignments, and standards related to addressing and associated required data layers.

The Board has reached out to other State agencies to coordinate data development, retention, hosting, and distribution. Coordination of GIS stakeholders, outside of public safety entities, is a key development that has been successful in the long-term viability of maintaining GIS resources.

### 3.6.2 Policy and Process

*Rating: 6.00*

The Board has embarked on a statewide GIS assessment to evaluate the readiness of locally produced GIS layers to integrate into a future NG911 solution. Over 90% of all PSAPs have provided GIS information for analysis, review, and gap identification.

The Board has established GIS policies that align with [NENA-STA-015.10-2018](#), *NENA Standard Data Formats for E9-1-1 Data Exchange & GIS Mapping*.

Further policies and processes documentation will need to be developed in concert with upcoming Board-initiated GIS data gap analyses and assessments.

### 3.6.3 Regional Coordination

*Rating: 4.00*

Regional and statewide coordination is essential for proper GIS data concatenation to develop the required datasets for NG911 deployment. Local jurisdictions have some regional collaboration, but these are small in numbers and are still migrating towards NENA standards.

The Board should develop formal agreements for local data submittals, sponsor regional training regarding data collection and submittals, and nurture a close working partnership and process with the localities.

### 3.6.4 Training

*Rating: 5.00*

The Board has certified specific GIS training curriculum for telecommunicators and has been directly involved in expanding the understanding of GIS requirements regarding NG911 sustainability.

The GIS assessment contractor is educating PSAPs on GIS layer requirements, remedial options, and NG911 requirements as it reviews each PSAP's results.

### 3.6.5 Support

*Rating: 2.00*

The Board relies upon the executive director's GIS experience and third-party resources, such as State resources and consultants, to support GIS. While the Board has supported some GIS training, the primary focus is on PSAP data development and the gap analysis study.

The Board foresees GIS support improving with the recommended addition of solution-specific training provided by a GIS integration provider.

### 3.6.6 Addressing

*Rating: 5.00*

The control of address assignment is delegated to local city, county, or regional authorities and is not within the Board's purview. Although the Board has developed minimum standards for the site/structure address point (SSAP) data layer and formatting to be integrated within future NG911 implementation projects, it does not currently require each PSAP to define the local method for address assignment, collection, and maintenance within its PSAP service area.

The Board should expand its guidance to include addressing support and define the minimum requirements for addressing data used for dispatching to correspond with actual address assignments in the field.

### 3.6.7 Data Readiness

*Rating: 7.00*

While the Board does not currently evaluate ALI and MSAG data, the Board has set standards for polygon and road centerline submittals. In 2021, the Board began a GIS readiness assessment on datasets and addressing databases based on submittals from each PSAP.

The assessment will highlight the jurisdictions that need remedial assistance or total rework of existing processes and data acquisition. A path to addressing the necessary corrections should be a central goal for the Board.

## 3.7 Operations

Many would say that implementing NG911 technology is the easy part. The more challenging part is operationalizing the processes, methods, and training, and managing the additional data and other support structures, such as continuity of operations (COOP) planning and incident management.

Having an operational state that supports the implementation of NG911 is one of the key factors in a successful implementation. Policies and training must exist that support both transitional and end-state

NG911. Having appropriate staff support for NG911 is also crucial—many managers and administrators at both the state and local level already are overwhelmed, wearing multiple hats each day. Without proper support, the needed tasks that are essential to the proper function of the NG911 environment may have to be added to an already overworked staff member. There is then a risk that these tasks are not completed in a timely manner or at all.

The planning for operational effectiveness in the NG911 environment requires all 911 stakeholders to review current operations and plan for the changes that will come. Effective operations involve coordination with stakeholders from across the state; thus requiring a supporting role from the Board to mediate and encourage operational changes that are consistent across the NG911 footprint.

The MAPS tool examines seven key areas associated with operations to help assess NG911 readiness.

- |   |   |
|---|---|
| <ul style="list-style-type: none"><li>• Policies and Procedures</li><li>• Support</li><li>• Additional Data</li></ul> | <ul style="list-style-type: none"><li>• COOP Plan(s)</li><li>• Succession Planning</li><li>• Training</li></ul> |
|---|---|

Based on the MAPS assessment, a review of the documentation provided, and interviews with Board staff and local stakeholders, MO911 achieved an overall score of **3.33** for operations—while this score is foundational, some work has been done towards the early phases of a transitional state on the NG911 readiness continuum.

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# MAPS NG911 Readiness Assessment

## Missouri 911

### Operations

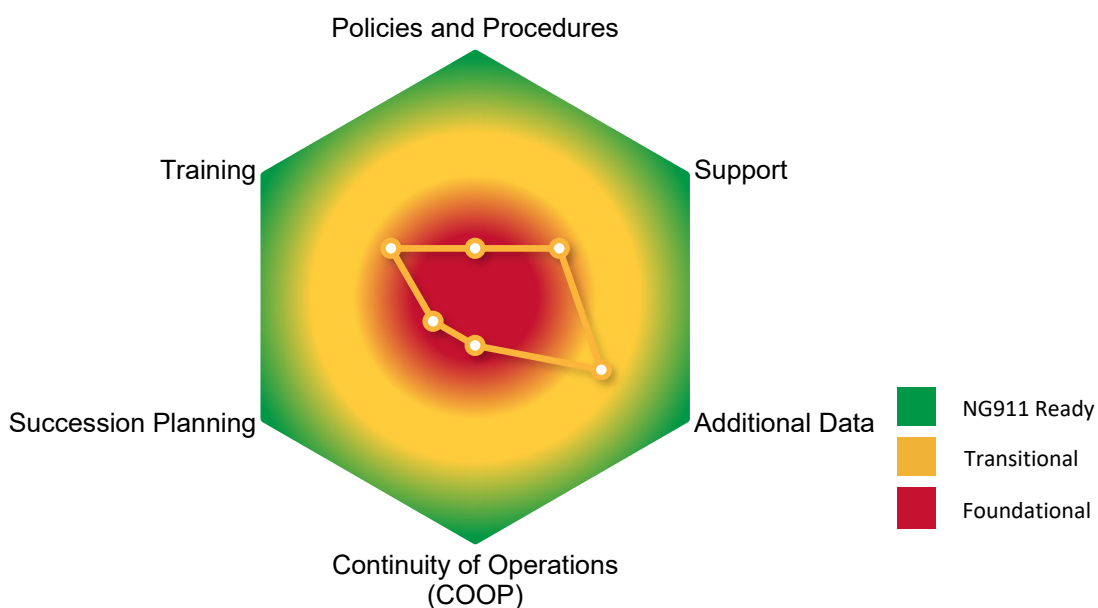


Figure 9: Operations MAPS

Table 8: Operations Readiness Scores

Lever	Overall Score	Policies and Procedures	Support	Additional Data	COOP Plan(s)	Succession Planning	Training
Operations	3.33	2.00	4.00	6.00	2.00	2.00	4.00

### 3.7.1 Policies and Procedures

*Rating: 2.00*

The Board has the authority to set policy and procedures and currently sets rules on training. However, the present Board has limited avenues to enforce rules. The Board sees its role as establishing best practices and/or guidelines and incentivizing PSAPs to adopt or follow best practices.



### 3.7.2 Support

*Rating: 4.00*

The Board's staff is limited to an executive director, supplemented by third-party contractors that administratively support the Board and coordinate the grant process. The Board is staffed to support current needs but lacks the appropriate subject-matter experts (SMEs) to support an NG911 solution for the state.

As Missouri moves forward with its GIS project—setting GIS standards and supporting aggregation services—and NG911 implementation, staffing with specific expertise in these areas is recommended.

Nationally, and in Missouri, PSAPs are experiencing a shortage of frontline personnel to handle 911 calls. Missouri PSAPs are also burdened with developing and keeping technical and GIS staff that are necessary to maintain the operational requirements of their current systems and anticipated NG911 requirements.

### 3.7.3 Additional Data

*Rating: 6.00*

The Board and individual PSAPs do not have specific policies on the use of additional data. NENA defines additional data as *“information which can be associated with a given emergency call, and is managed and sourced from outside the ESI net and its associated NG9-1-1 Core Services (NGCS).”*<sup>22</sup> Some PSAPs use OTT software to obtain additional data (e.g., Rave Smart911 and similar products).

All 911 calls are public records and are governed by Sunshine Laws at a local level. Each locality sets its rules. RSMo 610.510 states that *“...: any information acquired by a law enforcement agency or a first responder agency by way of a complaint or report of a crime made by telephone contact using the emergency number, '911', shall be inaccessible to the general public. However, information consisting of the date, time, specific location and immediate facts and circumstances surrounding the initial report of the crime or incident shall be considered to be an incident report and subject to section 610.100.”*<sup>23</sup> The law does not mention the different media types that are related to 911, such as video or text.

There is not a State minimum for retention.

### 3.7.4 COOP Plan(s)

*Rating: 2.00*

911 service is seen as a local issue, and there are no requirements by the State that PSAPs have a COOP plan. COOP planning is under the auspice of the Missouri Department of Public Safety (DPS). While the

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<sup>22</sup> [NG9-1-1 Additional Data - National Emergency Number Association \(nena.org\)](https://www.nena.org/), section 2.

<sup>23</sup> RSMo 610.150 “911” telephone reports inaccessible, exceptions.  
<https://revisor.mo.gov/main/OneSection.aspx?section=610.150>

Board has been requested to assist during an outage, there is no formal COOP plan. It is unknown if the DPS COOP plans contain provisions for 911.

### 3.7.5 Succession Planning

*Rating: 2.00*

Succession planning is a process for identifying and developing staff who can function in other roles. The Board has an informal succession plan; if the executive director is unavailable, a third-party contract employee functions in the role of director.

Board members serve their current terms and may remain until a replacement is identified. A formal orientation session for new Board and Committee members is encouraged. Additionally, a lack of a full Board roster currently creates quorum issues, and further vacancies will only magnify this issue.

Institutional knowledge of the Board and the 911 environment in Missouri is strong due to the dedicated involvement by many Board members; post-Board membership involvement during new member transition periods will assist with knowledge transfer.

### 3.7.6 Training

*Rating: 4.00*

The Board has a robust training certification process and has vetted and identified training modules that are available to all PSAPs. The current active classes included emergency medical dispatch (EMD), law, and other dispatcher-related duties as they relate to legacy 911 responsibilities.

Additional NG911-specific training is available for GIS curriculum. The GIS training curriculum for telecommunicators will be directly involved in expanding the understanding of GIS requirements regarding NG911 sustainability.

The GIS assessment contractor is educating PSAPs on GIS layer requirements, remedial options, and NG911 requirements as it reviews each PSAP's results.

Expansion of the Board-approved curriculum that specifically addresses NG911 operational items is encouraged and should include NG911 stress training, handling multimedia, and GIS discrepancy reporting.

## 4 Recommendations

This section presents recommendations for resolving challenges that the Board and MO911 face in its advancement toward NG911 readiness. In many cases, the transition to the NG911 end state is an iterative process and may take years to materialize. Technical and operational needs are intertwined and must be addressed in parallel to make the full transition to NENA i3-compliant NG911, which, in some cases, will require technology or compliance outside the Board’s sphere of influence.

The outlined recommendations are the basic steps in which an NG911 Strategic Plan is developed. The placement of each recommendation within a proper timeline, based on the Board’s and PSAPs’ available resources, will produce a work plan to achieve the Board’s stated goals for NG911 implementation. While the recommendations contain both long- and short-term tasks, each item builds upon solutions across categories to reach an end state in which an operational NG911 system is available to every PSAP that desires to participate.

### 4.1 Governance

The recommendations below are provided to address gaps in the governance area.

Table 9: Governance Recommendations

Category	Recommendations
Strategic Planning	<ul style="list-style-type: none"> <li>Finalize 3–5-year NG911 strategic plan</li> <li>Continue to engage stakeholders and seek their input for the plan</li> </ul>
Communication	<ul style="list-style-type: none"> <li>Create a communications plan among the Board, stakeholders, and PSAPs using a variety of communications tools</li> <li>Continue to update and maintain the Board website</li> <li>Develop statewide marketing to support PSAP public education and hiring needs</li> </ul>
Coordination	<ul style="list-style-type: none"> <li>Initiate discussions with neighboring states</li> </ul>
Technology	<ul style="list-style-type: none"> <li>Expand technical expertise resources for the Board and committees</li> <li>Continue the involvement of Board committees in the development of the request for proposal (RFP) requirements and technical reviews of proposed NG911 solutions</li> </ul>
Budgeting	<ul style="list-style-type: none"> <li>Expand budget priorities towards NG911 implementation</li> </ul>
Funding	<ul style="list-style-type: none"> <li>Continue to pursue increased prepaid wireless collection rates</li> </ul>
Staffing	<ul style="list-style-type: none"> <li>Secure technical GIS SME resource to support PSAP submittals and state coordination of NG911 required datasets</li> </ul>

Category	Recommendations
	<ul style="list-style-type: none"> <li>Identify technical SME(s) to assist with grant reviews, planning and procurement of the ESInet and NGCS components, and ongoing oversight of acquired solutions</li> </ul>
Standards and Best Practices	<ul style="list-style-type: none"> <li>Engage stakeholders in developing technical, operational, and training standards and best practices</li> <li>Prioritize the standards and best practices to be created</li> <li>Identify the minimal benchmarks that define a primary PSAP</li> </ul>

### 4.2 Next Generation 911 Core Services

The recommendations below are provided to advance MO911 toward the NG911 end state.

Table 10: NGCS Recommendations

Category	Recommendations
Technology Procurement	<ul style="list-style-type: none"> <li>Establish technical requirements for NG911 solution</li> </ul>
Functional Elements	<ul style="list-style-type: none"> <li>Define NGCS standards and operational best practices that support the migration to end-state i3 requirements</li> </ul>
Routing Solutions	<ul style="list-style-type: none"> <li>Foster geospatial routing solutions</li> </ul>
ALI DBMS and LIS	<ul style="list-style-type: none"> <li>Coordinate migration from legacy ALI to a GIS-based solution</li> </ul>
SLAs	<ul style="list-style-type: none"> <li>Define SLA best practices, encompassing ESInet and NGCS components for the following (but not limited to): high reliability and availability, defects and replacements, and notification, response, and repair</li> </ul>
Reporting and MIS	<ul style="list-style-type: none"> <li>Define minimum NG911 reporting metrics and/or reports, including parameters and frequency</li> </ul>
Interoperability	<ul style="list-style-type: none"> <li>Promote network-to-network solutions for established NG911 providers in Missouri</li> <li>Ensure appropriate policies/legislation are in place to support (intra and inter) statewide interoperability</li> </ul>
Call Transfer	<ul style="list-style-type: none"> <li>Define technical and operational standards for the ability to transfer voice and data that includes ANI/ALI, text, audio, video, and other data</li> </ul>

### 4.3 Emergency Services IP Network

The recommendations below identify some key requirements for a standards-based and future-proof ESInet that should be included in the RFP for a statewide ESInet.

Table 11: ESInet Recommendations

Category	Recommendations
Carrier Ingress	<ul style="list-style-type: none"> <li>Foster the migration to non-CAMA network solutions</li> </ul>
Interconnectivity	<ul style="list-style-type: none"> <li>Initiate discussions with neighboring states and/or providers</li> <li>Create a plan to support interoperability and interconnectivity with other i3 ESInets as well as with legacy selective routers</li> </ul>
Survivability	<ul style="list-style-type: none"> <li>Adopt standards to address survivability, redundancy, security, and resiliency based on industry standards and best practices</li> </ul>
Monitoring	<ul style="list-style-type: none"> <li>Develop guidelines for network monitoring and reporting</li> </ul>
Change Management	<ul style="list-style-type: none"> <li>If the Board moves forward with procurement of a ESInet solution, a structured change management process should be included in the development of the RFP requirements</li> </ul>
Reporting and MIS	<ul style="list-style-type: none"> <li>Develop minimum reporting parameters and frequency</li> </ul>
Bandwidth	<ul style="list-style-type: none"> <li>Establish bandwidth goals and standards for connections to an ESInet solution</li> </ul>
Netclock	<ul style="list-style-type: none"> <li>As Missouri moves forward with an ESInet solution, identify best practices for local traceable time sources (typically GPS-based) at each ESInet connected facility</li> </ul>
QoS	<ul style="list-style-type: none"> <li>Identify minimum QoS thresholds for ESInet deployments</li> </ul>
Documentation	<ul style="list-style-type: none"> <li>Secure network and configuration documentation for all Board-funded projects</li> </ul>

#### 4.4 Call-Handling Equipment

The recommendations below are to help guide the procurement of CHE during the State’s transition to i3.

Table 12: CHE Recommendations

Category	Recommendations
I3-capable Call Handling	<ul style="list-style-type: none"> <li>Define minimum requirements to connect CHE to ESInet solutions</li> <li>Determine if CHE requirements should be tied to grant funding</li> </ul>
Text-to-911/Text-from-911	<ul style="list-style-type: none"> <li>Create and communicate a statewide plan for text-to-911 deployment</li> <li>Engage PSAP operations personnel to develop standards and best practices regarding text-to-911 and text-from-911</li> </ul>
Logging and Recording	<ul style="list-style-type: none"> <li>Establish minimum logging recorder parameters to support the capture of traditional voice (phone or radio) as well as IP-based audio, when applicable</li> </ul>
Mapping	<ul style="list-style-type: none"> <li>Integrate GIS standards within the CHE solution and PSAP operational systems</li> </ul>
MIS	<ul style="list-style-type: none"> <li>Create policies regarding state-level aggregation, analysis, and use of MIS data from PSAPs</li> </ul>
ADR	<ul style="list-style-type: none"> <li>Engage PSAP personnel to identify all external data sources in use today and determine which ones align with NENA i3 specifications</li> <li>Promote solutions that integrate into national standards and support security policies</li> </ul>

#### 4.5 Security

The recommendations below are designed to help MO911 achieve a greater level of cybersecurity preparedness and become more cybersecurity aware as it moves towards NG911 readiness.

Table 13: Security Recommendations

Category	Recommendations
Cybersecurity Plan/Policy	<ul style="list-style-type: none"> <li>Engage PSAP personnel to create cyber requirements</li> <li>Develop a statewide NG911 cyber plan based on TFOPA principles</li> </ul>
Proactive Monitoring	<ul style="list-style-type: none"> <li>Develop requirements ensuring regions monitor system health</li> <li>Require regions to report on system health</li> </ul>

Category	Recommendations
Risk Assessment	<ul style="list-style-type: none"> <li>Require local security and audits prior to establishing connectivity to statewide funded solutions</li> </ul>
Logical Security	<ul style="list-style-type: none"> <li>Develop requirements to ensure logical, physical, and staff security in compliance with current and future NCIC and/or MULES mandates while meeting the requirements of relevant national standards.</li> </ul>
Physical Security	
Staff Security	

#### 4.6 Geographic Information System

The recommendations below are designed to improve MO911’s geospatial capabilities and position it to fully support local and regional GIS programs.

Table 14: GIS Recommendations

Category	Recommendations
Production Environment	<ul style="list-style-type: none"> <li>Foster and support the local development and ongoing maintenance of NG911-compliant GIS datasets</li> </ul>
Policies and Processes	<ul style="list-style-type: none"> <li>Define standards for data submittal, maintenance, and usage</li> </ul>
Regional Coordination	<ul style="list-style-type: none"> <li>Foster regional collaboration of data development and re-distribution to PSAPs via a GIS steward to store and manage statewide data</li> </ul>
Training	<ul style="list-style-type: none"> <li>Identify ongoing GIS training opportunities supporting the 911 community and their role in local GIS data development and integration into the PSAP</li> </ul>
Support	<ul style="list-style-type: none"> <li>Develop GIS resources to provide ongoing support to the PSAP community</li> </ul>
Addressing	<ul style="list-style-type: none"> <li>Engage PSAP personnel to identify best practices for address assignment, maintenance, and integration into datasets that support NG911 solutions</li> </ul>
Data Readiness	<ul style="list-style-type: none"> <li>Secure a data aggregation solution to provide statewide datasets for NG911 ingestion</li> </ul>

## 4.7 Operations

The recommendations below are provided to address gaps in the operations area.

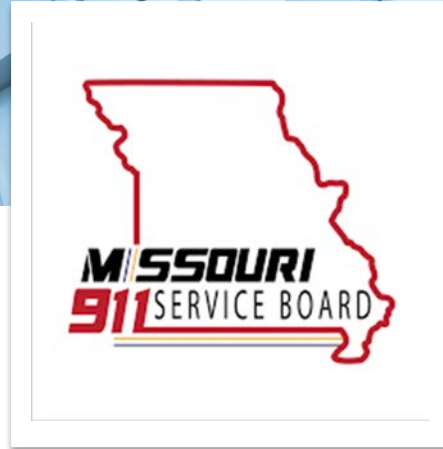
Table 15: Operations Recommendations

Category	Recommendations
Policies and Procedures	<ul style="list-style-type: none"> <li>Solicit feedback from PSAP stakeholders to identify and prioritize the requirements, policies, and best practices they seek</li> <li>Engage Board committees to help develop requirements, policies, and best practices</li> </ul>
Additional Data	<ul style="list-style-type: none"> <li>Create a policy for the use of additional data after consulting federal and state statutes for guidance</li> <li>Update state record retention legislation to specifically address 911 produced information and additional data that is collected</li> </ul>
COOP Plan(s)	<ul style="list-style-type: none"> <li>Engage staff and stakeholders to develop a comprehensive COOP plan template for PSAPs that aligns with Federal Emergency Management Agency (FEMA) recommendations</li> </ul>
Succession Planning	<ul style="list-style-type: none"> <li>Secure or create succession training for PSAPs to increase depth for emergency backup and cross-train staff</li> </ul>
Training	<ul style="list-style-type: none"> <li>Conduct an external training needs analysis to identify the needs of the PSAP community</li> <li>Develop NG911 training requirements, policies, and best practices</li> <li>Conduct NG911 internal and external training</li> <li>Update the training curriculum as NG911 technology is deployed               <ul style="list-style-type: none"> <li>Include a section on occupational wellness focused on the stress of NG911</li> </ul> </li> </ul>

## 5 Conclusion

The Board has taken many steps to improve 911 services in Missouri while developing a plan for the transition to NG911. This MAPS assessment reveals that critical NG911 elements range from legacy to foundational to transitional states. Missouri has made great strides while burdened with limited resources in its approach to NG911 migration and recognized that local GIS and broadband services are a cornerstone toward building an NG911 system. However, as Missouri moves forward, it should keep technology at its forefront and recognize the impacts on public safety telecommunicators and local PSAPs while positioning solutions that are woven into a statewide NG911 system.





**MissionCriticalPartners**  
Because the Mission Matters

## Next Generation 911 Recommendations

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### Draft Report

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PREPARED NOVEMBER 2021 FOR  
THE STATE OF MISSOURI

[MissionCriticalPartners.com](https://www.MissionCriticalPartners.com)

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# 1 Overview

The Missouri 911 Services Board (Board) is embarking on a transition to Next Generation 911 (NG911) and in 2021 enlisted the assistance of Mission Critical Partners, LLC (MCP) to conduct an NG911 readiness assessment and provide recommendations for an Emergency Services Internet Protocol (IP) network (ESInet) and NG911 infrastructure.

At the heart of the assessment were stakeholder interviews conducted using MCP's proprietary Model for Advancing Public Safety<sup>SM</sup> (MAPS<sup>®</sup>) tool. The MAPS tool helped provide insight into where Missouri 911 (MO911) is today and where it needs to be for a successful transition to NG911. Using criteria based on national standards, industry benchmarks, and best practices, feedback from the Missouri 911 Service Board (Board) staff and the Missouri public safety answering point (PSAP) community was translated into easy-to-understand scores and a heat map diagram, which can be used to build an NG911 strategic roadmap specific to Missouri.

During the assessment process, several NG911-centric developments within Missouri were identified. These included regional ESInets, hosted call-handling equipment (CHE) solutions, geographic information system (GIS) initiatives, and NG911 Core Services (NGCS) implementations. The organic growth of these solutions, some with Board grant funds, represents basic NG911 components that can become the cornerstone to an integrated NG911 system that is available statewide.

The recommendations provided herein build upon these components while considering the needs and migration paths identified to implement a successful NG911 system. Unfortunately, the limited funding currently available to the Board hampers a forklift approach to securing a statewide solution.

However, there are advantages to building an NG911 system via the parallel development of the three essential components of an NG911 system: the ESInet, GIS/database, and NGCS/applications. All three are required for full functionality but each has a unique development path, timeline to completion, and resources to finalize.

Therefore, MCP recommends five approaches that will shepherd Missouri through the migration to NG911 each with unique timelines, costs, and advantages, all of which should be weighted based on the Board's revenue availability (both current and future), partnerships, and ability to support local endeavors.

## 2 NG911 Approaches

### 2.1 Secure a Full NG911 System

The acquisition of a full NG911 system, to include the ESInet (public-safety-grade broadband connectivity) and NGCS (functional elements), which will support all PSAPs in Missouri can be secured via the selection of a service provider of a Software as a Service (SaaS) solution. This approach has been followed by other state and regional entities with success. Typically, the service is secured for a three-to-five-year term or longer and is priced based on the served population.

NG911 solutions provided in this manner require the provider to secure broadband connectivity to each participating PSAP, data center, and other designated entities (e.g., secondary and backup facilities), usually at 10 megabits (Mb) minimum, with greater bandwidth and geodiverse path requirements for key mission-critical sites.

NCGS installations are proposed within a minimum of two Tier III or higher data centers to meet the five nines (99.999%) uptime requirements. The location of each data center shall be pre-approved by the Board to achieve network and software diversity and redundancy.

Based on the current progress of the development of NG911 systems within the two metropolitan areas of Missouri—St. Louis and Kansas City—the further implementation of NG911 services by a SaaS solution within these areas would be a duplication of effort. The St. Louis County 911 Communications Center and the Mid-America Regional Council (MARC) have contracted with service providers and are far into the implementation process. Both are currently within one year of full deployment, having secured the required ESInet, NGCS, and GIS components.

Therefore, Option A is to supplement these areas with a SaaS solution for the remainder of the state, with an estimated population of 2,380,000. This path will provide full NG911 services to the whole state but will still require integration into St. Louis County's and MARC's solutions.

If long-term funding is available, Option B provides NG911 services via the SaaS model to the entire state, with an estimated population of 6,150,000. Although more ambitious, Option B provides a statewide seamless solution with standardized features and costs spread over many years.

MCP offers the following recommendations:

- Define minimum standards for Board-funded NG911 solutions to include ESInet and NGCS operational, cybersecurity, monitoring, maintenance, and efficiency requirements
- Distinguish NG911 providers (ESInet and/or NGCS) that meet the Board's determined levels of service
- Establish the Board in a position to support NG911 system development to a minimum level and acquire solutions based on funding availability

## 2.2 Hybrid NG911 Implementation

The development of a statewide NG911 solution can be achieved by leveraging the regional NG911 systems currently under development while fostering new system implementations within geographic areas that have broadband and other resource limitations.

Through the Board's unique position to secure funding for broadband infrastructure development while defining the parameters for NG911 integration throughout the state, the Board can pursue new ESInet qualifying connections to PSAPs and other mission-critical locations. Based on strategic requirements, one path or diverse paths to facilities can be acquired and supported with a combination of non-recurring and recurring revenues.

However, this would only secure connectivity of individual PSAPs to data centers that host qualified NGCS operations. The acquisition, operation, and integration of NGCS are still required for PSAPs to operate within an NG911 environment. Each PSAP has a unique role within the NG911 ecosystem as a major contributor to the NGCS functionalities and, therefore, is closely paired with this pillar of NG911. This includes providing the required local GIS datasets, defining individual operational protocols, and identifying routing parameters.

The cost of NGCS and ESInet services is traditionally based on the served or supported population. Under this proposed model, each PSAP would support their share of NGCS expenses monthly, while the Board supports the ESInet requirements. With the expense of connectivity removed or greatly reduced, the continual cost to individual PSAPs to participate within the NG911 system would be reduced, often to a lower operational cost than today's legacy system.

MCP offers the following recommendations:

- Develop a cost-sharing partnership between the Board and qualifying PSAPs that leverages the Board's ability to secure funding for initial broadband development and limited ongoing recurring support (e.g., ESInet monitoring, service, etc.) while PSAPs absorb ongoing recurring costs for NGCS and GIS support requirements
  - Appropriately structured, each PSAP's recurring financial responsibilities are estimated to be lower than their current individual legacy 911 network and database costs

## 2.3 Network-to-Network Solutions

Once individual NG911 solutions are operational, the connectivity of these systems via a network-to-network interface to handle the exchange of voice, data, and supplemental information will be required. For systems that adhere to National Emergency Number Association (NENA) i3 standards, there are specific protocols to achieve the transfer of 911 calls between NGCS via individual ESInet connections. Originally, this interface solution was envisioned for state-to-state connectivity but has evolved to include any geographically adjacent jurisdictions (within a state or across regions) that operate on different NG911 systems.

Currently, with the support of Board grants and individual efforts, several ESInet developments have been initiated within Regions 1, 3, 4, 6, and 8. These are in addition to the two networks currently being managed by MARC (Region 2) and St Louis County (Region 7).

The networks within Regions 2, 3, and 7 have already identified NGCS providers. These jurisdictions are moving toward full NG911 systems upon final integration of local GIS datasets and routing design protocols.

As Missouri works with adjacent states to integrate with their selected solutions as they mature into operation, a similar network-to-network integration path to sew together the patchwork of IP networks and the NGCS solutions within the state is recommended.

The Board is positioned to mediate and facilitate the development of network-to-network interfaces between current NGCS solutions in the state, by engaging providers while providing funding and project management required to coordinate competing interests.

The goal is to enable the transfer of 911 calls across regions and between NG911 systems regardless of individual CHE vendors, telecommunications providers, or geographic location. This will quickly expand to include the ability to transfer across state lines to both legacy PSAPs and those using NG911 solutions, using resources already available within the state.

MCP offers the following recommendations:

- Align governance policies and guidelines for state grants to support the requirements for network-to-network integration. Define minimum standards for Board-funded NG911 solutions to ensure interoperability.
- Engage with current NGCS providers operating within Missouri to secure pricing, timelines, and known limitations related to implementing an integration solution
- Identify priorities for expansion of existing IP networks to meet NG911 standards while supporting migration to existing NG911 systems
- Pursue network-to-network interface between NG911 solutions operating within Missouri

## 2.4 Multi-CHE Deployment from an NGCS

With the implementation of IP networks providing reliable and fast connections between facilities, CHE has moved from siloed systems installed at individual PSAPs to more efficient host/remote solutions. There are many CHE solutions available to PSAPs, with many selecting a vendor based on the individual characteristics of their local operations (e.g., volume, size, agency type). A single solution is not appropriate for all PSAPs.

To date, the NG911 systems and host/remote solutions developed within Missouri have been paired with one CHE provider. This is efficient when the participating PSAPs share common traits (e.g., rural, metro, or size) but as NG911 systems expand geographically and span a more diverse population, a single CHE solution is no longer applicable for all agencies.



An NG911 system, specifically NGCS, can support multiple CHE solutions within its ecosystem while still meeting the efficiency, reliability, and interoperability goals for all participants. A choice of CHE provider by a PSAP should not be limited based on which NG911 system it chooses to use—the more efficient path is to provide a choice of CHE within an NG911 system, especially a system with diverse participants.

MCP recommends that the Board pursue the implementation of multiple CHE solutions within an NG911 system that has a diverse PSAP community to allow the selection of CHE that best aligns with the local jurisdiction's needs. This can be accomplished by either encouraging choices within an existing NGCS and/or acquiring additional CHE solutions to be installed in parallel. The appropriate path to achieve this goal is dependent on the resources available and cooperation from the PSAPs and NGCS providers.

The cost below is based on the Board acquiring a CHE package, but much lower costs would be appropriate based on PSAP and/or NG911 system cost-sharing arrangements.

MCP offers the following recommendations:

- Engage the PSAP community to identify current CHE usage, preferences, and costs
- Designate an NG911 system to facilitate the installation, implementation, and operation of a second (or third) CHE solution to host within the current configurations
- Align grant priorities to encourage the use of CHE vendors integrated into designated NG911 solutions within Missouri

## 2.5 GIS Layer Aggregation

The Board has recognized the importance of GIS and related datasets toward the success of NG911 solutions within Missouri. The current GIS assessment undertaken by the Board will highlight the strengths (and weaknesses) within individual jurisdictions while outlining the next steps to move forward.

Any solution will involve the creation of the required datasets that encompass the entire geographic area of each NG911 system operating within the state. However, it is more prudent to expand the requirement so that one statewide dataset is available for each layer—ensuring that boundaries are concurrent and all gaps and overlaps are eliminated.

To accomplish this task, a process and system is necessary for PSAPs to submit locally produced data to the Board (or their designee) to be collected and aggregated into a statewide layer. This requires standardized components, timely submittals, and a quality control process to constantly maintain data integrity. Once compiled, the data should be stored and available to all participants, including the NG911 providers, local PSAPs, and other participating agencies.

As a priority, the PSAP (i.e., jurisdictional) boundary for every entity directly accepting 911 calls in the state should be compiled into a statewide coverage layer. Once developed, this layer is somewhat static and would only be updated when PSAPs alter their call acceptance boundaries. However; this boundary is desired today by Voice over IP (VoIP) and wireless carriers to enhance their call routing abilities and third-

party providers that currently provide hybrid enhanced locations to Missouri's PSAP community. The acquisition of this layer is included in the cost estimate below but can be pursued independently, and less costly, with a coordinated effort among local PSAPs, the Board, and partnering agencies.

To support the consistent development of GIS datasets across Missouri, the acquisition of LiDAR linked aerial imagery is recommended. The acquisition of the LiDAR control points, and the supporting infrastructure, is a onetime requirement that will support the initial imagery production and can be used for future aerial flights supported by the Board or any other state agency. The imagery will fulfill the needs of all the PSAPs while filling a void for each PSAP that does not have accurate or timely imagery today and those that use unreliable internet-based solutions for locate emergency calls.

Once secured and available within the 911 community, this essential base map should be leveraged to assist counties lacking 911 addresses and/or updated GIS data that meets the NG911 standards. The development of addressing and enhancement (or acquisition) of local GIS data can be time consuming and often requires a multi-year time frame to reach accuracy, completeness, and support standards.

MCP offers the following recommendations:

- Continue outreach to local PSAP and GIS professionals to further educate communities on the standards, usage, and timeliness required for GIS datasets to successfully operate within an NG911 system
- Foster partnerships with other state agencies to collaborate resources and establish data-sharing parameters related to GIS layers to develop for NG911 and those developed by other entities that will be used within the PSAP community
- Acquire a statewide system for the development, maintenance, review, and submittal of NG911-required GIS datasets to a Board-designated entity or entities for aggregation and distribution
- Prioritize the development of a statewide PSAP boundary layer

### 3 Conclusion

As the Board continues to move forward with improving 911 services in Missouri through initiatives to provide access to Enhanced 911 and text-to-911 to all residents, parallel developments of the NG911 cornerstones are essential to setting the migration path to full NG911 service throughout the state. While the path forward can be plotted, the timeline is dependent on funding availability, standardization, and the Board's ability to guide and support to the Missouri PSAP community.



Missouri 911 Service Board  
Financial Statements  
September 30, 2021

# Taylor Nold Kenney & Mitchell LLC

*Certified Public Accountants*

108 North Main Street • Clinton, MO • 64735 • (660) 885-6996

## Accountant's Compilation Report

Board Members  
Missouri 911 Service Board  
Clinton, MO

The members are responsible for the accompanying financial statements of Missouri 911 Service Board, which comprise the statement of net position – as of September 30, 2021 and 2020, and the related statement of activities – for the one month then ended September 30, 2021. It is also comprised of the balance sheet for the governmental fund as of September 30, 2021 and 2020, and the related statement of revenues, expenditures and changes in fund balances for the governmental fund for the month and the three months then ended September 30, 2020 and 2021, and for determining that the accrual basis of accounting is an acceptable financial reporting framework. We have performed a compilation engagement in accordance with Statements on Standards for Accounting and Review Services (SSARS) promulgated by the Accounting and Review Services Committee of the AICPA. We did not audit or review the financial statements nor were we required to perform any procedures to verify the accuracy or completeness of the information provided by the owner. Accordingly, we do not express an opinion, a conclusion, nor provide any form of assurance on these financial statements.

The members have elected to omit substantially all the disclosures ordinarily included in financial statements prepared in accordance with the accrual basis of accounting. If the omitted disclosures were included in the financial statements, they might influence the user's conclusions about the member's assets, liabilities, funds, revenues, and expenditures. Accordingly, the financial statements are not designed for those who are not informed about such matters.

The accompanying supplementary information is presented for purposes of additional analysis and is not a required part of the basic financial statements. This information is the representation of management. The information was subject to our compilation engagement; however, we have not audited or reviewed the supplementary information and, accordingly, do not express an opinion, a conclusion, nor provide any form of assurance on such supplementary information.

*Taylor, Nold, Kenney & Mitchell, LLC*

October 29, 2021

**Missouri 911 Service Board  
Statement of Net Position  
As of September 30, 2021 and 2020**

	<b>2021</b>	<b>2020</b>
<b>ASSETS</b>		
Cash and Cash Equivalents	\$ 3,502,378.23	\$ 3,323,286.58
Accounts Receivable	\$ 379,573.77	\$ 453,055.21
Total Assets	3,881,952.00	3,776,341.79
<b>LIABILITIES</b>		
Missouri Counties Payable	3,316,015.10	539,338.48
Accounts Payable	13,951.63	-
Payroll Liabilities	2,686.50	2,696.50
Accrued Vacation	9,350.00	9,350.00
Total Liabilities	3,342,003.23	551,384.98
<b>NET POSITION</b>		
Unassigned	539,948.77	3,224,956.81
Total Net Position	539,948.77	3,224,956.81

**Missouri 911 Service Board  
Statement of Activities  
As of September 30, 2021**

Functions/Programs	Expenses	Program Revenues Operating Grants and Contributions	Governmental Activities Net (Expenses) Revenues and Changes in Net Position
Primary Function:			
Governmental Activities			
Personnel	\$ (27,463.00)	\$ -	\$ (27,463.00)
General Operations	(337,986.52)	-	(337,986.52)
Emergency Telephone Numbers	(3,064,056.89)	-	(3,064,056.89)
911 Service Income	-	1,500,383.44	1,500,383.44
<b>Total Governmental Activities</b>	<b>\$ (3,429,506.41)</b>	<b>\$ 1,500,383.44</b>	<b>(1,929,122.97)</b>
General Revenues:			
Investment Earnings			1,826.35
Miscellaneous			30.00
Total General Revenues			1,856.35
Change in Net Position			(1,927,266.62)
Net Position - Beginning			2,467,215.39
Net Position - Ending			<b>\$ 539,948.77</b>

**Missouri 911 Service Board  
Balance Sheet - Governmental Fund  
As of September 30, 2021 and 2020**

	2021	2020
<b>ASSETS</b>		
Current Assets		
Cash and Cash Equivalents	\$ 3,502,378.23	\$ 3,323,286.58
Total Current Assets	<u>\$ 3,502,378.23</u>	<u>\$ 3,323,286.58</u>
Accounts Receivable		
Department of Revenue - MO	\$ 376,295.74	\$ 453,055.21
Payroll Asset	\$ 3,278.03	\$ -
Total Accounts Receivable	<u>\$ 379,573.77</u>	<u>\$ 453,055.21</u>
 Total Assets	 <u><u>3,881,952.00</u></u>	 <u><u>3,776,341.79</u></u>
<b>LIABILITIES AND FUND BALANCES</b>		
Liabilities		
Missouri Counties Payable	697,450.22	466,754.58
Grants Payable	2,618,564.88	72,583.90
Accounts Payable	13,951.63	-
Payroll Liabilities	2,686.50	2,696.50
Accrued Vacation	9,350.00	9,350.00
Total Liabilities	<u>3,342,003.23</u>	<u>551,384.98</u>
Fund Balances:		
Assigned		
Loan & Grants	-	-
Reserve Fund (15%)	1,863,212.14	1,072,721.02
Total Assigned	<u>1,863,212.14</u>	<u>1,072,721.02</u>
Unassigned		
Unassigned Balance	(1,323,263.37)	2,152,235.79
Total Unassigned	<u>(1,323,263.37)</u>	<u>2,152,235.79</u>
Total Fund Balances	<u>539,948.77</u>	<u>3,224,956.81</u>
 Total Liabilities and Fund Balances	 <u><u>\$ 3,881,952.00</u></u>	 <u><u>\$ 3,776,341.79</u></u>

**Missouri 911 Service Board**  
**Statement of Revenues, Expenditures and Changes in Fund Balances -**  
**Governmental Fund**  
**One Month and Year Then Ended September 30, 2021**

	<u>Month Ended</u> <u>Sept 30, 2021</u>	<u>Year Ended</u> <u>Sept 30, 2021</u>
<b>REVENUES</b>		
911 Service Income	\$ 376,225.19	\$ 1,500,383.44
Miscellaneous Income	\$ 10.00	\$ 30.00
Total Revenue	<u>376,235.19</u>	<u>1,500,413.44</u>
 <b>OPERATING EXPENDITURES</b>		
Emergency Telephone Fund		
1st Class Counties	56,788.11	251,324.81
Other Counties	115,543.56	445,492.01
Contract Services		
Accounting	-	1,470.00
Auditor	-	-
Insurance	-	1,867.00
Legal Fees	3,657.50	8,200.50
Outside Contract Services	-	30,417.38
Secretarial	-	42,728.68
Office Expense		
Bank Charges	0.50	1.50
Computer & Internet	-	548.68
Dues & Fees	-	-
Postage	-	-
Printing & Copying	-	400.25
Supplies	-	93.44
Telephone	92.30	276.90
Travel	-	-
Payroll Expenses		
Wages & Payroll Taxes	9,155.50	27,463.00
Program Operations		
Grants	2,618,564.88	2,618,564.88
Scholarships	-	-
Support Systems	-	500.00
Board Expense		
Interpreter	-	-
Mileage	-	157.38
Total Operating Expenditures	<u>2,803,802.35</u>	<u>3,429,506.41</u>
Excess (deficiency) of Revenues Over Expenditures	(2,427,567.16)	(1,929,092.97)

See Independent Accountant's Compilation Report

**Missouri 911 Service Board**  
**Statement of Revenues, Expenditures and Changes in Fund Balances -**  
**Governmental Fund**  
**One Month and Year Then Ended September 30, 2021**

	<u>Month Ended</u> <u>Sept 30, 2021</u>	<u>Year Ended</u> <u>Sept 30, 2021</u>
OTHER FINANCING SOURCES (USES)		
Interest	658.73	1,826.35
Total Other Financing Sources and Uses	658.73	1,826.35
<b>Net Change in Fund Balances</b>	<b>(2,426,908.43)</b>	<b>(1,927,266.62)</b>
Fund Balance - Beginning July 1, 2021		2,467,215.39
Fund Balance - Beginning Sept 1, 2021	2,966,857.20	
<b>Fund balance - Ending Sept 30, 2021</b>	<b>\$ 539,948.77</b>	<b>\$ 539,948.77</b>

**Missouri 911 Service Board**  
**Comparative Statement of Revenues, Expenditures and Changes in Fund Balances**  
**Governmental Fund**  
**Month and Year Ended Sept 30, 2021 & 2020**

	Month Ended Sept 30, 2021	Month Ended Sept 30, 2020	Variance	Year Ended Sept 30, 2021	Year Ended Sept 30, 2020	Variance
<b>REVENUES</b>						
911 Service Income	\$ 376,225.19	\$ 453,286.02	\$ (77,060.83)	\$ 1,500,383.44	\$ 1,021,246.21	\$ 479,137.23
Miscellaneous Income	\$ 10.00	\$ 10.00	\$ -	\$ 30.00	\$ 10.00	\$ 20.00
<b>Total Revenue</b>	<b>376,235.19</b>	<b>453,296.02</b>	<b>(77,060.83)</b>	<b>1,500,413.44</b>	<b>1,021,256.21</b>	<b>479,157.23</b>
<b>OPERATING EXPENDITURES</b>						
<b>Emergency Telephone Fund</b>						
1st Class Counties	56,788.11	64,150.03	(7,361.92)	251,324.81	151,703.38	99,621.43
Other Counties	115,543.56	141,837.47	(26,293.91)	445,492.01	315,142.61	130,349.40
<b>Contract Services</b>						
Accounting	-	325.00	(325.00)	1,470.00	1,445.00	25.00
Auditor	-	-	-	-	-	-
Executive Director Search	-	-	-	-	-	-
Insurance	-	746.00	(746.00)	1,867.00	746.00	1,121.00
Legal Fees	3,657.50	5,934.50	(2,277.00)	8,200.50	22,643.50	(14,443.00)
Outside Contract Services	-	-	-	30,417.38	-	30,417.38
Secretarial	-	-	-	42,728.68	38,397.82	4,330.86
<b>Office Expense</b>						
Bank Charges	0.50	0.50	-	1.50	1.50	-
Computer & Internet	-	-	-	548.68	-	548.68
Dues & Fees	-	-	-	-	500.00	(500.00)
Postage	-	-	-	-	-	-
Printing & Copying	-	-	-	400.25	-	400.25
Supplies	-	-	-	93.44	-	93.44
Telephone	92.30	-	92.30	276.90	-	276.90
Travel	-	-	-	-	-	-
<b>Payroll Expenses</b>						
Wages & Payroll Taxes	9,155.50	9,153.75	1.75	27,463.00	27,283.02	179.98
Vacation Time Owed	-	-	-	-	-	-
Moving Expenses	-	-	-	-	-	-
<b>Program Operations</b>						
Grants	2,618,564.88	-	-	2,618,564.88	362,919.53	2,255,645.35
Scholarships	-	-	-	-	-	-
Support Systems	-	-	-	500.00	672.33	(172.33)
<b>Board Expense</b>						
Interpreter	-	-	-	-	-	-
Mileage	-	-	-	157.38	-	157.38
<b>Total Operating Expenditures</b>	<b>2,803,802.35</b>	<b>222,147.25</b>	<b>2,581,655.10</b>	<b>3,429,506.41</b>	<b>921,454.69</b>	<b>2,508,051.72</b>
<b>Excess (deficiency) of Revenues Over Expenditures</b>	<b>(2,427,567.16)</b>	<b>231,148.77</b>	<b>(2,658,715.93)</b>	<b>(1,929,092.97)</b>	<b>99,801.52</b>	<b>(2,028,894.49)</b>
<b>OTHER FINANCING SOURCES (USES)</b>						
Interest	658.73	4,290.34	(3,631.61)	1,826.35	13,412.79	(11,586.44)
<b>Total Other Financing Sources and Uses</b>	<b>658.73</b>	<b>4,290.34</b>	<b>(3,631.61)</b>	<b>1,826.35</b>	<b>13,412.79</b>	<b>(11,586.44)</b>
<b>Net Change in Fund Balances</b>	<b>(2,426,908.43)</b>	<b>235,439.11</b>	<b>(2,662,347.54)</b>	<b>(1,927,266.62)</b>	<b>113,214.31</b>	<b>(2,040,480.93)</b>

See Independent Accountant's Compilation Report



**Missouri 911 Service Board**  
**Comparative Statement of Revenues, Expenditures and Changes in Fund Balances**  
**Governmental Fund**  
**Month and Year Ended Sept 30, 2021 & 2020**

	<u>Month Ended Sept 30, 2021</u>	<u>Month Ended Sept 30, 2020</u>	<u>Variance</u>	<u>Year Ended Sept 30, 2021</u>	<u>Year Ended Sept 30, 2020</u>	<u>Variance</u>
<b>Net Change in Fund Balances</b>	<b>(2,426,908.43)</b>	<b>235,439.11</b>	<b>(2,662,347.54)</b>	<b>(1,927,266.62)</b>	<b>113,214.31</b>	<b>(2,040,480.93)</b>
Fund Balance - Begin Sept 1, 2021	2,966,857.20					
Fund Balance - Begin Sept 1, 2020		2,989,517.70				
Fund Balance - Begin July 1, 2021				2,467,215.39		
Fund Balance - Begin Jul 1, 2020					3,111,742.50	
<b>Fund balance - End Sept 30, 2021 &amp; 2020</b>	<u><u>\$ 539,948.77</u></u>	<u><u>\$ 3,224,956.81</u></u>	<u><u>\$(2,685,008.04)</u></u>	<u><u>\$ 539,948.77</u></u>	<u><u>\$ 3,224,956.81</u></u>	<u><u>\$(2,685,008.04)</u></u>

Missouri 911 Service Board  
Supplementary Information  
September 30, 2021

**Missouri 911 Service Board**  
**Payroll Summary**  
**September 2021**

	Brian W Maydwell		TOTAL	
	Sep 21	Jan - Sep 21	Sep 21	Jan - Sep 21
<b>Employee Wages, Taxes and Adjustments</b>				
<b>Gross Pay</b>				
Salary	8,500.00	80,750.00	8,500.00	80,750.00
<b>Total Gross Pay</b>	8,500.00	80,750.00	8,500.00	80,750.00
<b>Adjusted Gross Pay</b>	8,500.00	80,750.00	8,500.00	80,750.00
<b>Taxes Withheld</b>				
Federal Withholding	-892.00	-8,474.00	-892.00	-8,474.00
Medicare Employee	-123.25	-1,170.88	-123.25	-1,170.88
Social Security Employee	-527.00	-5,006.50	-527.00	-5,006.50
MO - Withholding	-494.00	-4,693.00	-494.00	-4,693.00
Medicare Employee Addl Tax	0.00	0.00	0.00	0.00
<b>Total Taxes Withheld</b>	-2,036.25	-19,344.38	-2,036.25	-19,344.38
<b>Additions to Net Pay</b>				
Cell Phone Reimbursement	92.30	276.90	92.30	276.90
<b>Total Additions to Net Pay</b>	92.30	276.90	92.30	276.90
<b>Net Pay</b>	<u>6,556.05</u>	<u>61,682.52</u>	<u>6,556.05</u>	<u>61,682.52</u>
<b>Employer Taxes and Contributions</b>				
Federal Unemployment	0.00	42.00	0.00	42.00
Medicare Company	123.25	1,170.88	123.25	1,170.88
Social Security Company	527.00	5,006.50	527.00	5,006.50
MO - Unemployment	0.00	110.00	0.00	110.00
<b>Total Employer Taxes and Contributions</b>	<u>650.25</u>	<u>6,329.38</u>	<u>650.25</u>	<u>6,329.38</u>

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**Missouri 911 Service Board**  
**A/P Aging Summary**  
As of September 30, 2021

*Regular Payables*

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	<u>Current</u>	<u>1 - 30</u>	<u>31 - 60</u>	<u>61 - 90</u>	<u>&gt; 90</u>	<u>TOTAL</u>
Mission Critical Partners	0.00	0.00	0.00	13,951.63	0.00	13,951.63
<b>TOTAL</b>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>13,951.63</u>	<u>0.00</u>	<u>13,951.63</u>

**Missouri 911 Service Board**  
**A/P Aging Summary**  
**As of September 30, 2021**

*County Payables*

	Current	1 - 30	31 - 60	61 - 90	> 90	TOTAL
Adair County	587.53	723.24	650.26	0.01	0.00	1,961.04
Andrew County	273.33	309.60	282.87	0.00	0.00	865.80
Atchison County	97.40	125.72	99.97	26.79	-26.79	323.09
Audrain County	222.05	227.01	253.02	0.00	-0.01	702.07
Barry County	331.60	361.85	378.00	0.02	0.00	1,071.47
Barton County	745.80	770.30	735.36	0.00	-0.01	2,251.45
Bates County	1,086.70	1,204.55	1,093.14	0.00	0.00	3,384.39
Benton County	1,212.30	1,322.18	1,221.33	-0.03	0.00	3,755.78
Bollinger County	665.28	821.15	709.41	-0.01	0.00	2,195.83
Boone County	4,215.66	4,394.03	4,314.13	0.00	0.00	12,923.82
Buchanan County	2,809.92	3,015.32	2,868.84	0.00	0.00	8,694.08
Butler County	2,521.92	3,273.53	2,640.11	0.02	0.00	8,435.58
Caldwell County	711.88	789.65	697.59	-0.01	0.00	2,199.11
Callaway County	1,378.89	1,526.17	1,394.85	-0.01	0.00	4,299.90
Camden County	2,108.03	2,295.47	2,119.23	-0.03	0.00	6,522.70
Cape Girardeau County	2,897.70	3,290.74	3,069.29	0.02	0.00	9,257.75
Carroll County	81.29	92.39	88.53	0.07	0.00	262.28
Carter County	211.88	348.18	239.62	0.04	0.00	799.72
Cass County	598.43	626.63	689.80	0.00	0.00	1,914.86
Cedar County	1,184.72	1,327.84	1,171.58	0.04	0.00	3,684.18
Chariton County	123.69	181.95	690.17	0.00	0.00	995.81
Christian County	1,259.36	1,342.08	767.53	0.03	0.00	3,369.00
Clark County	61.60	97.37	71.09	0.02	0.00	230.08
Clay County	3,849.06	4,119.45	4,167.11	-0.01	0.00	12,135.61
Clinton County	418.29	530.62	425.72	-0.02	0.00	1,374.61
Cole County	1,737.94	1,831.26	1,740.14	0.03	0.00	5,309.37
Cooper County	793.79	855.66	776.42	0.02	0.00	2,425.89
Crawford County	1,103.55	1,317.77	1,136.73	-1.01	0.00	3,557.04
Dade County	91.10	108.49	111.37	-0.01	0.00	310.95
Dallas County	152.99	174.32	172.87	-0.01	0.00	500.17
Davies County	41.72	43.34	42.87	74.31	561.05	763.29
Dekalb County	578.60	615.46	517.33	0.00	0.00	1,711.39
Dent County	835.57	985.01	881.90	-0.03	0.00	2,702.45
Douglas County	1,245.69	1,306.36	1,236.05	-0.01	0.00	3,788.09
Dunklin County	1,716.05	2,139.61	1,821.66	0.01	0.00	5,677.33
Franklin County	3,652.80	4,257.70	3,810.28	0.02	0.00	11,720.80
Gasconade County	611.52	723.91	609.25	0.00	0.00	1,944.68
Gentry County	158.30	244.99	161.54	0.01	0.00	564.84
Greene County	11,635.43	13,105.89	11,856.91	-0.01	0.00	36,598.22
Grundy County	510.69	660.75	531.65	-0.02	0.00	1,703.07
Harrison County	506.58	561.14	491.30	0.01	0.00	1,559.03
Henry County	327.05	302.29	328.95	0.00	0.00	958.29
Hickory County	688.09	788.08	692.94	0.01	0.00	2,169.12
Holt County	70.96	91.92	74.02	0.00	0.00	236.90
Howard County	312.10	424.40	328.34	-0.02	0.00	1,064.82
Howell County	343.54	351.88	382.54	0.00	0.00	1,077.96
Iron County	370.51	583.04	433.10	0.01	0.00	1,386.66
Jackson County	16,524.01	17,699.89	18,500.41	-0.02	0.00	52,724.29
Jasper County	4,740.50	5,523.83	4,893.23	0.01	0.00	15,157.57
Jefferson County	2,171.13	2,426.32	2,222.32	0.02	0.00	6,819.79
Johnson County	173.92	206.47	260.73	-0.01	0.00	641.11
Knox County	31.27	52.19	40.74	-0.02	0.00	124.18
Laclede County	2,284.65	2,574.64	2,255.86	-0.02	0.00	7,115.13
Lafayette County	1,091.19	1,255.36	1,154.75	-0.02	0.00	3,501.28
Lawrence County	3,198.84	3,425.32	3,201.09	-0.02	0.00	9,825.23
Lewis County	258.79	426.40	259.64	0.00	0.00	944.83
Lincoln County	1,224.71	1,389.01	1,259.23	0.03	0.00	3,872.98
Linn County	273.76	319.16	276.38	0.00	0.00	869.30
Livingston County	836.83	949.29	888.43	-0.03	0.00	2,674.52
Macon County	319.14	513.12	322.56	0.00	0.00	1,154.82
Madison County	639.66	755.81	652.92	0.02	0.00	2,048.41
Maries County	210.22	326.92	234.84	0.01	0.00	771.99
Marion County	675.77	1,073.33	708.25	0.03	0.00	2,457.38
McDonald County	202.07	218.71	241.71	0.00	0.00	662.49
Mercer County	144.50	199.41	143.94	-0.01	0.00	487.84
Miller County	1,106.50	1,226.76	1,116.95	0.02	0.00	3,450.23

**Missouri 911 Service Board**  
**A/P Aging Summary**  
**As of September 30, 2021**

	Current	1 - 30	31 - 60	61 - 90	> 90	TOTAL
Mississippi County	397.89	510.53	443.20	0.01	0.00	1,351.63
Moniteau County	488.91	596.86	499.54	0.00	0.00	1,585.31
Monroe County	76.23	115.98	81.56	-0.02	0.00	273.75
Montgomery County	449.63	548.54	480.95	-0.01	0.00	1,479.11
Morgan County	918.94	1,054.54	926.56	0.02	0.00	2,900.06
New Madrid County	1,354.44	1,655.59	1,461.72	0.01	0.00	4,471.76
Newton County	4,258.16	4,589.89	4,222.45	0.01	-0.01	13,070.50
Nodaway County	324.56	362.25	335.58	0.00	-0.02	1,022.37
Oregon County	477.25	599.41	506.97	0.00	-0.02	1,583.61
Osage County	28.99	25.37	36.32	0.01	0.00	90.69
Ozark County	703.43	874.21	711.26	0.00	0.00	2,288.90
Pemiscot County	702.80	926.29	795.58	0.01	0.00	2,424.68
Perry County	908.76	945.46	908.02	0.00	-0.01	2,762.23
Pettis County	2,051.89	2,296.74	2,099.26	0.00	-0.01	6,447.88
Phelps County	1,589.97	1,998.72	1,743.12	0.01	-0.03	5,331.79
Pike County	758.66	949.26	780.04	0.01	0.00	2,487.97
Polk County	2,212.95	2,468.16	2,300.32	-0.04	0.00	6,981.39
Pulaski County	1,536.40	1,789.02	1,532.35	-0.02	0.00	4,857.75
Putnam County	129.95	199.04	132.09	0.00	0.00	461.08
Ralls County	308.67	431.47	303.94	-0.01	0.00	1,044.07
Randolf County	450.66	534.30	484.70	0.00	-0.01	1,469.65
Ray County	1,481.15	1,590.99	1,500.98	0.01	0.00	4,573.13
Reynolds County	204.58	286.38	219.88	0.00	-0.02	710.82
Ripley County	643.54	850.91	665.76	0.02	0.00	2,160.23
Saline County	144.97	154.35	176.11	0.02	0.00	475.45
Schuyler County	60.13	84.39	70.92	-0.03	0.00	215.41
Scotland County	72.08	124.75	74.39	0.00	-0.02	271.20
Scott County	741.45	905.68	776.27	0.00	0.00	2,423.40
Shannon County	219.04	389.55	237.85	0.01	0.00	846.45
Shelby County	29.17	61.03	30.00	0.03	0.00	120.23
Sikeston (City of)	303.98	398.55	335.02	0.00	0.00	1,037.55
St. Charles County	7,974.86	8,079.01	8,150.17	0.00	0.00	24,204.04
St. Clair County	599.73	719.56	647.81	0.00	0.00	1,967.10
St. Francois County	2,446.95	2,942.17	2,535.68	0.02	0.00	7,924.82
St. Louis City	10,628.62	10,646.46	11,071.19	0.00	0.00	32,346.27
St. Louis County	21,660.62	21,587.03	21,262.68	0.00	0.00	64,510.33
Ste. Genevieve County	456.89	514.88	466.95	0.02	0.00	1,438.74
Stoddard County	1,853.71	2,349.08	1,922.58	0.00	-0.01	6,125.36
Stone County	230.48	259.09	258.71	0.01	0.00	748.29
Sullivan County	73.71	82.51	77.09	0.02	0.00	233.33
Taney County	3,181.66	3,472.52	3,113.80	0.00	-0.01	9,767.97
Texas County	1,487.08	1,906.91	1,546.86	-0.02	-0.01	4,940.82
Vernon County	1,889.44	1,987.57	1,822.13	0.02	0.00	5,699.16
Warren County	469.50	518.29	498.75	0.01	0.00	1,486.55
Warrenton	75.00	67.46	79.86	0.00	0.00	222.32
Washington County	968.20	1,167.62	1,039.78	0.03	0.00	3,175.63
Wayne County	595.16	1,110.13	635.62	0.03	0.00	2,340.94
Webster County	194.15	216.19	278.11	0.00	-0.02	688.43
Worth County	51.63	73.31	45.74	-0.04	0.00	170.64
Wright County	218.71	235.09	249.91	-1.03	0.00	702.68
<b>TOTAL</b>	<b>172,331.67</b>	<b>191,405.32</b>	<b>178,186.82</b>	<b>99.36</b>	<b>534.04</b>	<b>542,557.21</b>

10:50 AM

10/29/21

**Missouri 911 Service Board**  
**A/P Aging Summary**  
**As of September 30, 2021**

*Grant Payables*

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	<u>Current</u>	<u>1 - 30</u>	<u>31 - 60</u>	<u>61 - 90</u>	<u>&gt; 90</u>	<u>TOTAL</u>
Dekalb County	0.00	1,250,000.00	0.00	0.00	0.00	1,250,000.00
Greene County	0.00	439,654.61	0.00	0.00	0.00	439,654.61
Macon County	0.00	884,258.27	0.00	0.00	0.00	884,258.27
Wright County	0.00	44,652.00	0.00	0.00	0.00	44,652.00
<b>TOTAL</b>	<b>0.00</b>	<b>2,618,564.88</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>2,618,564.88</b>

**Missouri 911 Service Board  
Reserve Transfer  
15% of Revenue**

	Revenue	Reserve Transfer
6/30/2019	\$ 1,022,745.66	\$ 153,411.85
<b>2018-2019 Fiscal Year</b>	<b>\$ 1,022,745.66</b>	<b>\$ 153,411.85</b>
6/30/2020	\$ 5,094,068.88	\$ 764,110.33
<b>2019-2020 Fiscal Year</b>	<b>\$ 5,094,068.88</b>	<b>\$ 764,110.33</b>
6/30/2021	\$ 4,802,389.93	\$ 720,358.49
<b>2019-2020 Fiscal Year</b>	<b>\$ 4,802,389.93</b>	<b>\$ 720,358.49</b>
7/31/2021	\$ 389,341.27	\$ 58,401.19
8/31/2021	\$ 735,984.60	\$ 110,397.69
9/30/2021	\$ 376,883.92	\$ 56,532.59
10/31/2021		\$ -
11/30/2021		\$ -
12/31/2021		\$ -
1/31/2022		\$ -
2/28/2022		\$ -
3/31/2022		\$ -
4/30/2022		\$ -
5/31/2022		\$ -
6/30/2022		\$ -
<b>2021-2022 Fiscal Year</b>	<b>\$ 1,502,209.79</b>	<b>\$ 225,331.47</b>
<b>Overall Total</b>	<b>\$ 12,421,414.26</b>	<b>\$ 1,863,212.14</b>