

# Appendix D – Existing Conditions

## Introduction

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This appendix summarizes existing conditions for the SJATSO Metropolitan Planning Area (MPA) multimodal transportation system.

## Overview of the SJATSO MPA

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Strategically located along the Missouri River, the St. Joseph region has played a significant role in the development of the nation's transportation system. This rich history is still present today as observed in unique community assets including historical links to the Pony Express and Jesse James. St. Joseph is home to numerous museums and historically significant properties which attract regional visitors and support local tourism. The area is also home to the Kansas City Chiefs' annual preseason training camp (July/August) held at Missouri Western State University (MWSU). The region is rich in urban resources including historic architecture, a continuous 26-mile parkway system with picturesque landscapes, vast wooded areas, hike and bike trails, and family-oriented parks. Educational opportunities are plentiful including a four-year state university (MWSU), a private technical school, and a privately operated post-secondary vocational/technical school.

## Roadways

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This section provides an overview of the existing roadway system conditions within the SJATSO MPA.

### Functional Classification

Functional classification is a process by which roadways are grouped into classes according to the service they provide. This ranges from a high degree of travel mobility (interstates and freeways) to land access functions (local roads). Federal regulations require that each state classify roadways in accordance with the Federal Highway Administration's Highway (FHWA). The primary criterion for defining functional classification includes average daily traffic volumes, posted and observed travel speeds, and access control. The functional classification hierarchy is as follows:

- *Principal Arterial*: Principal arterials include all interstate freeways. Freeways connect the region with other areas in the state and other states and they also connect the St. Joseph central business district (CBD) to regional business concentrations. The emphasis is on mobility as opposed to land access. Principal arterials only connect with other freeways, other principal arterials and select minor arterials and collectors. Typically, freeways provide for the longest trips in the region.

- *Arterial*: The arterial system connects the urban area to cities and towns inside and outside the region. Arterials connect the rural growth centers in the region as well as to similar places just outside the city. They provide supplementary connections between the St. Joseph CBD and the regional business centers. Arterials can be broken down into relievers, expanders, and augmenters/connectors; however, for the purpose of the 2050 MTP they are displayed as minor arterials.
- *Collector*: The collector system facilitates connections between neighborhoods and from neighborhoods to minor business concentrations. Collectors also provide supplementary interconnections of major traffic generators within the CBD and regional business concentrations. Mobility and land access are equally important and direct land access is predominantly to development concentrations.
- *Local Street*: Local streets connect blocks and land parcels. The primary emphasis is on land access. In most cases local streets connect to other local streets and collectors. In some cases, they connect to minor arterials. Local streets typically serve short trips at low speeds. In urban areas, local streets are often spaced every block. In the rural areas, local streets could be spaced as much as one mile apart.

When operating properly, the functional classification hierarchy facilitates the efficient and safe movement of traffic. The review, and potential reclassification, of functional classification typically occurs every few years to ensure the roads reflect their true function. Table 1 summarizes the roadway miles by functional classification for the SJATSO MPA.

Existing Functional Classification

I-29 and I-229 function as the primary regional connections between Kansas City to the south and Omaha to the north. Principal arterials act as a feeder network bringing in vehicles from the interstate network into the urbanized area. Roadways such as US-59 and US-169 provide connections between interstates and business districts within the urbanized area. East-west arterial connections in St. Joseph include Mitchell Avenue, Faraon Street, and Frederick Avenue. Major and minor collectors provide connections from higher classified roadways to local/neighborhood roadways. Figure 1 and Figure 2 display the existing functional classification and land use within the SJATSO MPA.

Table 1: Roadway Miles by Functional Classification (SJATSO MPA)

Functional Class	Total	% of Total
Interstate	108.5	14.7%
Freeway	37.5	5.1%
Principal Arterial	103.8	14.1%
Minor Arterial	181.6	24.6%
Major Collector	302.9	41.0%
Minor Collector	4.3	0.6%
<b>Total</b>	<b>738.5</b>	<b>100%</b>

Source: MoDOT and KDOT (2020).

For the regional roadway network to function properly, roadway facility types must provide appropriate access to the land use within the SJATSO MPA. Gaps in the roadway network create long-term connectivity and accessibility issues if the roadway infrastructure does not keep pace with development. As identified in previous MTP planning efforts, improvements to the Cook Road corridor (currently classified as a

minor arterial), is a priority to enhance east-west travel in the northern part of the urbanized area (approximately one-mile south of County Line Road). Currently, east-west access is constrained within the urbanized area north of Frederick Avenue and the Cook Road improvements strengthen the regional network. However, Cook Road does not currently extend west to I-229 so in order to fully recognize the connectivity and accessibility benefits it would be necessary to extend Cook Road west from US-59 to I-229.

Another roadway facility to monitor is the Belt Highway (US-169). As St. Joseph's primary commercial corridor, the Belt Highway is a heavily traveled commercial corridor with frequent access to adjacent land uses. Another important aspect of the functional classification network is the connection between St. Joseph and surrounding municipalities. Maintaining minor arterials and major collectors, connecting rural municipalities to the urbanized area, is important as traffic patterns evolve over time.

Figure 1: Functional Classification

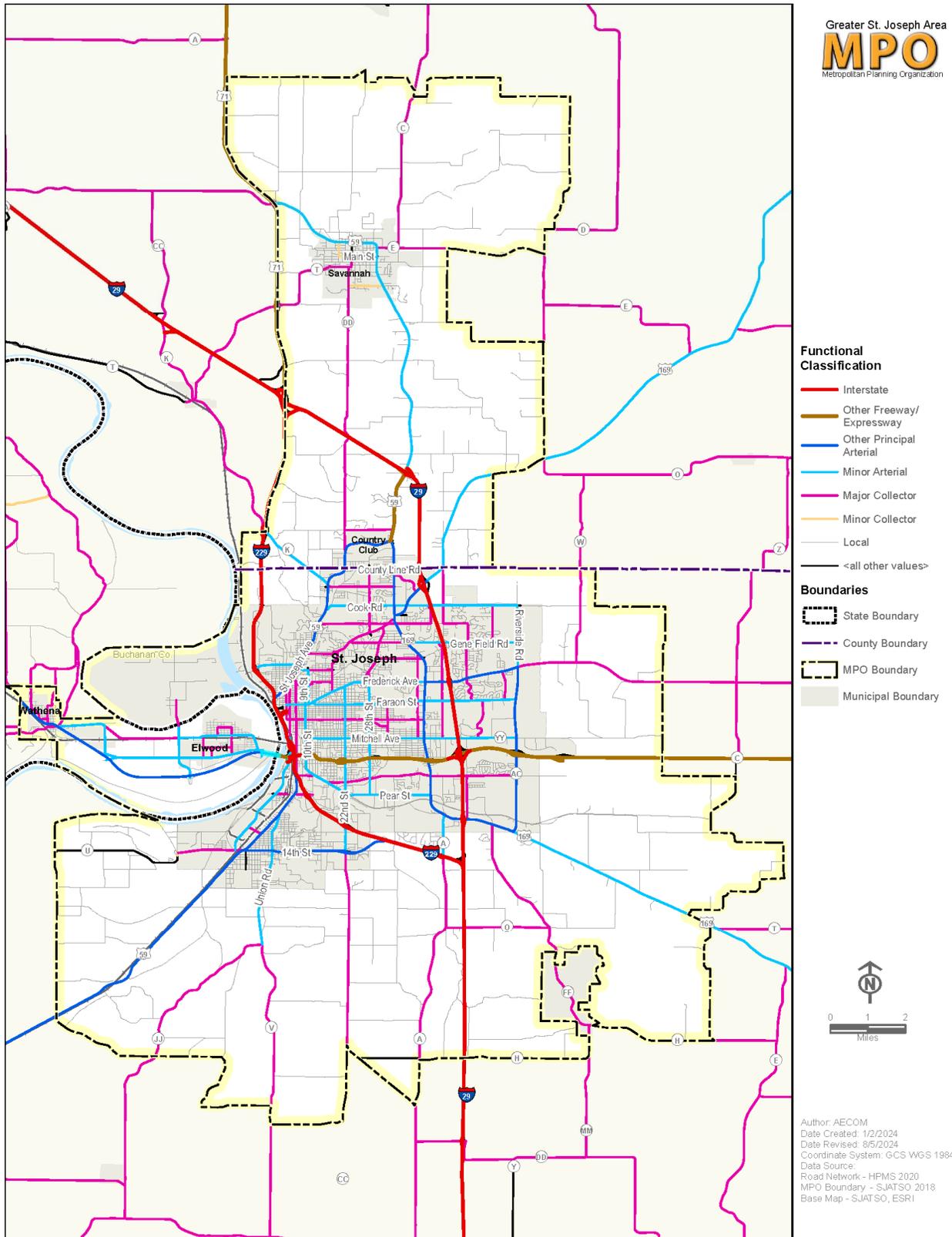
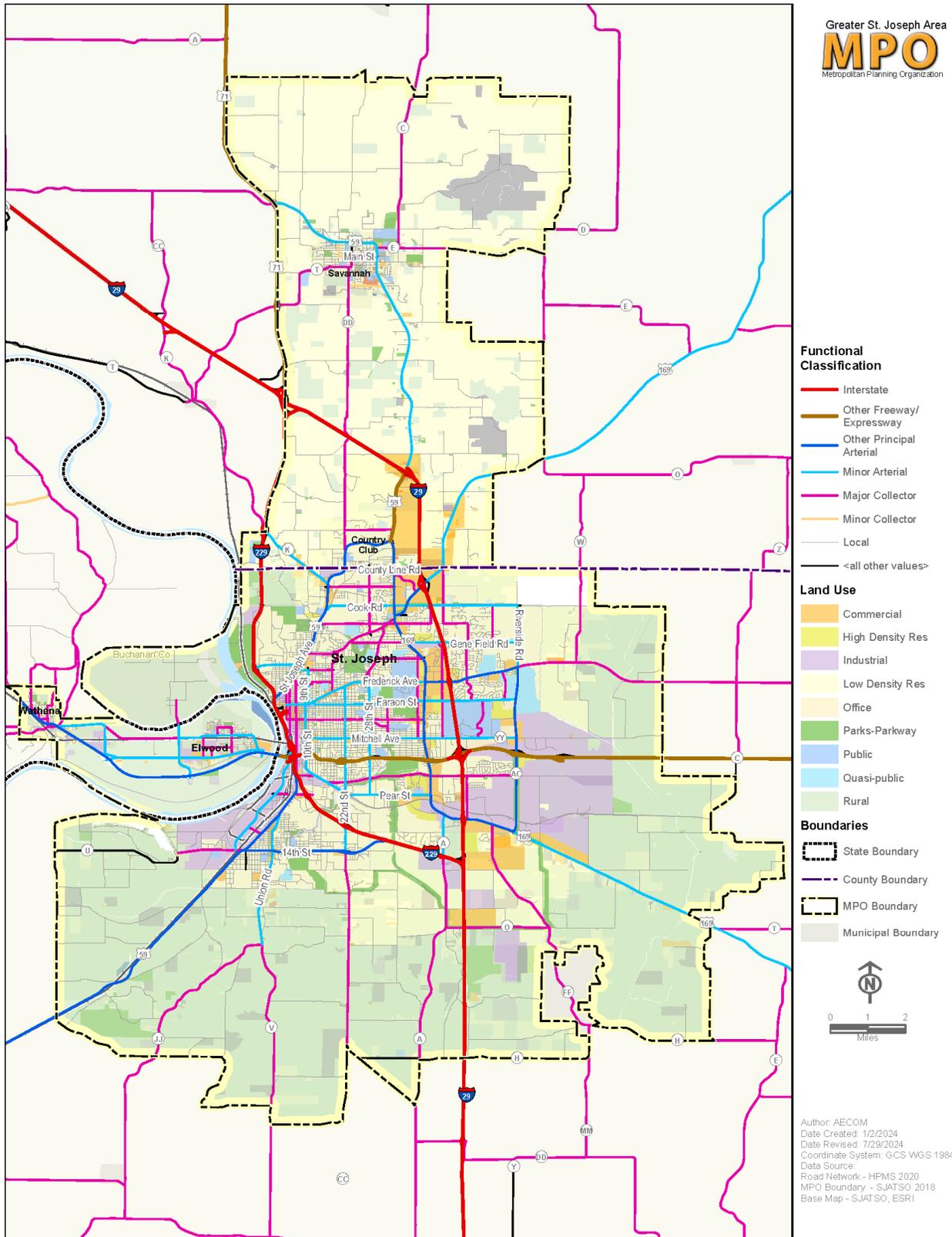


Figure 2: Functional Class and Land Use



## Travel Characteristics

Table 2 summarizes Daily Vehicle Miles of Travel (VMT) by Functional Classification for the SJATSO region. According to FHWA Highway Statistics, in 2006 there was an average of 1,768,000 vehicle miles traveled (VMT) per day on roadways in the SJATSO MPA. By 2015, this total decreased by 134,000 vehicle miles per day to 1,634,000 which reflected a nationwide trend of decreasing VMT. Recent VMT estimates from 2022 indicate a significant spike to 2,612,000 VMT per day. This may reflect increasing traffic levels in the area. It may also reflect people making more trips on a daily basis, which was a trend observed during Covid. Finally, increase in home deliveries may also contribute to the increasing VMT.

Table 2: Daily Vehicle Miles of Travel by Functional Classification (in 1,000s miles)

Year	Interstate	Freeways	Principal Arterial	Minor Arterial	Major/Minor Collector	Local	Total
2006	297	124	447	193	152	555	1,768
2015	381	121	380	277	180	295	1,634
2022	445	159	361	260	192	1,195*	2,612

Source: FHWA – Highway Statistics, numbers pulled on January 29, 2024.

\*It is unclear what caused the significant increase in the local category completed to prior years.

## Average Daily Traffic Volumes

Figure 3 and Figure 4 displays the annual average daily traffic (AADT) for the SJATSO region. Traffic counts represent MoDOT data from 2020. These volumes, along with the functional classification data, are used to calibrate the regional travel demand model.

The SJATSO network includes a range of AADT counts based on the use of the roadway facility. Interstates 29 and 229 provide connections to and from the St. Joseph region. On I-29, segments south of US-169 exceed 25,000 AADT. North of US-169, AADT ranges from 10,000 to 25,000 AADT. I-229 is an auxiliary interstate highway providing access to downtown St. Joseph off of I-29. AADT on I-229 varies significantly by segment. From I-29 (south extents) to MO-752 and US-36 to US-59, I-229 handles 10,000 to 25,000 AADT. Segments between MO-752 to US-36 and US-59 to I-29 (northern extents) carry between 2,500 to 10,000 AADT.

While the interstates provide primary north-south regional connections, US-36 is the primary east-west regional connection. AADT through the MPA typically exceeds 10,000 AADT with the segment from 28<sup>th</sup> Street to I-229 carrying over 25,000 AADT. The Belt Highway (US-169) is the primary retail corridor in the urbanized area paralleling I-29. Belt Highway captures much of the traffic exiting from the interstate and carries between 12,000 to over 20,000 AADT.

Figure 3: Annual Average Daily Traffic (2020)

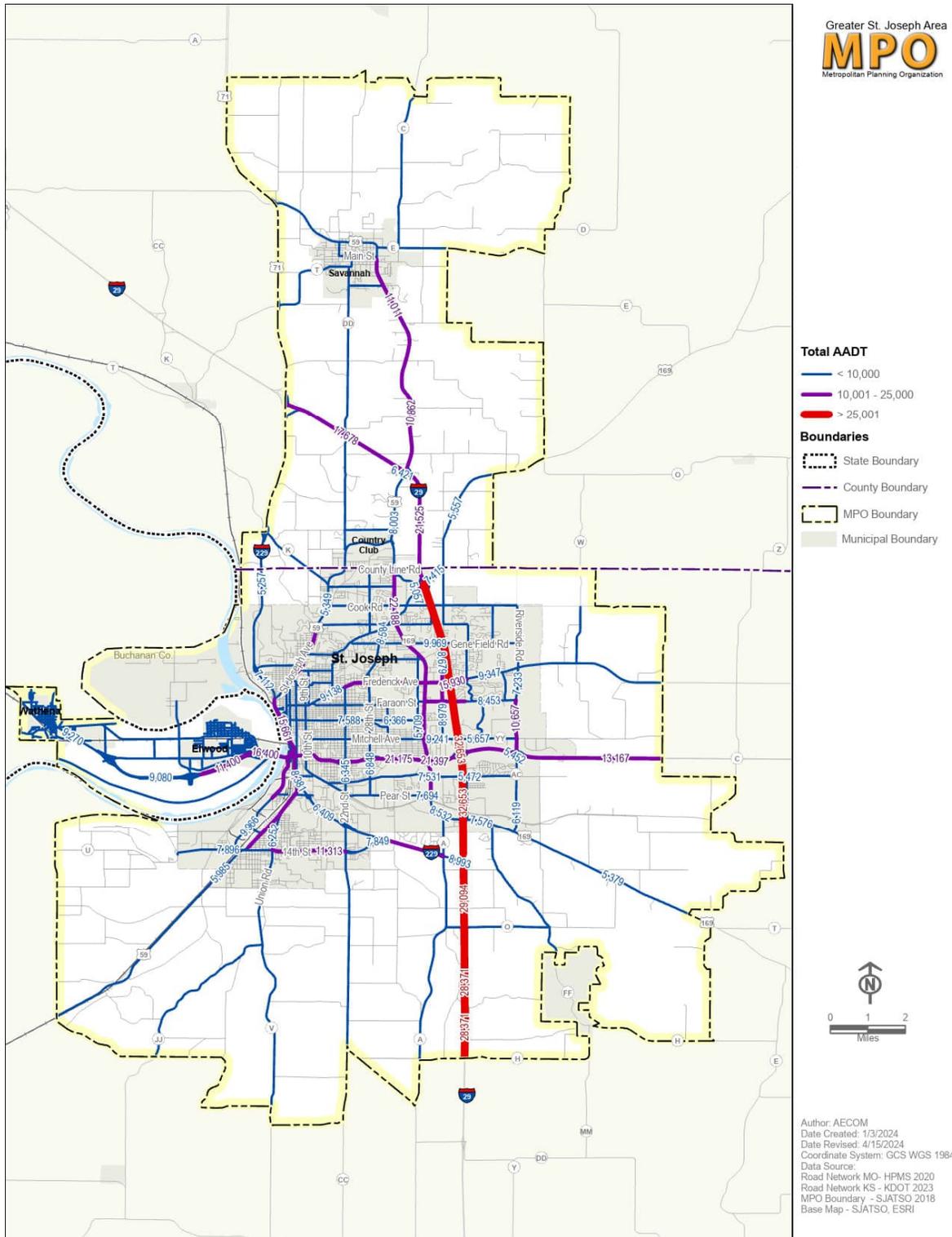
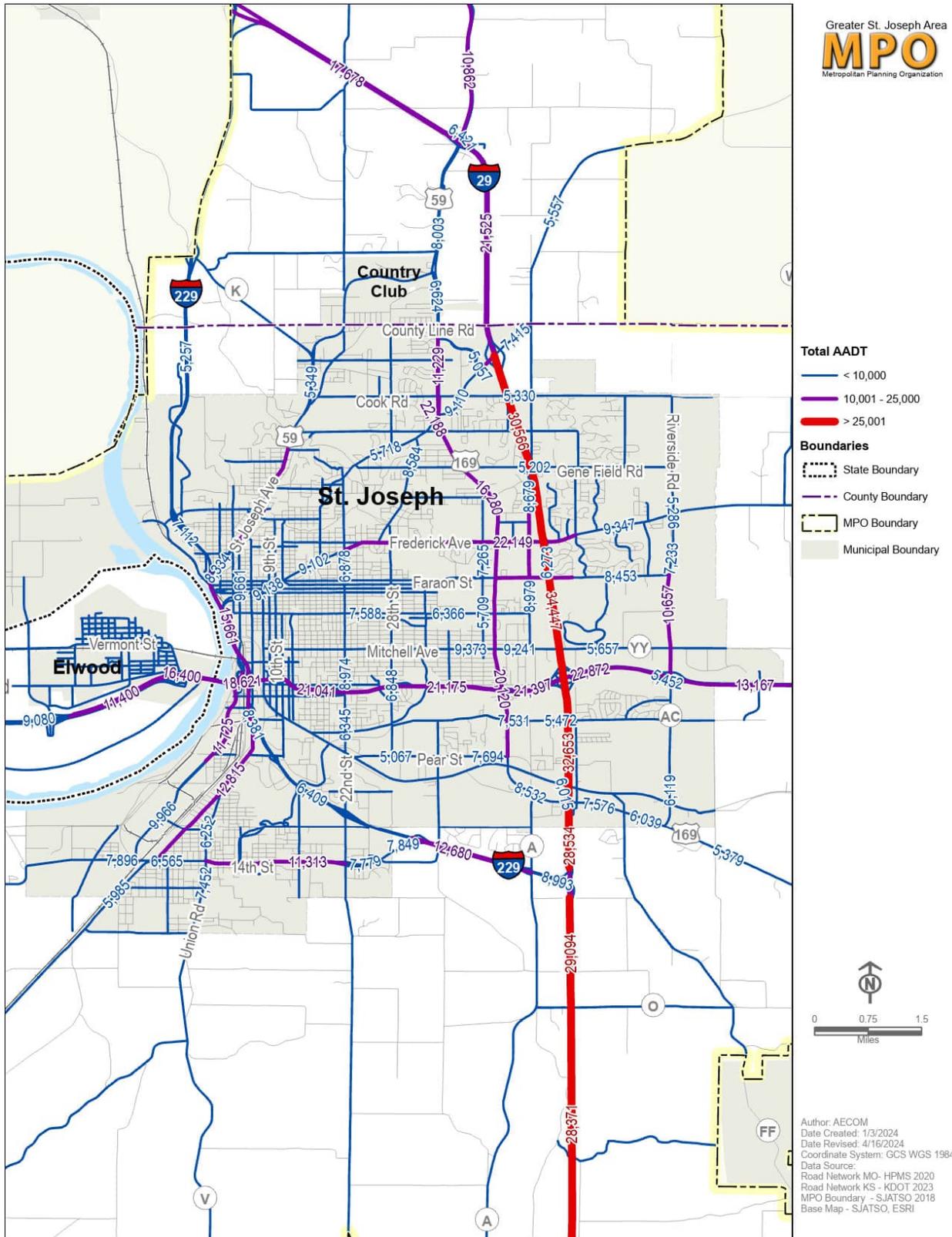


Figure 4: Annual Average Daily Traffic (2020) – City of St. Joseph



## Travel Delay

Significant travel delay, or capacity deficiencies, are not that frequent within the SJATSO MPA. The primary area of concern is the I-29 corridor which has approximately 40,000 vpd between Frederick Avenue and US-36. In addition, interchange ramps along I-29 and US-36 experience some delay, primarily during a.m. and p.m. peak hours. This is reflected in peak hour traffic counts which show the Riverside Road, near US-36, carries nearly 1,200 vehicles in the a.m. peak and nearly 1,300 in the p.m. peak.

Along the I-29 corridor there are capacity issues that exist at US-169 (Belt Highway), Frederick Avenue, and US-169 (Rochester Road). Capacity issues also exist along US-36 at the I-229/US-59 interchange area. For the most part, these congestion issues occur primarily during the a.m. and p.m. peak travel hours. However, the I-29 and US-169 interchange (Belt Highway) and the Route AC at the US-36 interchange are two areas that are more likely to experience extended periods of delay. As growth continues in the eastern portion of the MPA, these traffic issues are likely to increase in intensity and should be closely monitored. Furthermore, Frederick Avenue remains a highly traveled corridor in the a.m. and p.m. as it serves as the primary entry/exit into downtown St. Joseph. Figures 5 and 6 display the peak hour counts. Table 3 summarizes the top five a.m. and p.m. peak hour locations.

Table 3. AM and PM Peak Hour Traffic

Top 5 AM Peak Segments	Top 5 PM Peak Segments
1. Riverside/US-36 -1,180	1. Riverside/US-36 -1,290
2. Frederick/Rush Rd -1,050	2. Frederick/Fairleigh - 1,280
3. Frederick/Fairleigh - 1,040	3. Frederick/Rush Rd - 1,210
4. Woodbine/Frederick - 1,000	4. Woodbine/Frederick (North) - 1,130
5. Frederick/Jones St. - 780	5. Woodbine/Frederick (South) - 960

Source: 2022 Traffic Counts

Figure 5: Peak Hour Traffic Counts (2022)

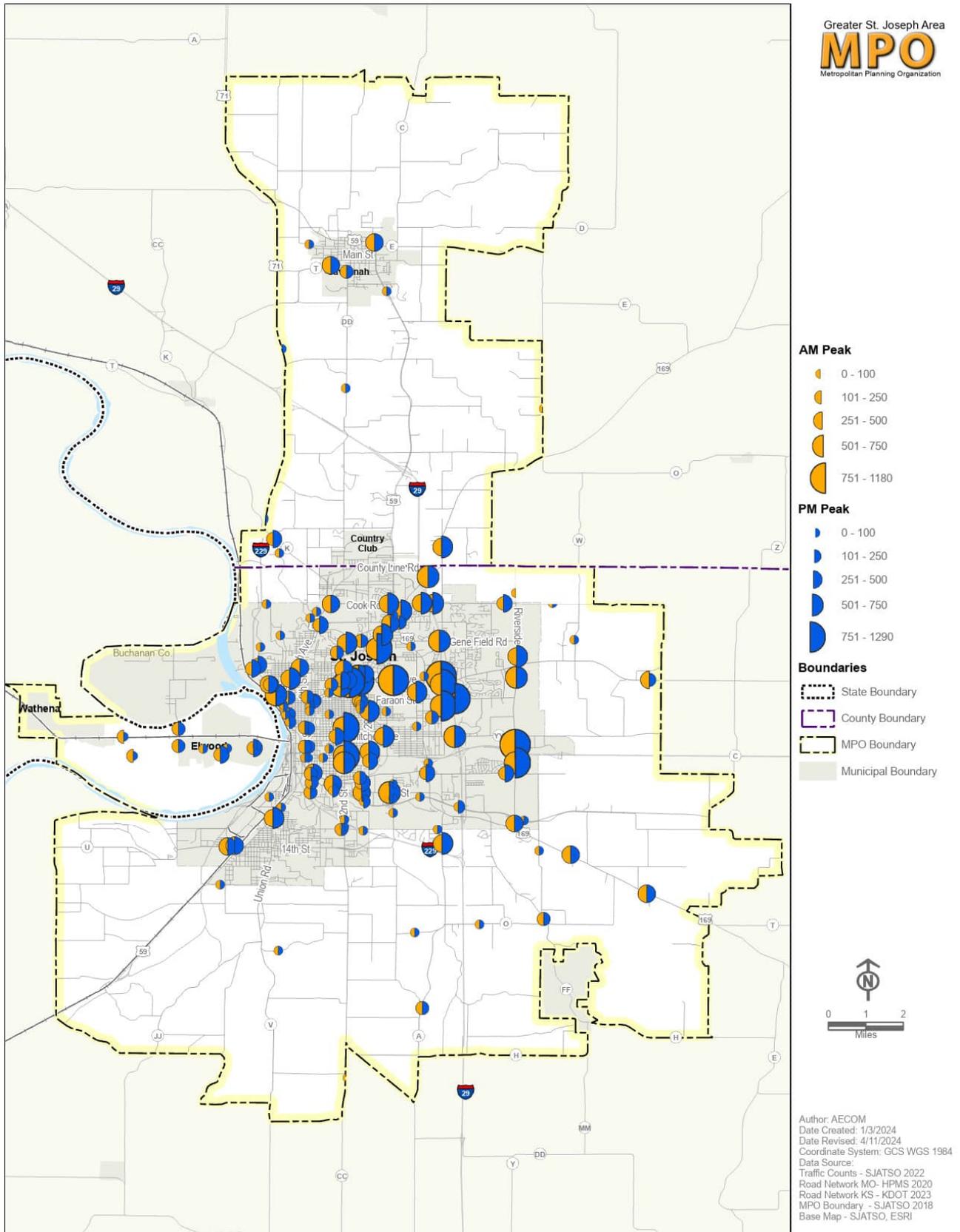
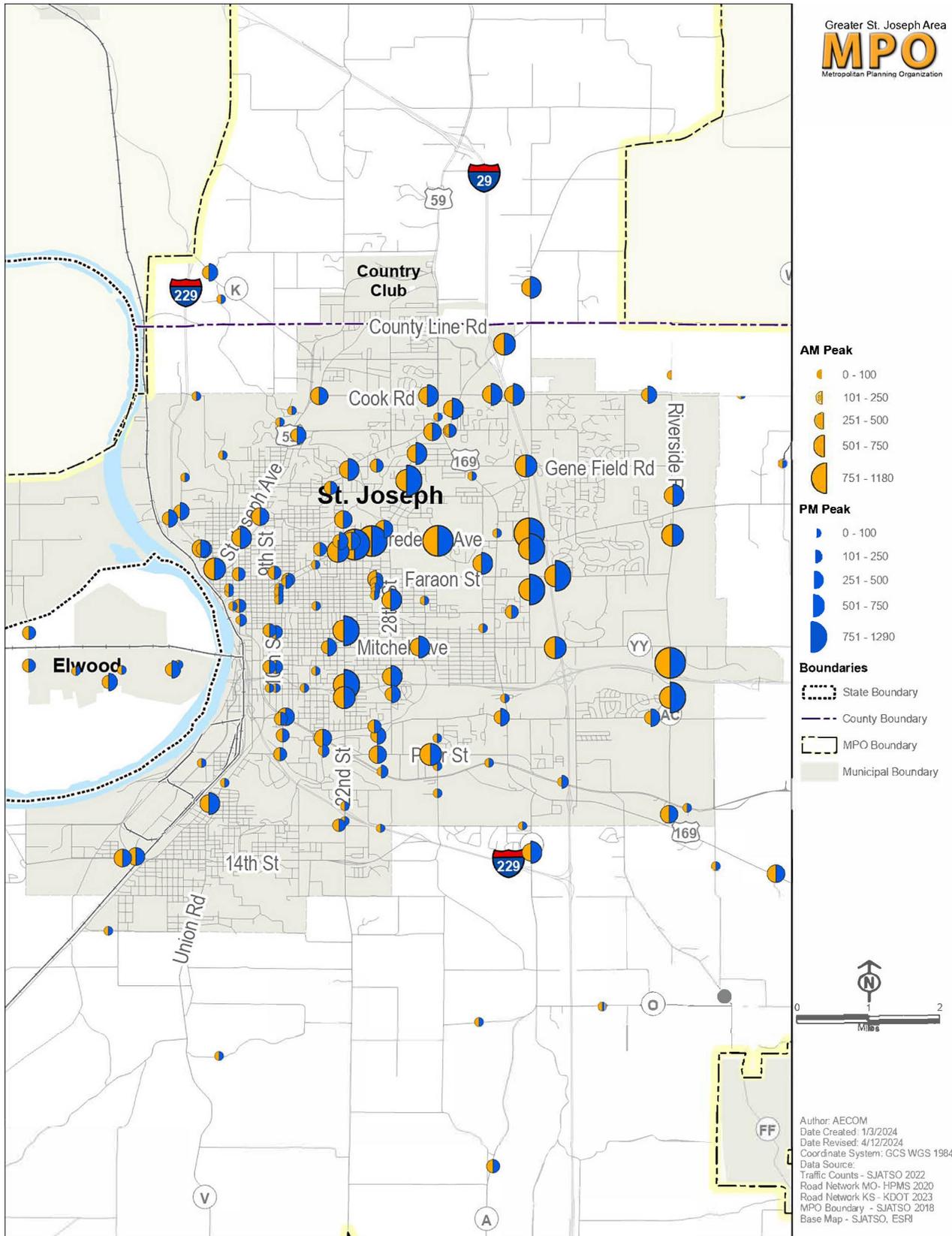


Figure 6: Peak Hour Traffic Counts (2022) – City of St. Joseph



## Traffic Safety

Safety is the highest transportation system concern for the SJATSO region. Safety data (2018 to 2022) within the MPA was assessed to identify potential areas of concern. Identifying these locations can lead to identifying projects that help improve safety and enhance the overall traffic flow within the region. Federal legislation places an increased emphasis on safety as MPO's and state DOT's must measure their performance in reducing the number of fatalities and serious injuries. SJATSO, in conjunction with MoDOT and KDOT, adopt safety performance targets through SJATSO's Coordinating Committee. System performance, including a discussion of safety, is included in Appendix F.

### Overview

Table 4 summarizes the crash data between 2018 and 2022 for the SJATSO region. A review of the data identifies several locations with high crash occurrences including Frederick Avenue at the Belt Highway and I-29, US-36 in the vicinity of the I-229 interchange, and MO-752 between US-59 and King Hill Avenue.

In particular, the Belt Highway (US-169) has consistently been identified as a safety concern. Public opinion surveys dating back to 2004 have identified this corridor as a concern given the crash history due in large part to frequent access points and high peak hour and daily traffic volumes. Surveys conducted as part of the 2050 survey process (ETC Institute and MetroQuest) continue to confirm the Belt Highway as a primary safety concern. According to crash data, the Belt Highway had 7 fatalities and 26 serious injuries from 2018 to 2022 – or about the same number observed along I-29 within the MPA. Faraon Street and Frederick Avenue, east-west corridors, also rank high in disabling injuries as vehicles make connections between downtown St. Joseph and the Belt Highway.

### Fatal and Injury Crashes

Table 5 summarizes the crashes that involved a fatality or injury (serious and minor) between 2018 and 2022. Figure 7 displays the location of fatal and serious injury crashes within the MPA during this same time period. Figure 8 shows a zoomed in area of the City of St. Joseph, where the majority of these crashes occur. Fatalities and serious injuries are only shown as these two categories are required performance measures that are reported to FHWA. Furthermore, as minor injuries represent 86% of fatal and injury crash types, adding these to the map would make it difficult to read.

Table 4: Fatal and Injury Crashes (2018 – 2022)

Crash Type	2018	2019	2020	2021	2022	Total
Fatal	23 2.4%	13 1.4%	17 2.0%	22 2.6%	20 3.1%	95 2.2%
Disabling Injury / Suspected Serious Injury	110 11.5%	77 8.2%	107 12.5%	103 12.3%	88 13.6%	485 11.4%
Minor Injury	821 86.1%	852 90.4%	732 85.5%	714 85.1%	538 83.3%	3,657 86.3%
<b>Total Crashes</b>	<b>954</b>	<b>942</b>	<b>856</b>	<b>839</b>	<b>646</b>	<b>4,237</b>

Source: MoDOT and KDOT Crash Data (2018-2022).

Annual fatalities have ranged from 13 to 23, with the most recent data for 2022 showing 20 fatalities. The number of annual serious injuries ranged from 77 to 110 during the five-year study period, with the most recent data showing 88 serious injuries in 2022. This number is the second lowest of the five-year period. Table 6 provides a further breakdown of fatal and serious injury crashes, by roadway corridor between 2018 and 2022.

Figure 9 and Figure 10 (zoom in on City of St. Joseph) display further analysis of the crashes using a heat map. The heat map shows the crash density, highlighting locations that are more likely to experience a crash that involves a fatality or serious injury (based on the most recent five-year crash data).

Figure 7: Fatal and Serious Crash Locations (2018 – 2022)

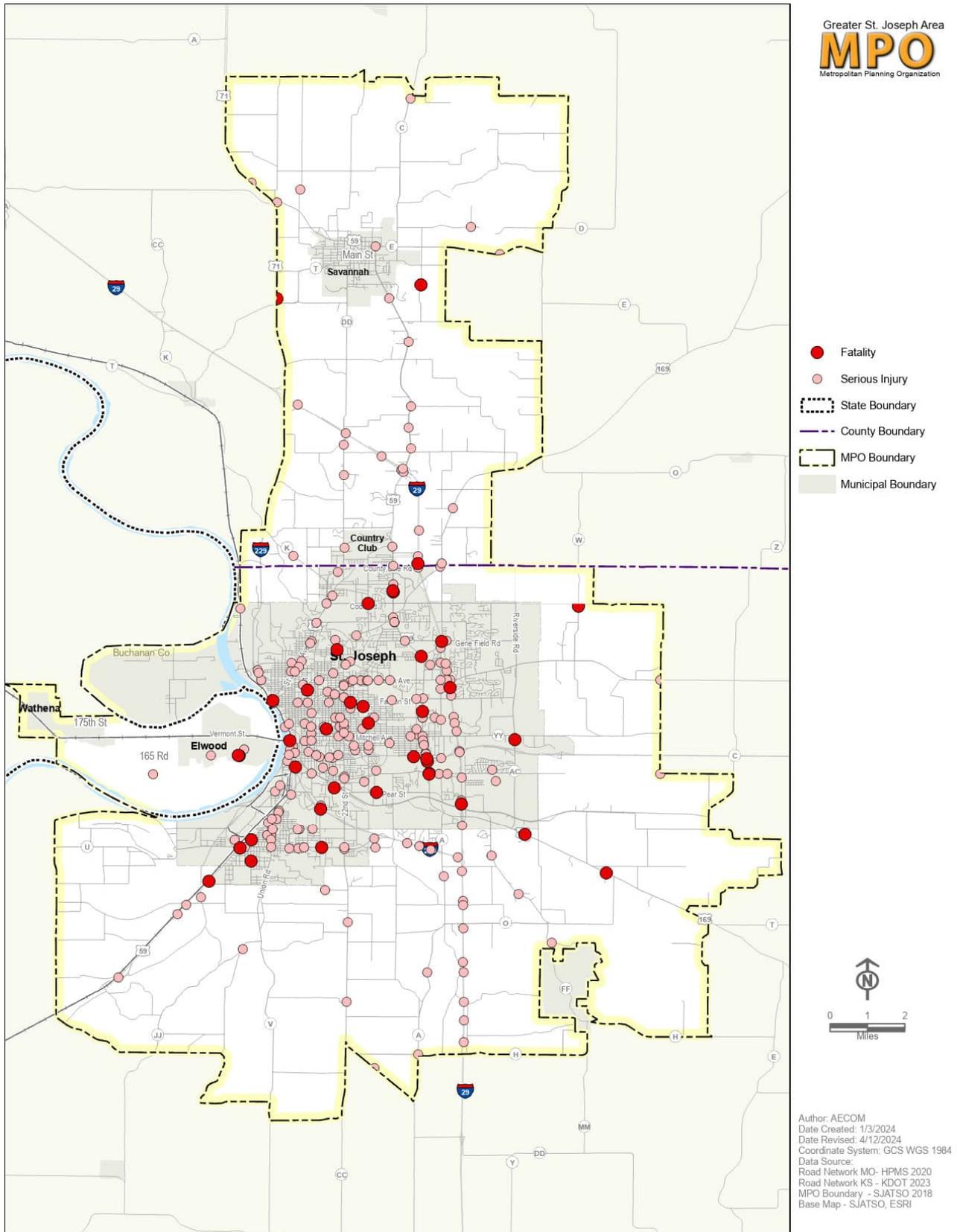
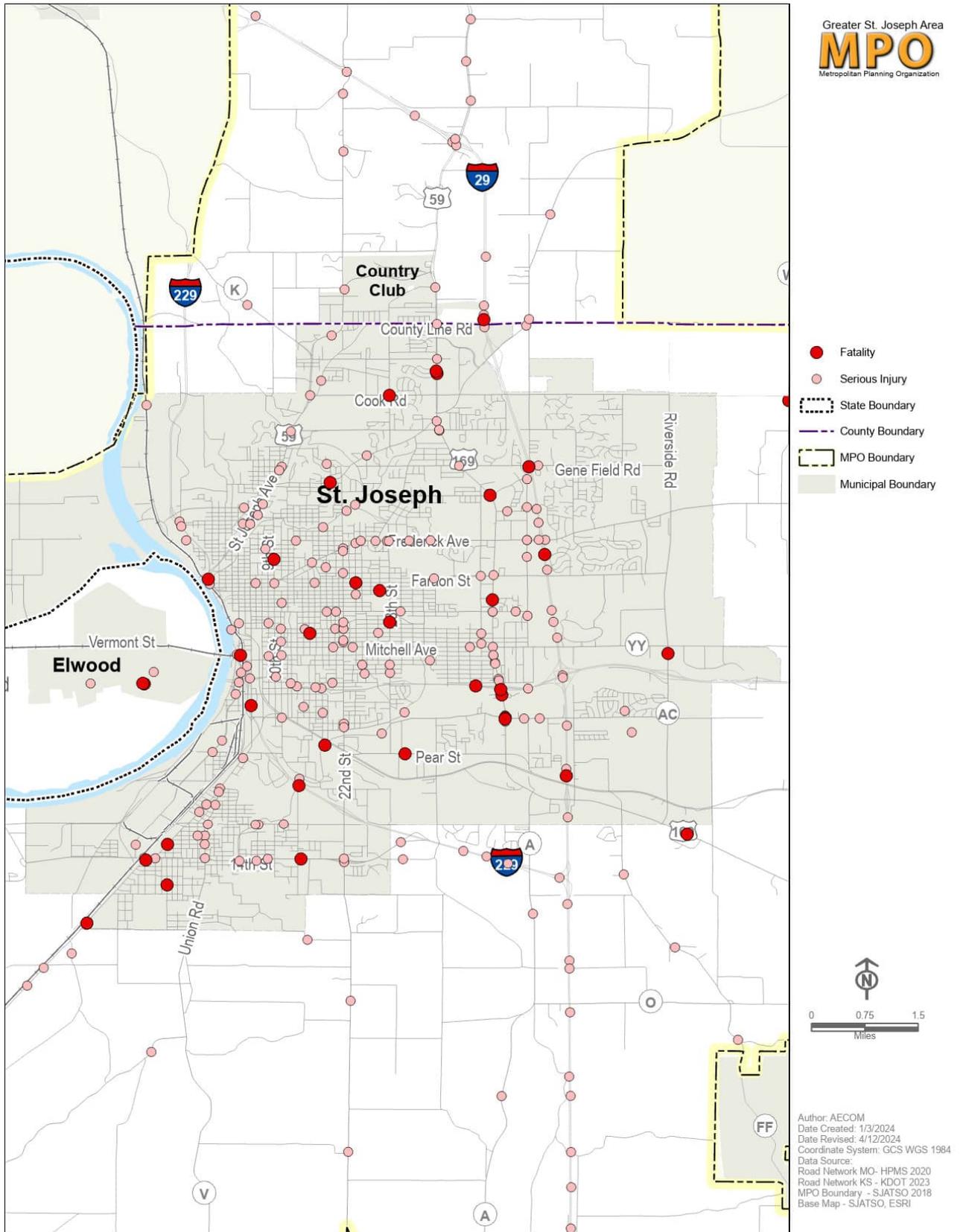


Figure 8: Fatal and Serious Crash Locations (2018 – 2022) – City of St Joseph



Author: AECOM  
 Date Created: 1/3/2024  
 Date Revised: 4/12/2024  
 Coordinate System: GCS WGS 1984  
 Data Source:  
 Road Network MO - HPMS 2020  
 Road Network KS - KDOT 2023  
 MPO Boundary - SJATSO 2018  
 Base Map - SJATSO, ESRI

Table 5: Fatal and Serious Injury Crashes, by Roadway Corridor (2018 – 2022)

Roadway	Fatal	Serious Injury	Total
US 169	7	26	33
Interstate 29	2	28	30
US-59	6	23	29
LP 29	4	20	24
Interstate 229	1	10	11
US-36	2	13	15
22ND ST		9	9
BU 71		7	7
MO 752	1	6	7
WOODBINE RD	1	5	6
SOUTHWEST PKWY	1	4	5
MESSANIE ST		4	4
MO 371		4	4
RT A	2	2	4
11TH ST		3	3
CORBY PKWY		3	3
FARAON ST	1	2	3
KING HILL DR		3	3
LAFAYETTE ST	1	2	3
PICKETT RD	1	2	3

Source: MoDOT and KDOT Crash Data (2018-2022).

Note: Includes roadways with a minimum of 10 combined fatalities and/or disabling injuries.

Figure 9: SJATSO Crash Analysis (2018 – 2022)

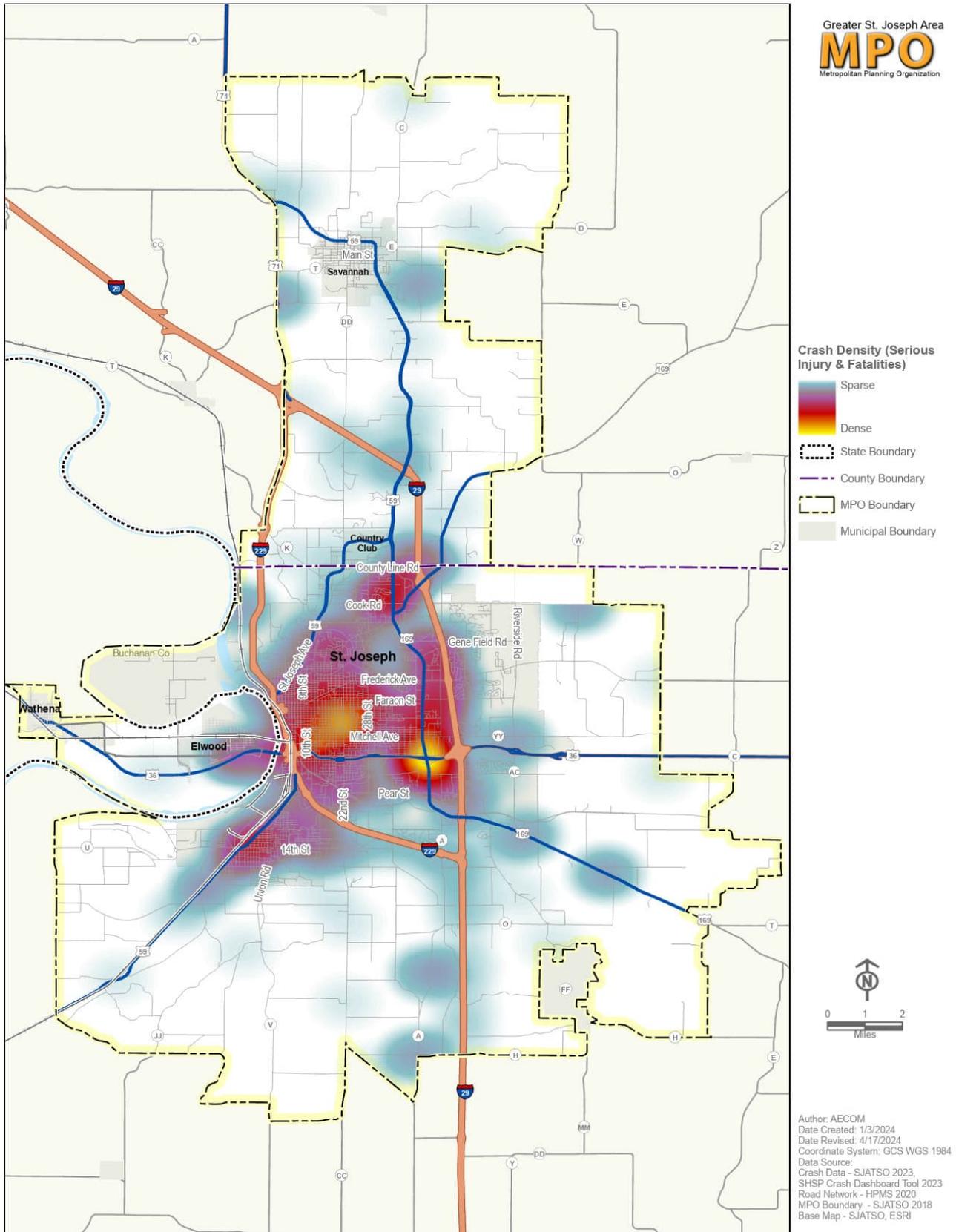
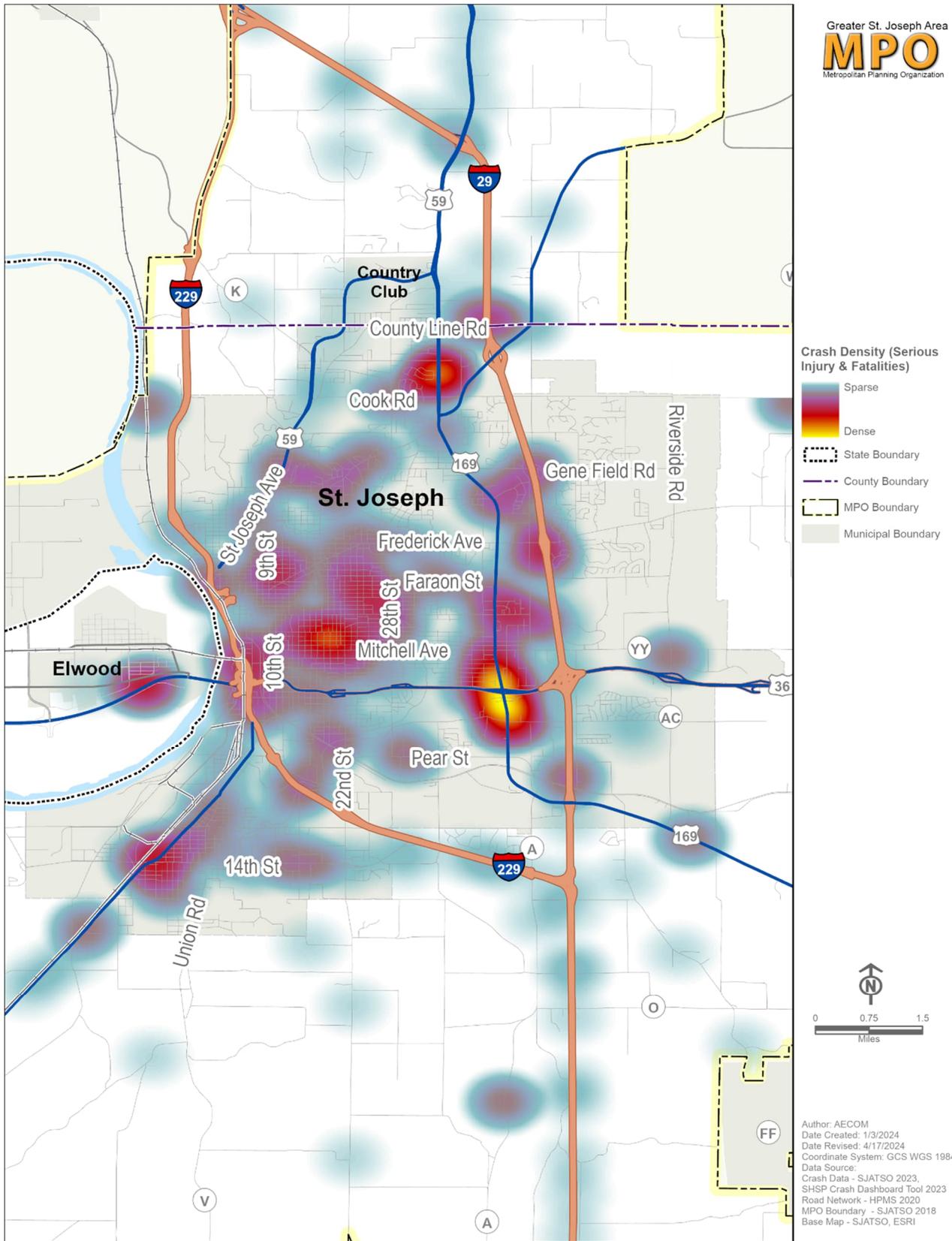


Figure 10: City of St Joseph Crash Analysis (2018 – 2022)



Vulnerable Roadway Users

According to the Federal Highway Administration (FHWA), Vulnerable Roadway Users (VRUs) include nonmotorists such as pedestrians, bicyclists, and individuals using personal conveyances like wheelchairs. These users are particularly at risk in traffic environments due to their lack of protection compared to motor vehicle occupants.

Analyzing crashes involving bicyclists and pedestrians is crucial for several reasons:

- **Safety Improvements:** Understanding the patterns and causes of these crashes helps in designing safer roadways and implementing effective safety measures.
- **Reducing Fatalities and Injuries:** Pedestrians and bicyclists are more likely to suffer severe injuries or fatalities in crashes. Targeted analysis can lead to interventions that significantly reduce these incidents.
- **Promoting Active Transportation:** By making roads safer for VRUs, more people may be encouraged to walk or bike, which has health, environmental, and congestion-reducing benefits.
- **Equity Considerations:** Vulnerable road users often include economically disadvantaged groups who rely on walking or biking. Ensuring their safety promotes equity in transportation.

Table 6 summarizes the bicycle and pedestrian involved crashes between 2018 and 2022. Table 7 documents the location of pedestrian involved crashes in the region while Table 8 summarizes the location of bicycle involved crashes during this same period. Figure 11 shows the location of these crashes, along with vehicle crashes that resulted in a fatality or serious injury. The area is zoomed in on the City of St. Joseph as this is where the bicycle and pedestrian crashes are concentrated.

Table 6: Bicycle and Pedestrian Involved Crashes, by Crash Type (2018 – 2022)

	2018	2019	2020	2021	2022	Total
Fatal	1 3.4%	3 9.4%	3 9.1%	1 4.2%	1 4.5%	9 6.4%
Disabling Injury / Suspected Serious Injury	8 27.6%	7 21.9%	6 18.2%	6 25.0%	6 27.3%	33 23.6%
Minor Injury	20 69.0%	22 68.8%	24 72.7%	17 70.8%	15 68.2%	98 70.0%
<b>Total Crashes</b>	<b>29</b>	<b>32</b>	<b>33</b>	<b>24</b>	<b>22</b>	<b>140</b>

Source: MoDOT and KDOT Crash Data (2018-2022).

Table 7: Pedestrian Involved Crashes SJATSO Region (2018 – 2022)

Roadway	Fatal	Disabling Injury	Total
Interstate 29	2		2
US-169	1	6	7
10TH ST	1		1
MITCHELL AVE	1		1
RT AC	1		1
RT W	1		1
US-36	1		1
LP 29		3	3

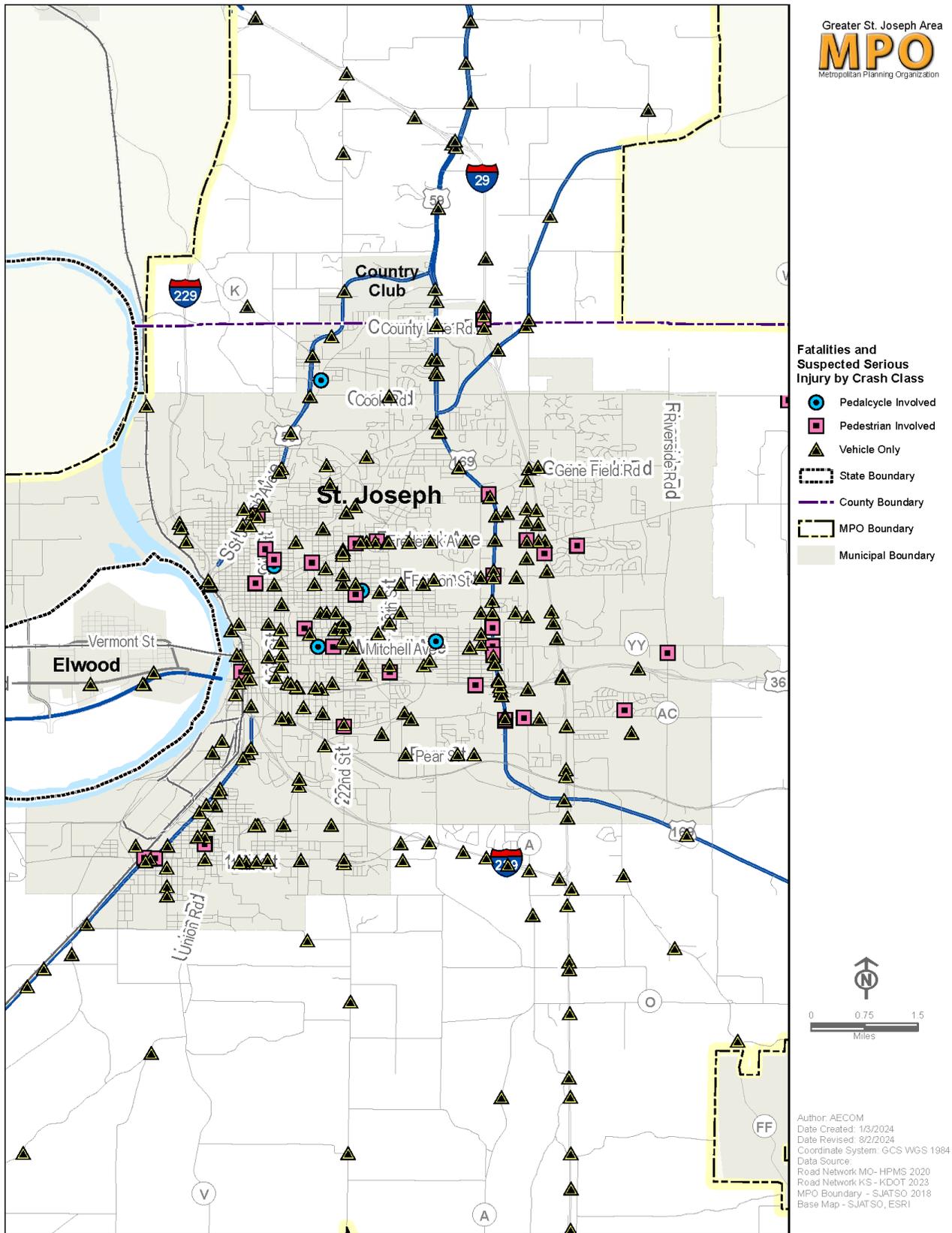
Source: MoDOT and KDOT Crash Data (2018-2022).

Table 8: Bicycle Involved Crashes SJATSO Region (2018 – 2022)

Roadway	Fatal	Disabling Injury	Total
10TH ST		1	1
FELIX ST		1	1
MITCHELL AVE		1	1
OLIVE ST		1	1
PENN ST		1	1
SAVANNAH RD		1	1

Source: MoDOT and KDOT Crash Data (2018-2022).

Figure 11: City of St Joseph Fatalities and Disabling Injuries (2018 – 2022)



Crash Type

In addition to the number of crashes, it is important to consider the types of crashes that occur most frequently on area roadways. The most common crash types include rear-end collisions, often resulting from sudden stops or following too closely; right-angle (T-bone) crashes, typically occurring at intersections due to failure to yield or running red lights; and out-of-control crashes, where vehicles lose control due to factors like speeding, adverse weather conditions, or road surface issues. Table 9 summarizes the most frequent crash types between 2018 and 2022.

Table 9: Crash Type within the SJATSO Region (2018 – 2022)

	2018	2019	2020	2021	2022	Total
Out of Control	254 26.6%	238 25.3%	214 25.0%	243 29.0%	196 30.3%	1,145 27.0%
Rear End	216 22.6%	215 22.8%	181 21.1%	150 17.9%	105 16.3%	867 20.5%
Right Angle	142 14.9%	152 16.1%	149 17.4%	150 17.9%	106 16.4%	699 16.5%
Left-turn	70 7.3%	56 5.9%	55 6.4%	57 6.8%	53 8.2%	291 6.9%
Left-turn / Right Angle Collision	44 4.6%	64 6.8%	52 6.1%	70 8.3%	42 6.5%	272 6.4%
Other	228 23.9%	217 23.0%	205 23.9%	169 20.1%	144 22.3%	963 22.7%
<b>Total Crashes</b>	<b>954</b>	<b>942</b>	<b>856</b>	<b>839</b>	<b>646</b>	<b>4,237</b>

2,711  
64.0%

Source: MoDOT and KDOT Crash Data (2018-2022).

In total, out of control crashes account for approximately 27% of all crashes between 2018 and 2022. This type of crash was actually slightly higher in recent years, coming in at 30% of crashes in 2022, and 29% in 2021. This is consistent with national trends that have seen an increase in out of control crash types following the pandemic.

Rear end and right-angle crashes are the next most frequent crash types. These crashes, in combination with the third highest crash type, out of control, imply a potential issue with reckless driving in the region (confirmed by local emergency responders). In addition to driver behavior, intersection traffic control devices and sight distance could be analyzed to improve rear end and right-angle crashes.

By understanding and analyzing these crash types, SJATSO can identify critical safety improvements and implement targeted measures to enhance roadway safety for all users. In 2025, SJATSO plans to begin the development of a Safety Action Plan that will dive deeper into potential causes of crashes and identify potential proactive measures to mitigate or prevent certain types of crashes.

## Operations and Maintenance

This section discusses the operations and maintenance needs within the SJATSO region. Preserving the existing transportation infrastructure and regional transportation assets in a state of good repair is a priority of the SJATSO.

### Preserving Existing Transportation Assets

The need to preserve the region's transportation infrastructure and assets in a state of good repair has never been greater. Annual maintenance needs and costs continue to outpace available transportation revenues resulting in a backlog of projects. While limited funding is a concern, preserving the existing infrastructure is also critical in that building major capacity projects to address future mobility deficiencies is not an easy process and in many cases is not the locally preferred alternative. Adding capacity to the regional transportation network should require significant justification and address the MTP goals and objectives.

The importance of preserving existing transportation assets is confirmed in the Public Participation Survey conducted in Spring 2023. When residents were asked how they would spend \$100 on roadways in the next 25 years, they provided the following responses: repave/maintain existing roads (\$44.64), replace/maintain existing bridges (\$16.98), build new roads (\$6.74), improve aesthetics (\$6.07), improve intersections (\$5.93), implement complete streets design (\$5.90), widen existing roads (\$5.87), install medians to improve safety (\$4.00), and install roundabouts to improve traffic flow (\$3.87).

Closely related to preserving the existing transportation infrastructure is the need to preserve the natural environment and social character of the St. Joseph area. This has been, and will continue to be, a priority for area residents and local officials as reflected in the locally adopted land use policies. Ultimately, communities will need to carefully consider their approach to planning and design of the future transportation system to ensure that future investments support economic prosperity, encourage community participation, promote healthy communities, and enhance mobility for all users. If this is done, it will lead to a St. Joseph region that can be a leader in promoting sustainable development.

### Asset Management

MPOs are charged with carrying out the metropolitan transportation planning process. As defined in the scope of the metropolitan transportation planning process, "...MPOs, States, and public transportation operators may apply asset management principles and techniques in establishing planning goals, defining TIP priorities, and assessing transportation investment decisions, including transportation system safety, operations, preservation, and maintenance, as well as strategies and policies to support homeland

security and to safeguard the personal security of all motorized and non-motorized users.”

The term "asset management" means a strategic and systematic process of operating, maintaining, and improving physical assets, with a focus on both engineering and economic analysis based upon quality information, to identify a structured sequence of maintenance, preservation, repair, rehabilitation, and replacement actions that will achieve and sustain a desired state of good repair over the lifecycle of the assets at minimum practicable cost.

The BIL/IIJA requires each state to develop a risk-based asset management plan, often referred to as a Transportation Asset Management Plan (TAMP), for the National Highway System (NHS) to improve or preserve the condition of the assets and the performance of the system. This focuses on addressing pavements and bridges; however, states are free to include all infrastructure assets within the highway right-of-way (ROW) as well as non-NHS roads. Consistent with the performance management framework under BIL/IIJA, the TAMP provides a performance-driven process to support investment decision-making for physical assets. The TAMP defines strategies that lead to a program of projects that can help make progress toward achievement of the state targets for asset condition and performance of the NHS and supports progress towards achievement of national goals for infrastructure condition.

## Pavement Conditions

Roadway pavement represents one of the largest infrastructure investments for the SJATSO, local agencies, and Missouri and Kansas DOT's. Maintaining roadway pavement throughout the MPA involves complex decisions about how and when to resurface or apply other treatments to keep the highway performing at acceptable levels and keep costs reasonable. Generally speaking, a typical roadway pavement will require some form of maintenance approximately every five years. Depending on traffic levels, traffic mix (i.e., passenger cars, heavy trucks, etc.), and other circumstances, some roadways may require maintenance more frequently than every five years while other roadways may require less frequent maintenance.

Figure 12 displays the pavement condition on major roadways within the SJATSO region within the MPA. Table 10 provides an overview of pavement condition by functional class. Pavement conditions are defined as good, fair, or poor based on condition ratings criteria defined by FHWA.<sup>1</sup> Among roadways containing pavement condition data, more than one-third (33.8%) are considered to be in good condition and nearly two-thirds (63.8%) are considered to be in fair condition. The remaining roadways with data are considered to be in poor condition (3.1%). Poor condition roadways within the dataset account for 8.5 miles within the MPA's network. A total of 6.2 miles or poor conditions are displayed on major collector facilities.

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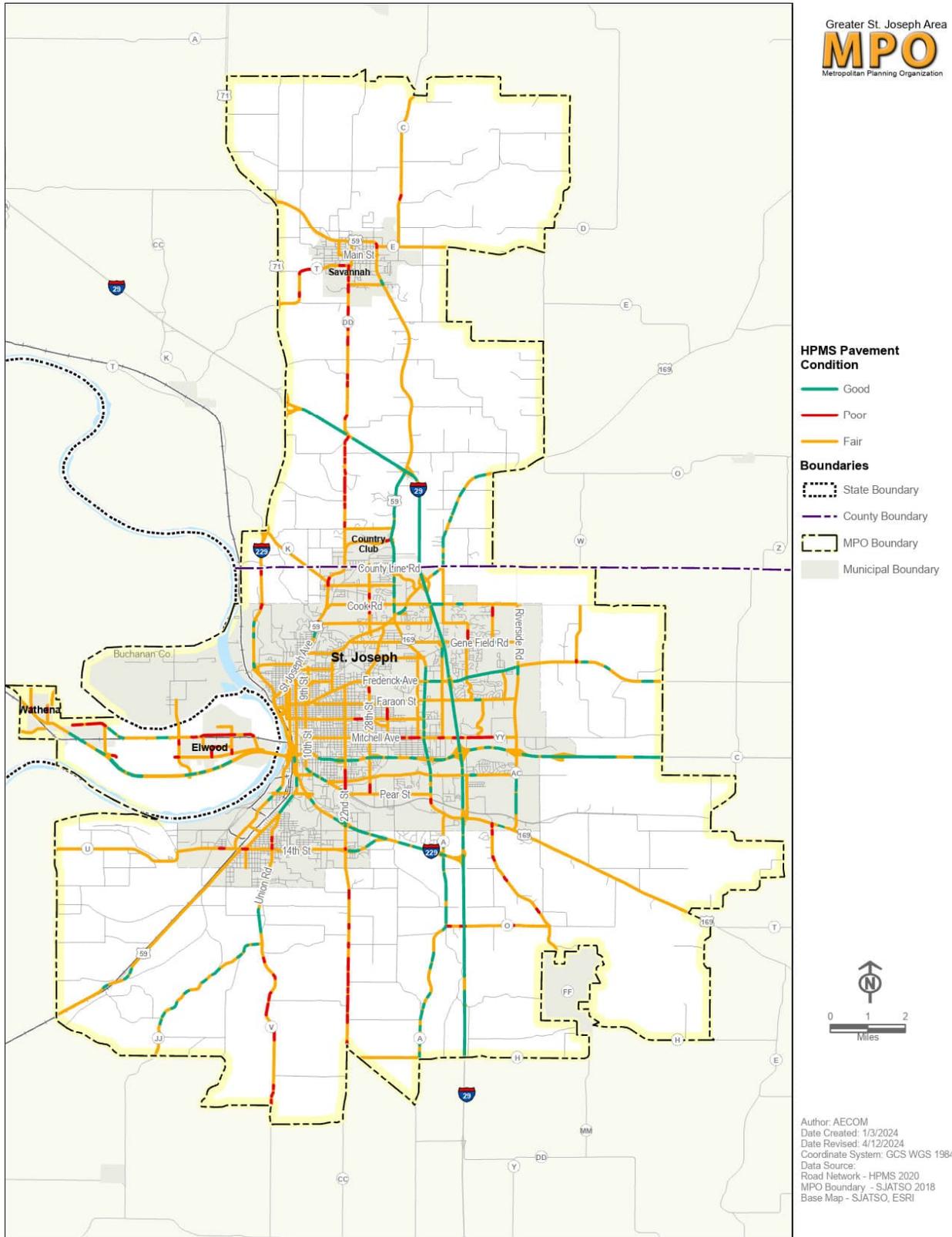
<sup>1</sup> FHWA Computation Procedure for the Pavement Condition Measures, April 2018 (FHWA-HIF-18-022).

Table 10: Pavement Conditions (SJATSO MPA)

Functional Classification	Good	Fair	Poor	Total
Interstate	77.5	29.0	2.1	108.5
Freeway	30.9	6.4	0.2	37.5
Principal Arterial	48.3	54.8	8.4	111.6
Minor Arterial	42.3	124.9	19.7	186.9
Major Collector	56.8	166.8	83.7	307.4
Minor Collector	114.4	92.8	20.7	228.0
<b>Total</b>	<b>370.3</b>	<b>474.6</b>	<b>134.9</b>	<b>979.8</b>

Source: MoDOT and KDOT (2020)

Figure 12: Pavement Conditions (2020)



## Bridge Conditions

Bridges are a vital component of the roadway network that directly impacts the traveling public and the on-going maintenance of bridges within the SJATSO MPA is critical to the safe and efficient movement of people and goods. The functional loss of a bridge not only impacts mobility but could reduce accessibility resulting in negative economic impacts to area businesses and industries.

Bridge conditions are defined as good, fair, or poor based on condition ratings criteria defined by FHWA. The bridge data includes ratings for various components of the bridge such as the bridge deck structure, superstructure, and substructure. Based on these individual ratings, an overall bridge rating is calculated. Table 11 provides a summary of bridge conditions while Figure 13 displays the location of these bridges within the SJATSO MPA. Table 12 summarizes the ‘poor’ rated bridges in the SJATSO MPA.

Table 11: Summary of Bridge Conditions (SJATSO MPA)

County	Good	Fair	Poor	Total
Andrew County, MO	16	11	1	14
Buchanan County, MO	40	91	16	97
Doniphan County, KS	6	0	0	6
Total	62	102	17	181
Percentage	34.25%	56.50%	9.25%	100%

Source: MoDOT and KDOT (2023)

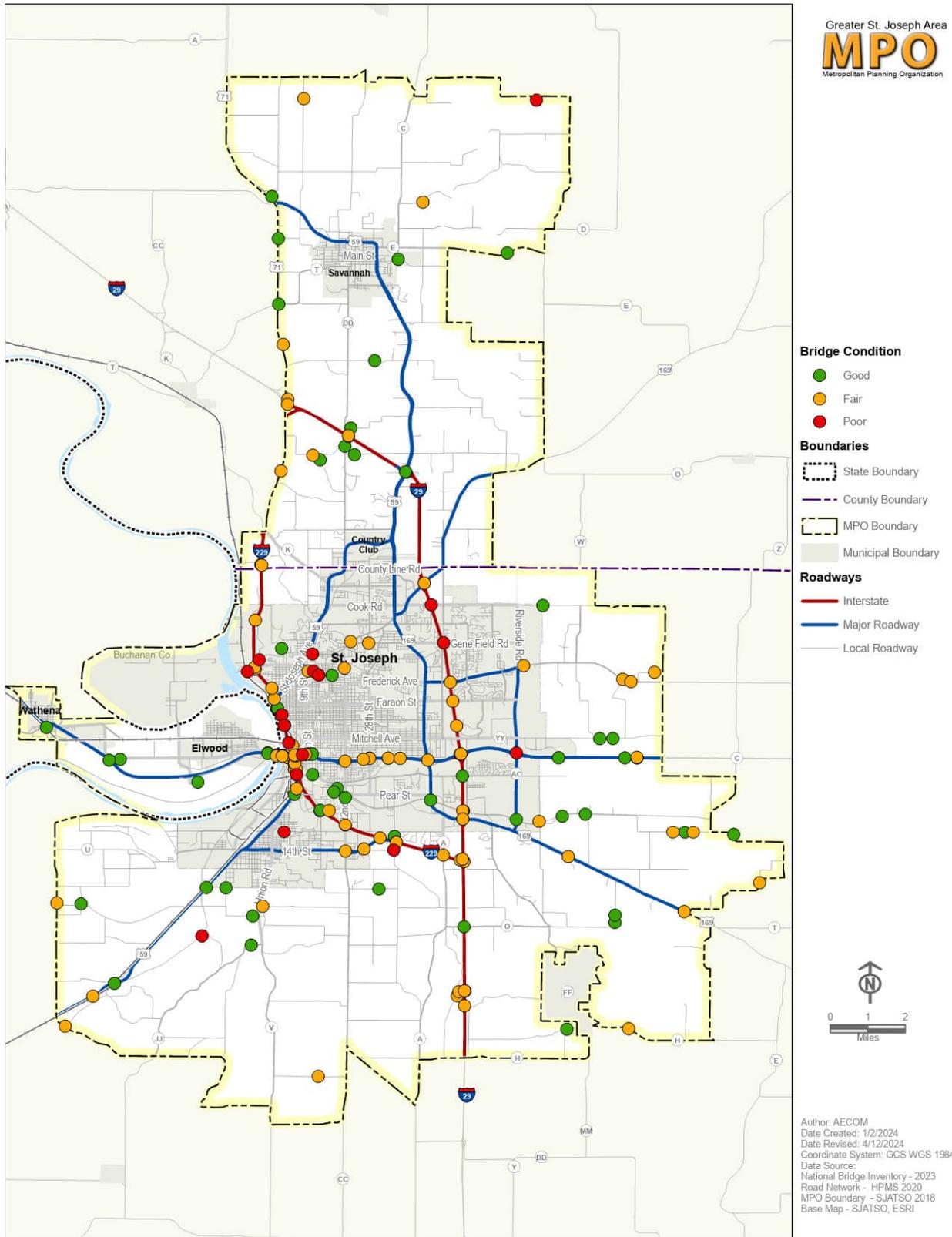
One structure with significant long-term impacts on the region’s transportation maintenance expenditures is the evaluated section of I-229, located just west of downtown St. Joseph. Completed in 1986, this structure could require \$50 million in improvements to extend its useful life (based on recent MoDOT projections). Given these significant maintenance costs, along with age of the I-229 structure, the 2045 MTP prioritized the need to evaluate the long-term options related to this structure but did not make a specific improvement recommendation. In 2018, MoDOT began studying the I-229 elevated section to identify potential long-term improvements. This study is designed to take a fresh and objective look at options for the bridge prior to making significant tax-payer investments in infrastructure. The study will narrow the potential options for what the future of the bridge may be, make recommendations, and review the environmental impacts of alternatives. The EA study concluded in Fall 2024 with a preferred alternative that will replace the elevated structured with an at-grade arterial roadway.

Table 12: Poor Rated Bridges

Structure #	Route	Intersection	County	Year Built	Bridge Condition	Rating
17881	SE AJAX RD	WHITEHEAD CR	Buchanan	1991	Poor	28.8
18447	COUNTY RD 186	BR OF 102 RVR	Andrew	1970	Poor	5.4
18582	SW BLUFF RD	BR OF HORSESHOE LK	Buchanan	1916	Poor	18.9
23022	ELEVENTH ST	MAPLE LEAF PKWY	Buchanan	1920	Poor	0
23023	THIRTEENTH ST	MAPLE LEAF PKWY	Buchanan	1915	Poor	0
23027	FIFTH AVE	ABANDONED RR	Buchanan	1970	Poor	19.8
23028	KING HILL DR	BARBARA ST	Buchanan	1915	Poor	6.3
23029	HUNTOON RD	ROYS BR	Buchanan	1930	Poor	0
23036	MAC ARTHUR DR	BNSF RR ROYS BR	Buchanan	1947	Poor	30.6
6202	US-36 E	INTERSTATE 229 CST 6TH ST IS	Buchanan	1951	Poor	53.1
509	GENE FIELD RD E	INTERSTATE 29	Buchanan	1962	Poor	33.3
508	COOK RD E	INTERSTATE 29	Buchanan	1962	Poor	36.9
2601	INTERSTATE 229 S	US-59 CST ATCHISON ST	Buchanan	1979	Poor	43.2
2434	RT AC S	US-36	Buchanan	1973	Poor	58.5
1915	RAMP INTERSTATE 229S TO MO759	CST MONTEREY ST BNSF RR	Buchanan	1979	Poor	45.9
1914	RAMP CHARLES ST TO I	BNSF RR	Buchanan	1979	Poor	52.2
1909	INTERSTATE 229 S	CST MCARTHUR DR CST MON	Buchanan	1976	Poor	46.8

<sup>1</sup> Source: MoDOT and KDOT (2023)

Figure 13: Bridge Conditions (2023)



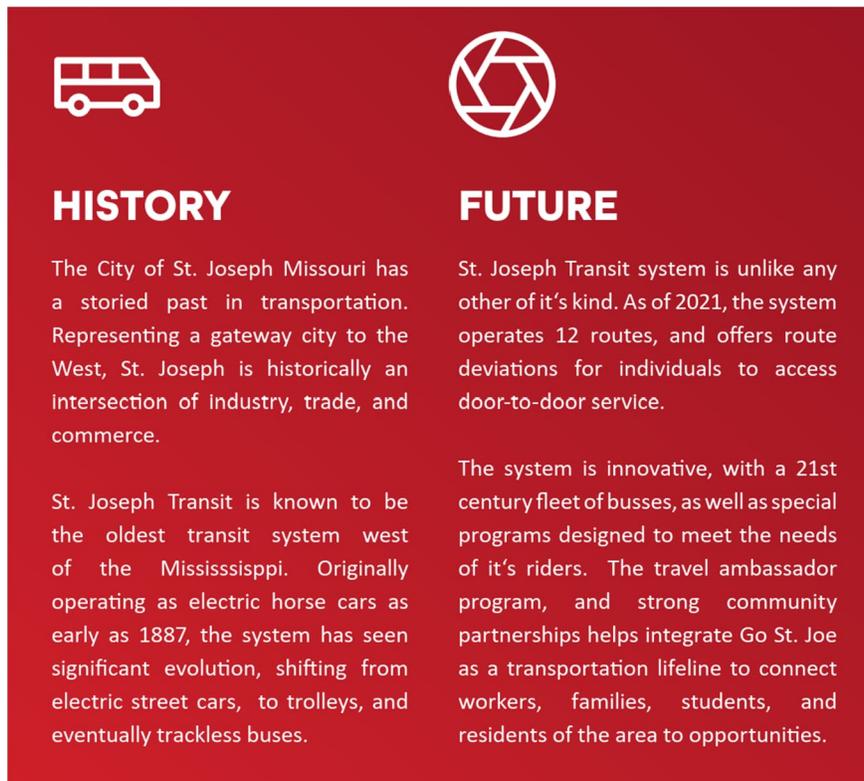
## Public Transportation

This section provides an overview of the public transportation services in the St. Joseph region. The St. Joseph public transportation service includes fixed-route deviation bus service provided by *Go St. Joe* and additional services throughout the SJATSO region provided by OATS Inc. and other local agencies.

### Recent Transit Investment

In June 2023, St. Joseph Transit completed a Transit Service Development plan that focused on addressing the mobility needs of area residents. The overarching goal was to analyze current transit operations to identify opportunities to improve reliability, enhance service delivery, and improve service efficiency (reduce service costs). The TPD explored alternative forms of service delivery and included the identification of short- to mid-term needs, challenges, and opportunities. The TDP included phased improvements and actionable steps to implement future service enhancements. The completion of the TDP coincided with SJATSO and St. Joseph Transit efforts to rebrand the transit system as *Go St. Joe*. The rebranding focused on providing a reliable, safe, modern, and community-oriented transit service that is accessible, responsive, and provides unique amenities and services to all riders – across generations, race, and socioeconomic status. Figure 14 summarizes the history and future of St. Joseph Transit.

Figure 14: St. Joseph Transit – History and Future



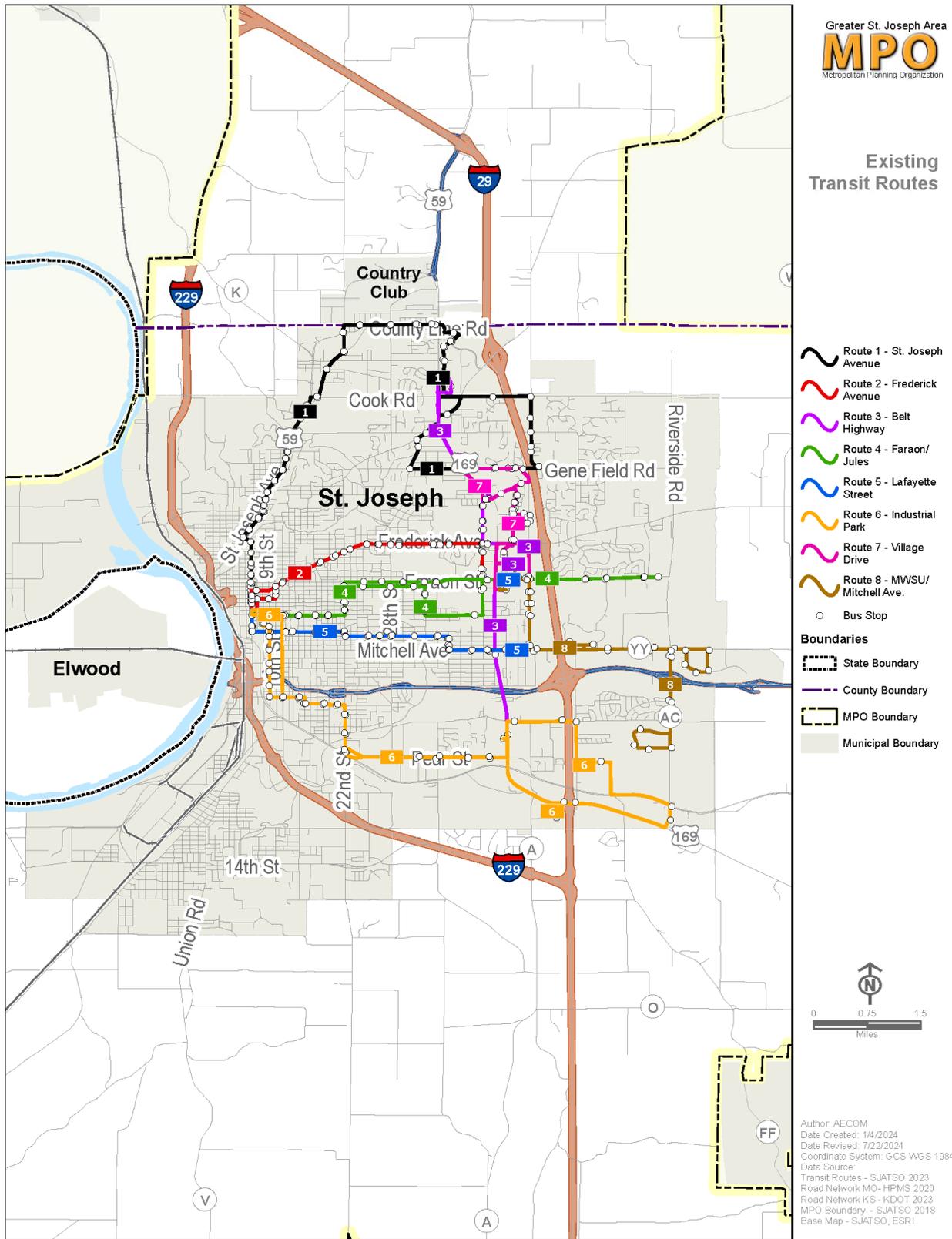
## Existing Transit Services

*Go St. Joe* operates within the city limits of St. Joseph with the exception of one route which provides service to Elwood, Kansas. The service includes route deviation which allows bus drivers to leave the published route to pick-up passengers at a specific location. While the bus will deviate from the fixed-route as requested, there are regularly scheduled stops along each route where the buses are required to stop during each trip and every attempt is made not to miss any section of the published route.

All St. Joseph Transit buses are wheelchair ramp equipped for the convenience of persons with limited mobility. Bus fares are reduced for senior citizens (over 60), Medicare cardholders and ADA certified residents. This is not a separate service and all riders, including persons with limited mobility, can call to request a route deviation to better serve their needs.

Figure 15 shows the current fixed-route service, which is also supported by an on demand microtransit zone in the south/southwest portion of the study area. Additional detail regarding the transit service can be found in the Transit Development Plan.

Figure 15: Existing Transit Routes



### Client Based Services

In addition to the fixed-route transit service, the St. Joseph area includes local service agencies that provide client-based transportation services. Client-based services mean these providers are serving a particular clientele, either through larger systems like Health Care Institutions (e.g., Living Community) or specially-qualifying circumstances (e.g., Sunshine Factory). The following information is contained in the *Coordinated Public Transit – Human Services Transportation Plan*, which SJATSO updates every five years in coordination with the MTP update. The most recent update of this plan was completed in June 2023. The following summarizes the private and non-profit agencies that provide transportation services within the SJATSO MPA.

- **OATS, Incorporated (non-profit):** OATS, Incorporated is a private not-for-profit transportation service provider and is the second largest transit provider in the state of Missouri. OATS provides personalized advance reservation and demand response transportation services to senior citizens and persons with disabilities as well as to the general public in rural areas on a space available basis. OATS' 87-county service area is divided into seven regions. The OATS Northwest Region includes Andrew and Buchanan Counties as well as 16 other counties in northwestern Missouri. The regional offices for the OATS Northwest Region are in St. Joseph. OATS Transit also provides express trips to Kansas City and St. Joseph to riders living in northwest Missouri. A priority is given to medical trips and reservations are required at least 24-hours in advance. The buses will deviate up to five miles from the main route to pick up riders.
- **Living Community (private):** Living Community is a senior housing and assisted living facility. The organization has a 16-passenger van which is used for medical transportation and for transportation for elderly persons for shopping and activities. The on-demand service is Monday through Friday for residents only.
- **Mosaic Life Care (private):** Mosaic Life Care is an integrated health delivery system, which includes a medical center, physician practices, foundation and a health plan. They have three vehicles. The operation of the vehicles is staggered to cover 12 hours a day, Monday through Friday. Most trips are transporting riders to or from a Mosaic facility and they transport approximately 4,500 people a year.
- **Doniphan County Aging and Transportation (non-profit):** Doniphan County Aging and Transportation provides general public transportation for Doniphan County residents. Doniphan County Aging and Transportation provides a door-to-door service. They have five vehicles, one with a lift and four minivans. The agency participates in KDOT Coordinated Transit District (CTD) activities. The CTD includes Doniphan, Brown, Nemaha, Jackson and Atchison counties in Kansas. Service is generally provided from 8 a.m. to 5 p.m. with some exceptions, Monday and Friday.
- **Doniphan County Services and Work Skills (non-profit):** Doniphan County Services and Work Skills provide service to mentally and physically handicapped adults. They provide trips for medical appointments. They have three KDOT vehicles and one handicapped accessible vehicle. Doniphan County Services and Work Skills agency

receives a grant with 80% state funds and 20% local funds for a vehicle. The grant requires that they provide their services to the general public. The agency has two workshops and a residential facility. They pick up residents of Doniphan County and will take them almost anywhere including trips to the VA hospital in Leavenworth. The agency provides two different fare structures, one 30 punch ticket based on individual income, such social security, SSI, etc. and then a rate based on destination if they choose not to share income information. Service is provided Monday through Friday, 6 a.m. to 9 p.m.; Saturday 8 a.m. to 9 p.m.; and Sunday 9 a.m. to 9 p.m.

- Community Action Partnership (non-profit): Community Action Partnership is guided by the goal of eliminating poverty by Helping People Changing Lives-Ending Poverty. The agency works with youth and children and has added services such as affordable housing, energy crisis assistance, and employment and training programs through the Missouri Career Center. The Community Action Partnership provides transportation for Head Start. They have 37 vehicles and serve four counties, namely Andrew, Buchanan, Clinton and DeKalb. They use minibuses to transport children to and from school and minivans for taking children and families to the doctor, dentist and store. All buses are “school” buses that carry 16 to 30 passengers and there are no wheelchair accessible vehicles.
- Sunshine Factory (government agency): The Sunshine Factory operates three vehicles Monday through Friday to workshops in Gentry and Buchanan Counties, MO and places of employment. Transportation services are eligible for residents of Andrew County with an IQ of 75 or below. Approximately 27 residents participate in the service. The Sunshine Factory is a Senate Bill 40 provider which allows for local control and financial support for a variety of community-based programs and services for persons with developmental disabilities.
- Missouri Rural Health Association: The Missouri Rural Health Association is addressing the barriers to health and wellness through an innovative mobility coordination and service program called HealthTran. The cloud-based technology creates a one-stop shop of transportation options in communities through a membership model. To fill unmet needs, public transit, private transit, volunteer drivers and 5310 subrecipients are linked through the system to provide a simple scheduling system with services available 7 days a week with a 4 hour to 30-day scheduling window.
- Faith in Action: Collaboration across participating faith communities to provide rides for the elderly, individuals with disabilities and those in need, particularly those on a fixed income. Faith in Action is run by 10 volunteer drivers, providing free transportation to doctor’s appointments, food pantries, and grocery stores within the city of St. Joseph.

### Regional Transit Providers

St. Joseph is currently served by Jefferson Lines, a long-distance bus service that departs from downtown St. Joseph to destinations across 14 states in the Midwest and Western

US. The St. Joseph Jefferson Line station is located at St. Joseph Transit's Downtown Transfer Center. As of March 2023, Jefferson Lines' service operates two buses, one that goes West towards Omaha that departs at 2:30 AM, and one that goes South towards Kansas City that departs at 3:00 AM. St. Joseph is not currently served by Amtrak.

### Human Services

Additional human service agencies that fund and/or support access for transportation services as well as other government agencies that administer health, employment, or other support programs for the targeted populations including:

There are also additional agencies that fund and/or support access for transportation services as well as other government agencies that administer health, employment, or other support programs for transit-dependent populations, including:

- Temporary Assistance for Needy Families (TANF)
- Workforce Investment Act (WIA)
- Vocational Rehabilitation
- Medicaid
- Community Action Program (CAP)
- Independent Living Centers
- Area Agency on Aging (AAA) programs
- Nonprofit organizations that serve the targeted populations intended for transportation services
- Advocacy organizations working on behalf of targeted populations
- Security and emergency management agencies
- Any other appropriate local or state officials
- Tribes and tribal representatives
- Representatives of the business community (e.g., employers)
- Community-based organizations
- Economic development agencies
- Job training and placement agencies
- Elected official

### Operating Statistics and Ridership

Table 13 provides operating statistics between FY 2013 and FY 2021. Miles driven in FY 2013 (846,229 miles) has sharply declined to 801,801 in FY 2021; however, totals have slightly rebounded from a low of 750,714 in FY 2015. A similar trend has also followed for revenue hours over the same period. Farebox recovery has remained steady, staying within a range of 5.6% to 3.7% from FY 2013 to FY 2021. Since FY 2013, on-time performance has improved and remained around 98% since FY 2011. Total ridership for the transit system reached 246,391 in FY 2021, the lowest ridership since FY 2018 (428,748

riders). However, it is important to note that this ridership in FY 2020 and FY 2021 were greatly impacted by Covid. More detailed figures can be found in the June 2023 TDP.

Table 13: Operating Statistics (FY 2013 – FY 2021)

Category	2013	2014	2015	2016	2017	2018	2019	2020	2021
Passengers	421,945	423,645	410,945	414,198	417,497	428,748	427,563	330,664	246,391
Route Deviations	43,912	46,493	54,887	57,322	57,347	*	*	*	*
Wheelchairs	3,854	3,074	2,555	3,208	3,023	*	*	*	*
Miles Driven	846,229	800,392	750,714	767,185	775,277	771,956	803,847	767,806	801,801
Revenue Hours	70,479	65,309	63,550	63,699	63,616	64,289	64,332	64,418	64,798
Farebox Recovery	5.6%	5.6%	5.5%	5.4%	5.6%	5.7%	5.4%	5.0%	3.7%
On-time Performance	98.3%	98.7%	98.1%	98.8%	97.9%	*	*	*	*
Accidents per 100,000 miles	1.54	0.87	1.54	1.13	0.50	*	*	*	*

Source: St. Joseph Transit  
 Note: Transit system operates on a July to June fiscal year.

### Service Coverage

Go St. Joe service coverage was reviewed to determine population and employment access to the fixed-route service. For the purpose of this analysis, and consistent with general planning guidelines, a ¼-mile buffer around each bus stop was used to represent the approximate walking distance.

#### Transit Dependent Population

Low income and minority populations are two specific populations analyzed as part of Environmental Justice (EJ). The following figures display existing transit routes overlaid with areas of low income and minority populations. A review of service coverage in relation to these populations allows for the opportunity to review transit service coverage for EJ.

An overview of low-income population areas with existing transit routes is provided in Figure 16. Most areas of low income populations within the MPA have service coverage within ¼ mile with the exception of the northwest portion of the area. Also, it should be noted that on-demand service provides coverage to the Stockyards area and Elwood, Kansas. Areas with minority populations and existing transit routes are provided in Figure 17. Generally speaking, minority populations are covered by current fixed-route service, or on-demand service.

#### Proximity to Residential and Employment

Transit service coverage in proximity to population and employment is shown in Figures 18 and 19.

Figure 16: Transit Routes (with Low Income Population)

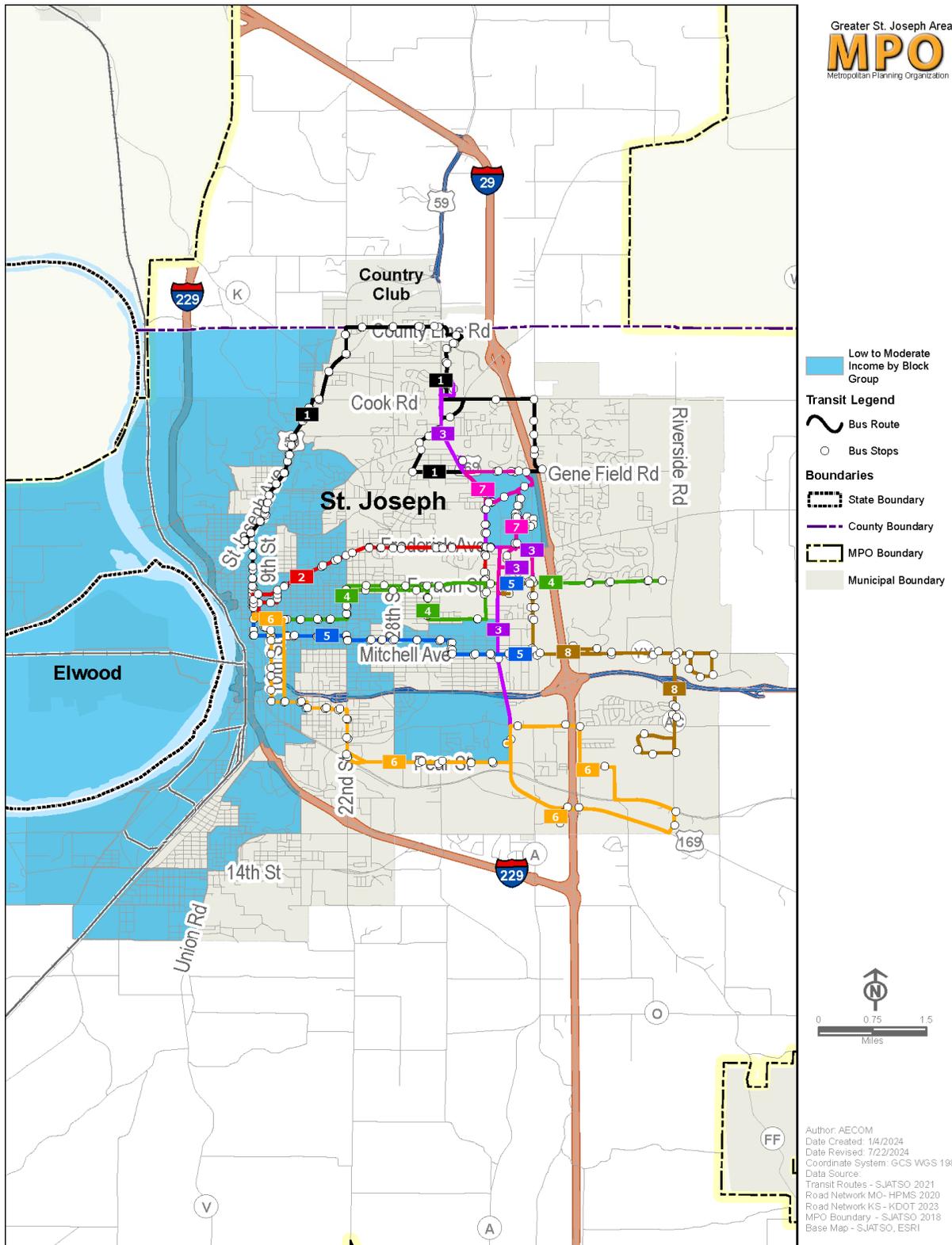


Figure 17: Transit Routes (with Minority Population)

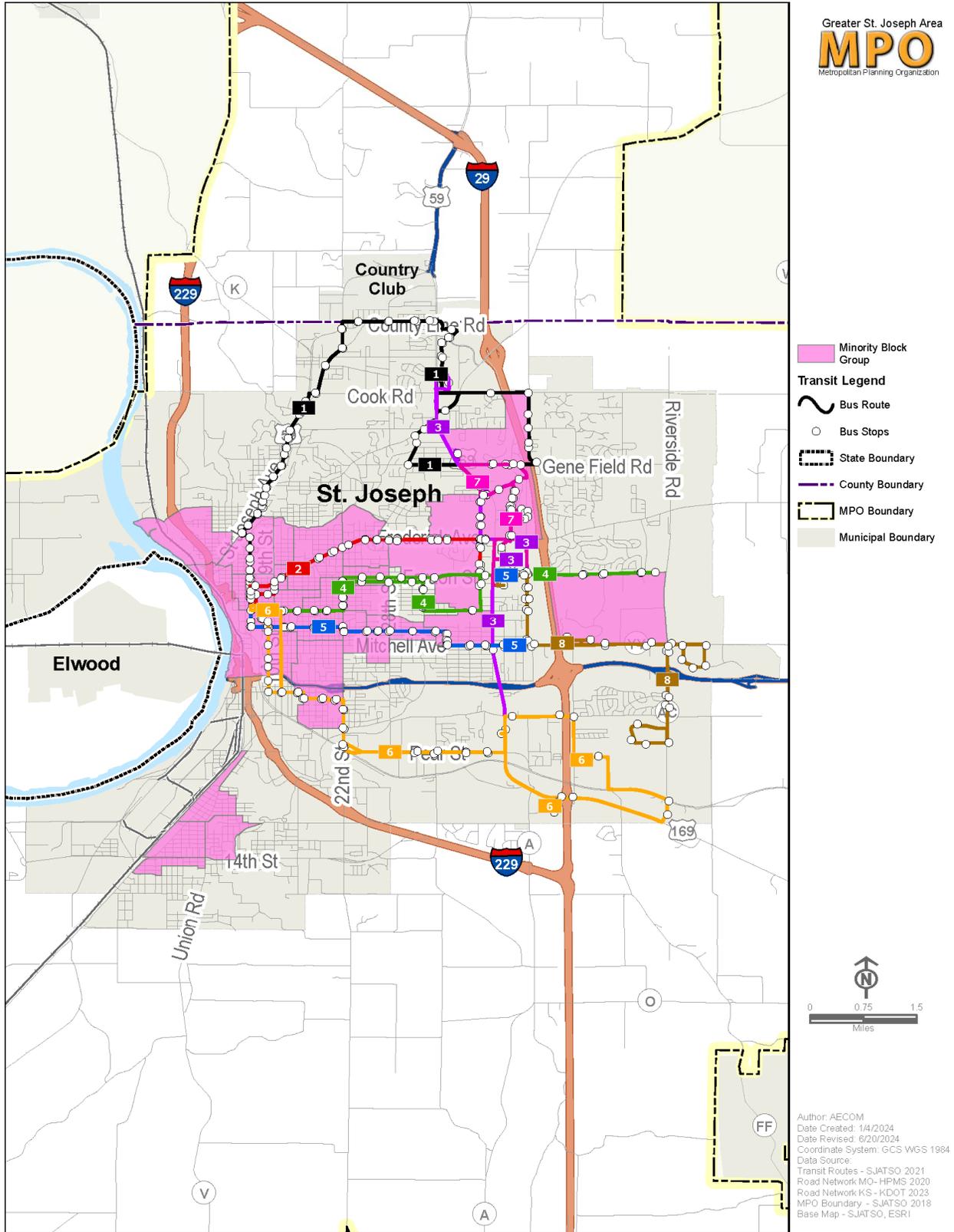


Figure 18: Transit Service Coverage – Residential

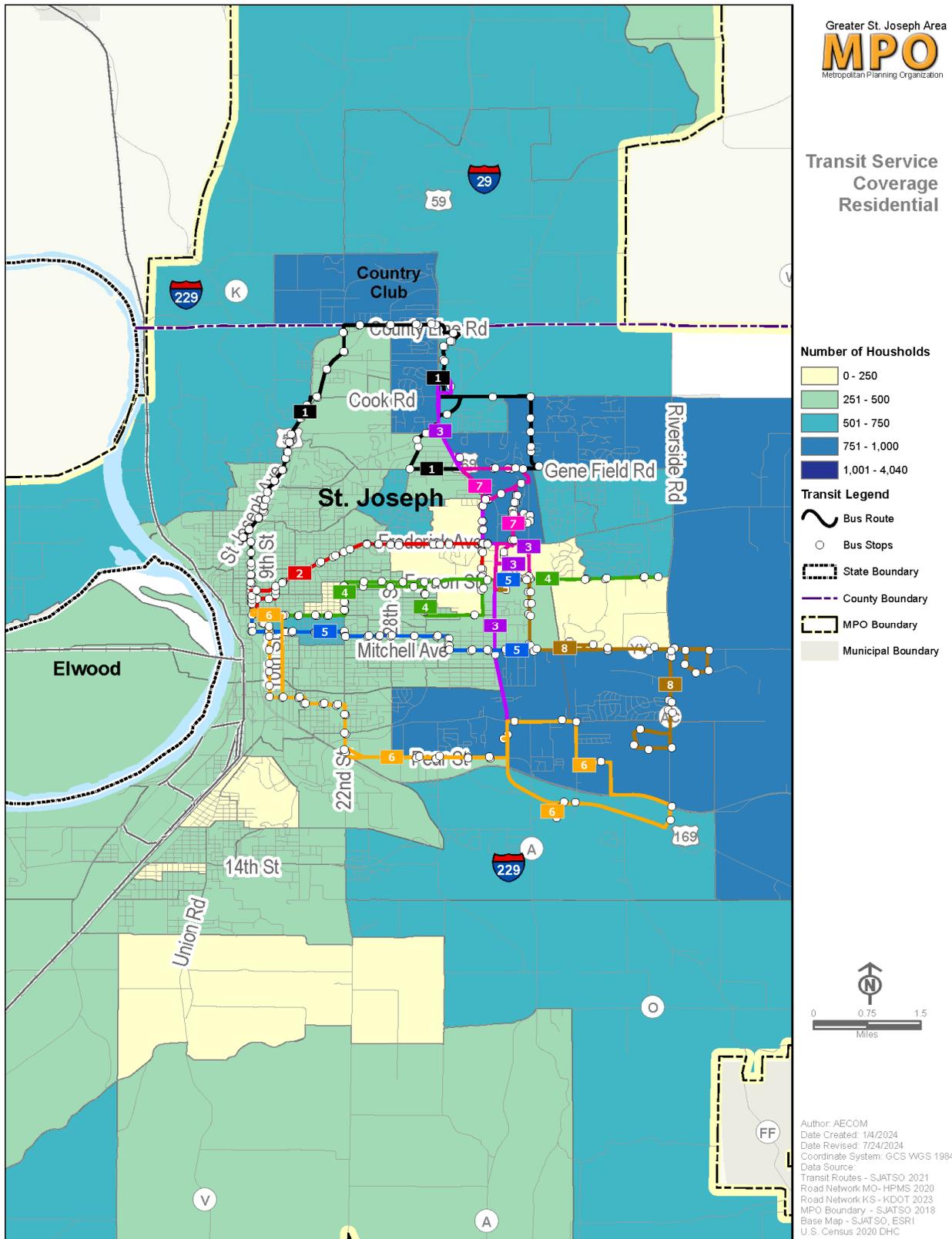
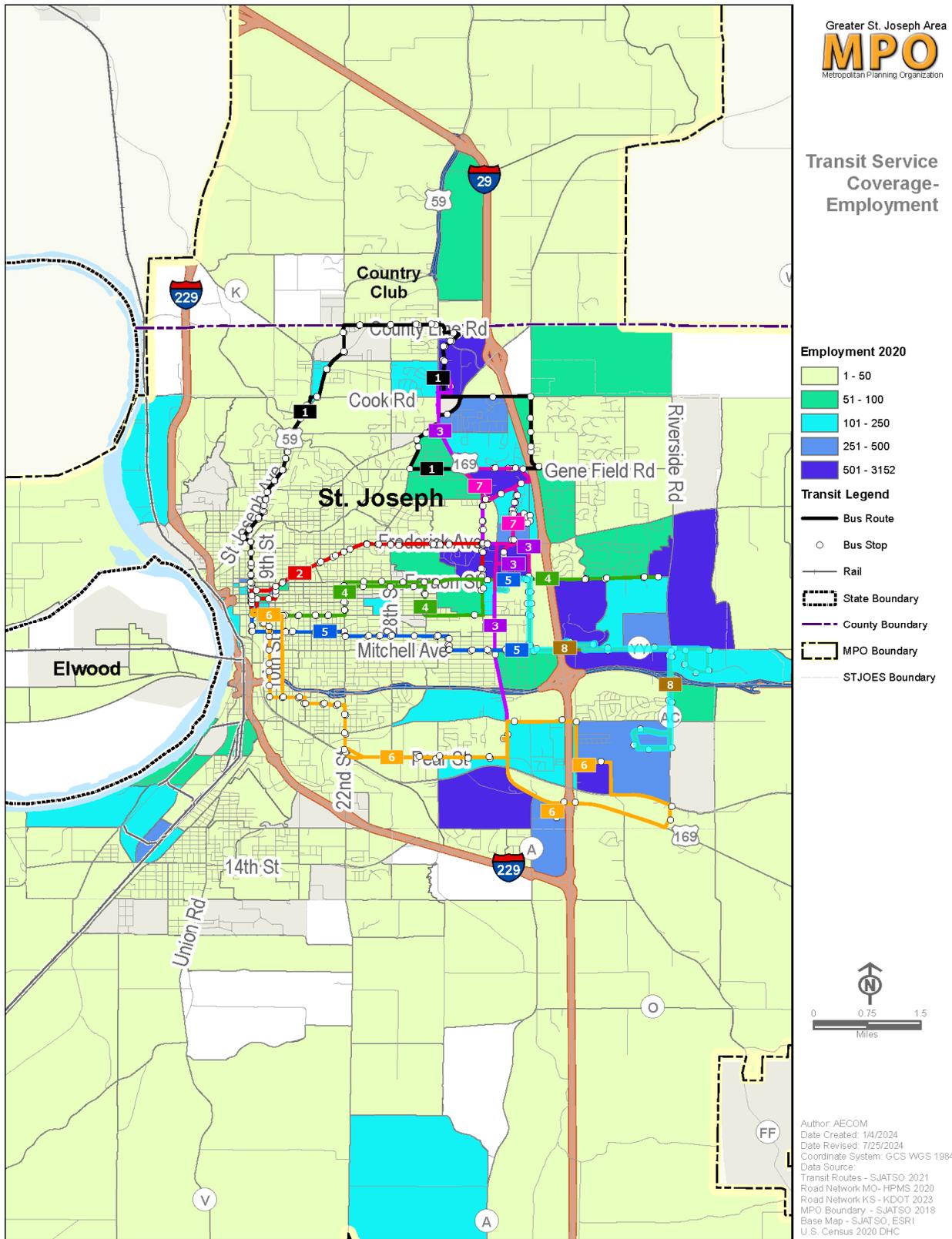


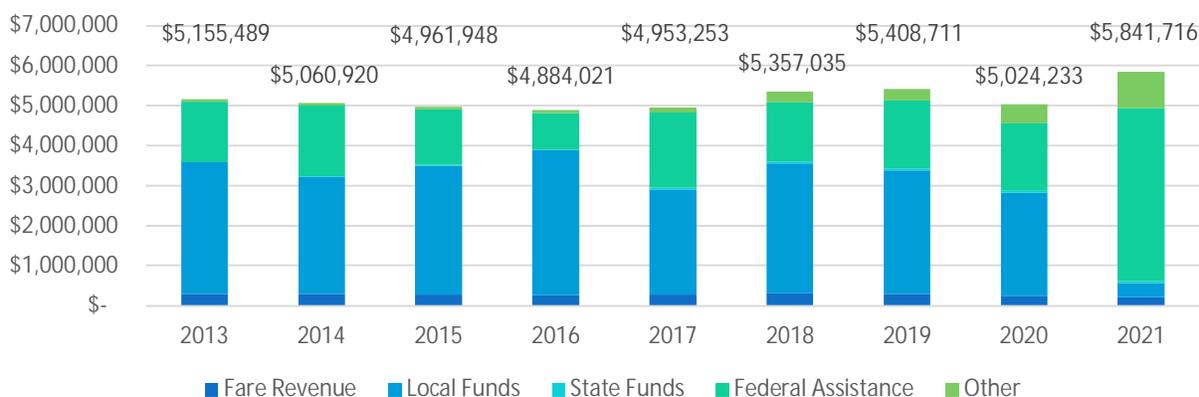
Figure 19: Transit Service Coverage – Employment



## Operating Budget

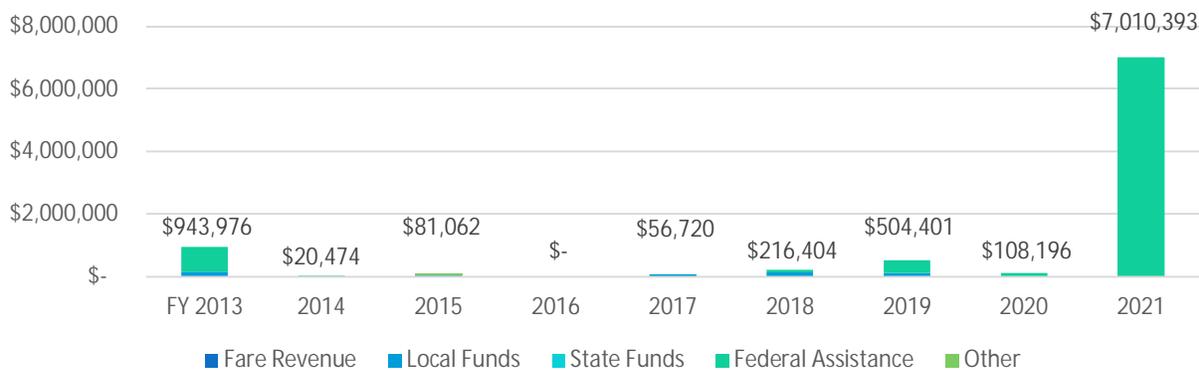
St. Joseph receives funding and revenue for operation and maintenance expenses from Federal, State, and local sources. Table 14 and 15 illustrates the respective breakdown of funding sources for operating and capital expenses from FY 2013 to FY 2021.

Table 14: St. Joseph Source of Funds Towards Operating Expenses (FY 2013 – FY 2021)



Source: FTA National Transit Database (2013-2021), Accessed 3/3/2023

Table 15: St. Joseph Source of Funds Towards Capital Expenses (FY 2013 – FY 2021)



Source: FTA National Transit Database (2013-2021), Accessed 3/3/2023

Operating funding trends indicate that share of overall operating costs covered by local funds are highly variable from year to year. Federal assistance and “other” funding sources make up the difference in operational needs from 2013-2020. The exception to this trend is in 2021 when approximately \$2.6 million from the Federal Transit Administration American Rescue Plan Act of 2021 accounts for the increase in the share of federal funding from 2020 to 2021.

The *Go St. Joe* Transportation Service Development Plan developed service recommendations using operations revenue estimates derived by analyzing 2015-2019

revenue trends, assuming federal funding trends. State funding reflected the recent allocation for the FY2022 Statewide Operating Assistance Grant, assuming no escalation or increase in future years. Fare revenue estimates conservatively assumed the minimum 5% fare recovery experienced during the 2020 pandemic, with remaining operating resources coming from local funding sources. Capital revenue assumptions built in an 80% federal share. Additional details can be found in the TDP.

## Active Transportation

This section provides an overview of the active transportation network for the SJATSO region, focusing primarily on the regional bicycle network. The SJATSO region consists of a well-established parkway and urban trail system within the City of St. Joseph. There is also the potential to expand non-motorized connections throughout the MPA through new trail connections as well as additional on-street facilities.

### Land Use and Non-Motorized Plans

As part of the 2050 MTP update, the SJATSO reviewed relevant land use and active transportation plans from the planning partners. While each of the plans identifies individual goals and recommendations, there are common themes among the plans. Generally speaking, all the plans advocate making basic changes in the way the community grows and functions in the future to promote active transportation. These changes include, but are not limited to:

- Guiding development into new compact patterns that will enable non-motorized facilities to flow with public transit and automobiles.
- Ensuring connectivity of existing and proposed roadways, sidewalks, and urban trails (pedestrian/bicycle routes).
- Preserving the character and quality of the area while accommodating its anticipated growth and development.

Incorporating the goals and recommendations, and ultimately adopting these recommendations, will allow for more convenient and cost-effective transportation choices as well as create a more livable and sustainable region. The following active transportation planning documents were reviewed to identify issues, projects, priorities and recommendations.

#### St. Joseph Active Transportation Plan

The St. Joseph Active Transportation Plan stresses the importance of developing a collective network and system of bicycle and roadway facilities. In the context of the plan, a network is comprised of the many types of facility systems that support bicycle and pedestrian access. Together, these elements, or systems, provide the infrastructure necessary to support and expand non-vehicular modes of transportation. The St. Joseph region has an extensive non-motorized trail network which includes:

- Urban Trail System
- Rails to Trails

- Historic Parkway & New Blvd. Systems
- Connector Streets/Complete Streets
- Safe Routes to School
- Conservation Trails
- Rural Trail Connectors
- Roadways of Focus
- On-Road Bicycle Routes (Bike Lanes)
- Traditional Sidewalks

The St. Joseph Active Transportation Plan envisions new connections that build off the established parkway system. Traditional system designations in the urbanized areas of the MPA consist of trails within greenways and “park-like” roadways. This plan update formally recognizes the following components of the Urban Trail System:

- “Parkway” or “boulevard” street typical sections (include both pedestrian and bicycle access in its design with special design features and landscaping)
- 10’ multi-use, bi-directional trails that provide a link to traditional sidewalk systems commonly called the urban trail; located in greenways.
- Conservation Trails
- Rails to Trails
- Traditional sidewalk systems that link sections of the urban trail (connector streets).
- Quad State Trail connections on the north and south of the metropolitan area (if off-road and part of network if on-road).

Within the City of St. Joseph, the community is fortunate to have established a 26-mile, curvilinear park system that divides the city from north to south. Within the larger park, which includes hundreds of acres of urban forest, are located pocket parks, ball fields, water features, urban trails, mountain bike trails, playgrounds, etc. These elements constitute the heart of the Parkway system. In summary, what is unique about the Parkway system is that the Parkway and roadway are not one in the same – the road is not the Parkway, but an element of the Parkway. The Parkway is a defined linear park that includes the elements noted earlier in this paragraph.

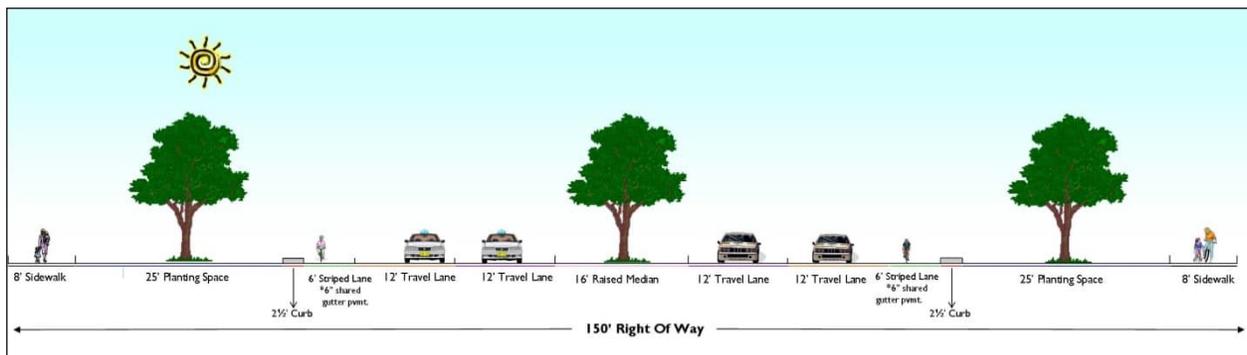
During the last 20 years community planners have looked at where the Parkway could be extended. Unfortunately, many of the corridors identified did not obtain the necessary levels of staff or political support, until approximately 2007, to reasonably attain the goals of Parkway expansion, using the template established in the 1920’s.

Sections have been allowed to develop with multiple access points, shallow setbacks, and narrow rights-of-way, necessitating that a “new” old roadway prototype, that has a long history in the community, be re-applied to these corridors. The public lands that would have lined the Parkway extensions are now developed with yards and homes, eliminating the prospect of the urban forest associated with the original Parkway. What has now occurred is that in defining the potential of a new Parkway, the roadway itself becomes the identifier and the larger context of the public lands within which the roadway functions fall away – but is not eliminated in total where land may still be available to partially extend the original vision.

One corridor that fits into this category is Riverside Road. It borders the 102 River and much of the land between the roadway and the river is designated as floodplain. This area is identified by the St. Joseph Parks Department as a ripe location for new athletic fields as well as the creation of another natural area much like the existing Parkway system.

The current Riverside Road is largely comprised of a two-lane section, portions of which have shoulders, maintained by both the City of St. Joseph and MoDOT. The future roadway plan calls for a four-lane, divided highway. However, to meet the park-like treatment requirement, the roadway would be designed with a typical section that would include four 12' travel lanes, 16' center turn lane (raised/landscaped median when turning movements for access points are not required), 2 ½' curb/gutter sections, 6' marked bike lane (6" of this width could utilize the gutter pavement), 25' of planting area for adequate space for large and mature trees, and 8' sidewalks, all of which would collectively require a 150' right of way as displayed in Figure 20.

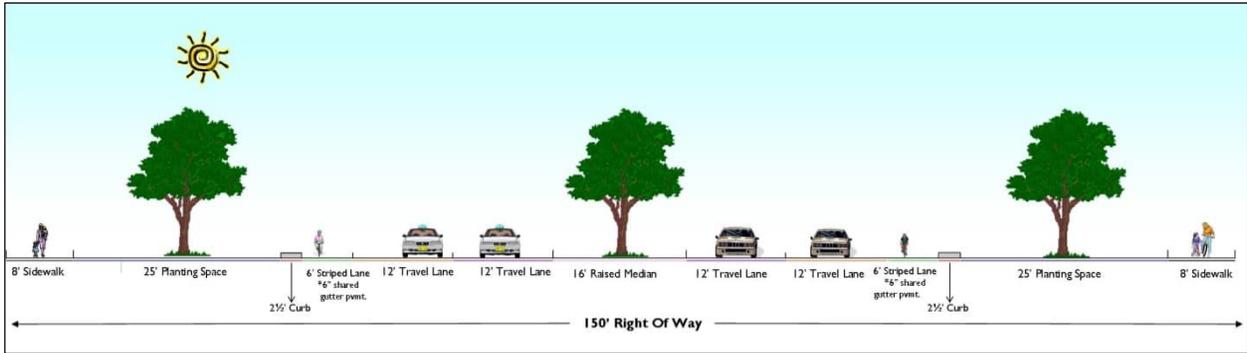
Figure 20: Riverside Parkway Concept



Source: St. Joseph MPO.

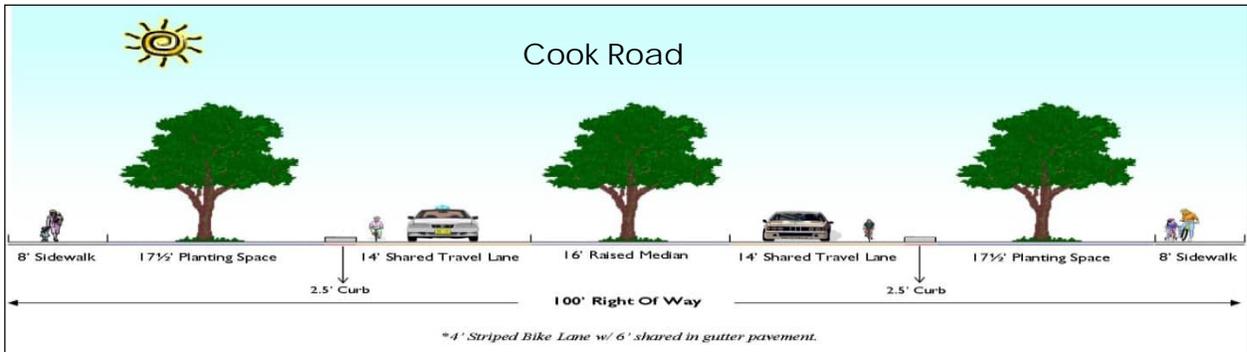
Cook Road is another example. Currently a two-lane roadway with open ditches, the new roadway would require a 100' right of way in each of the two design concepts. The first roadway cross section (see Figure 21) includes two 12' travel lanes, a 16' center turn lane (raised/landscaped median when turning movements for access points are not required), 4' bike lanes (6" of gutter being used for width), 2 ½' curb and gutter section, 16' planting area for trees, and 8' sidewalks. Concept two (see Figure 22) is largely the same but instead of marked on-street bike lanes, wide outside lanes (14') would be used for a lane width to provide adequate width for a shared lane. As a result, the planting space on each side could be increased to 17 ½'.

Figure 21: Cook Road – Concept 1



Source: St. Joseph MPO

Figure 22: Cook Road – Concept 2



Source: St. Joseph MPO

Within the urban area, Noyes Boulevard is a good example of a boulevard functioning as a collector or arterial in a residential area. In that case on-street parking is allowed, extra-wide lanes for biking, extra wide planting areas for large trees, and extra wide sidewalks were developed. Boulevards and avenues themselves represent good examples of “park-like treatment”.

These variations in approach are not unique designs, nor are they new to the St. Joseph region. The typical sections being described are commonly known as boulevards or avenues. Aside from what would now be called complete streets or designs that appropriately include all users of the transportation system, these new boulevards would include features not common in most streets and would be located in much wider rights of way to accomplish that end.

Safe Routes to School

SJATSO developed a Safe Routes to School Plan which was completed in 2024. The plan outlines the importance of having safe routes to school including walking and bicycle facilities. The plan looks at each school and evaluates existing conditions and outlines potential improvements which include detailed cost estimates for improvements that enhance sidewalk access. Refer to this plan for specific details.

### Rail to Trail Inventory

The Rail to Trail Inventory, completed in 2012, is a comprehensive planning level inventory intended to provide a detailed understanding of developing current railroad rights-of-way. The Rail to Trail Inventory focuses on outlying connections that tie the St. Joseph area with surrounding communities and beyond. The corridors include:

- The former Chicago and Northwestern Railroad is an approximate 11.2-mile corridor from St. Joseph to Savannah, Missouri. This trail would also provide connections to Country Club Village and unincorporated areas of Andrew County.
- The former and current Union Pacific Railroad is an approximate 5.6-mile corridor from St. Joseph to Wathena, Kansas. Communities aside from St. Joseph that are adjacent to this corridor include the City of Elwood, the City of Wathena and unincorporated areas of Doniphan County.

As a rail to trail inventory, this study was intended to provide a detailed understanding of developing the former and current railroad rights-of-way at a planning level, identifying opportunities and constraints along each corridor; identifying a preferred trail alignment based upon those findings; determining segment lengths and priorities; and provide an estimated cost which defines lengths of prioritized segments. In summary, the study provides next steps for SJATSO and surrounding communities to facilitate trail development within these two corridors.

### Active Transportation Facilities

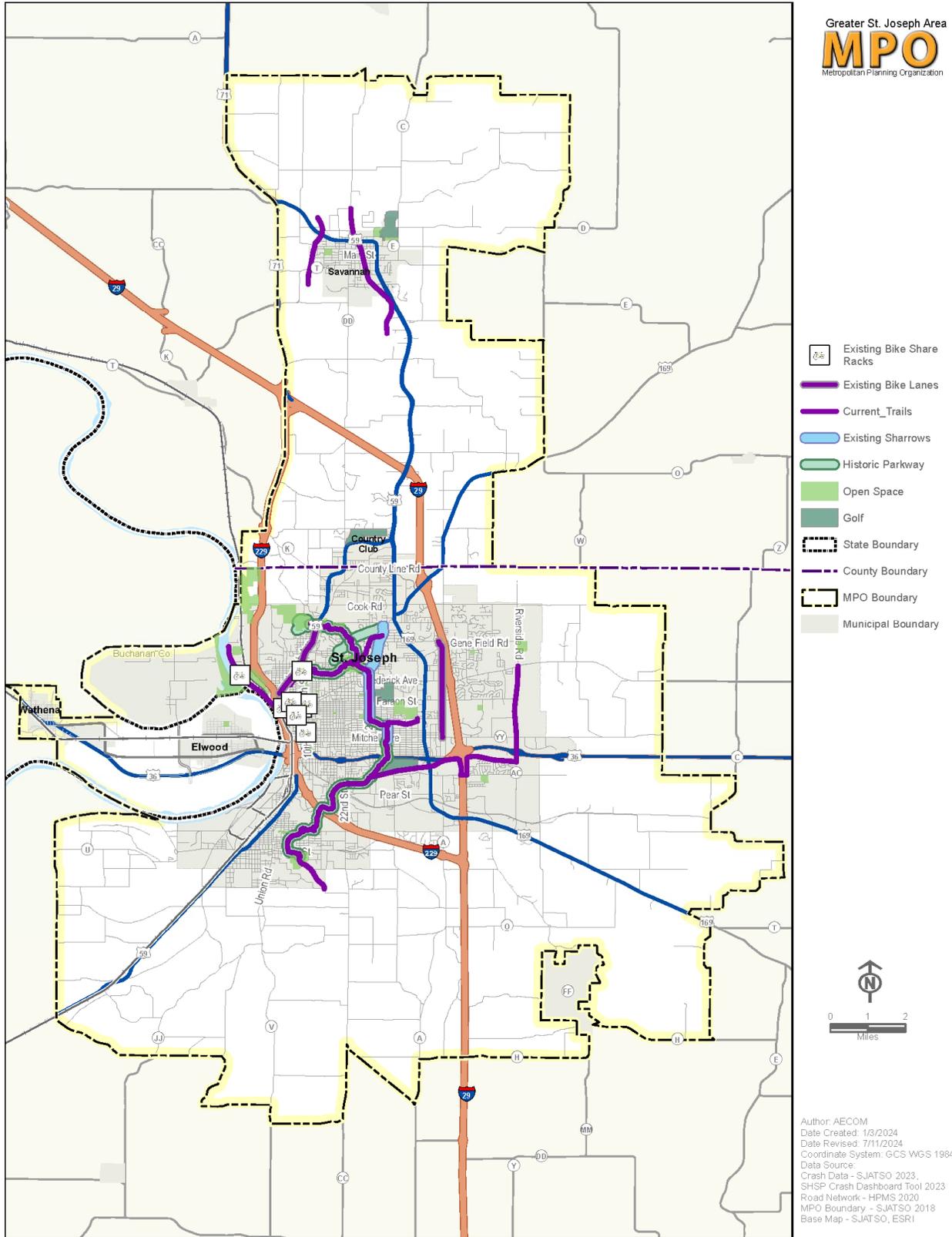
The St. Joseph region has an extensive urban trail system which currently consists of approximately 17 miles of trails within the SJATSO MPA. The majority of the system is located within the City of St. Joseph. There is also an on-street bike lane on St. Joseph Avenue, between Highland Avenue and Savannah Road.

In addition to on-street bike lanes, the City of St. Joseph, in conjunction with the City of St. Joseph Public Health Department, has designated some area roadways as desired on-street bike facilities by installing sharrows. Sharrows are street markings, placed in the center of a travel lane, to indicate that a bicyclist may use the full lane. According to the US Manual on Uniform Traffic Control Devices, shared-lane markings are used to:

- Assist bicyclists with lateral positioning in a shared lane with on-street parallel parking in order to reduce the chance of a bicyclist's impacting the open door of a parked vehicle;
- Assist bicyclists with lateral positioning in lanes that are too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane;
- Alert motorists of the lateral location bicyclists are likely to occupy within the traveled way;
- Encourage safe passing of bicyclists by motorists; and
- Reduce the incidence of wrong-way bicycling.

Figure 23 displays the existing non-motorized facilities within the region. This includes existing bike lanes, trails, sharrows, open space, parkways, bike share racks, and golf courses.

Figure 23: Active Transportation Facilities



## Short Trip Analysis

Using Replica, a data mobility model generated from multiple sources, the project team looked at origins and destinations for all short automobile trips within the MIC area by TAZ. Short trips were defined as trips one mile or less and trips three miles or less. One-mile was used to represent potential pedestrian trips, while the three-mile trips were used to represent potential bicycle trips. It is envisioned that this information might be used to help inform future updates of the region's active transportation plan.

The results of the one-mile and three-mile trips were very similar, with concentration of origin and destination of both trips types in two key zones within the St. Joseph region. Both concentrations of short trips are located in commercial zones of St. Joseph, along US-169 (Belt Highway) and Frederick Avenue. These areas represent opportunity zones to enhance future bicycle and/or pedestrian facilities.

To support short car trips being replaced with biking or walking trips, an analysis was completed to understand how the zones perform in terms of safety and transit access. Both zones are well served by transit but have a high number of pedestrian crashes, especially Frederick Avenue. This highlights a need for safety improvements and the addition of dedicated bicycle and pedestrian infrastructure.

Figure 24 shows the origin of 3-mile trips while Figure 25 shows a zoom in of the St. Joseph area with bicycle and pedestrian crashes included. Figure 26 shows the origin of 1-mile trips while Figure 27 shows a zoom in of the St. Joseph area with bicycle and pedestrian crashes included. Figure 28 shows short trips in relationship to the fixed-route transit service.

Figure 24: Medium Trips (3-mile)

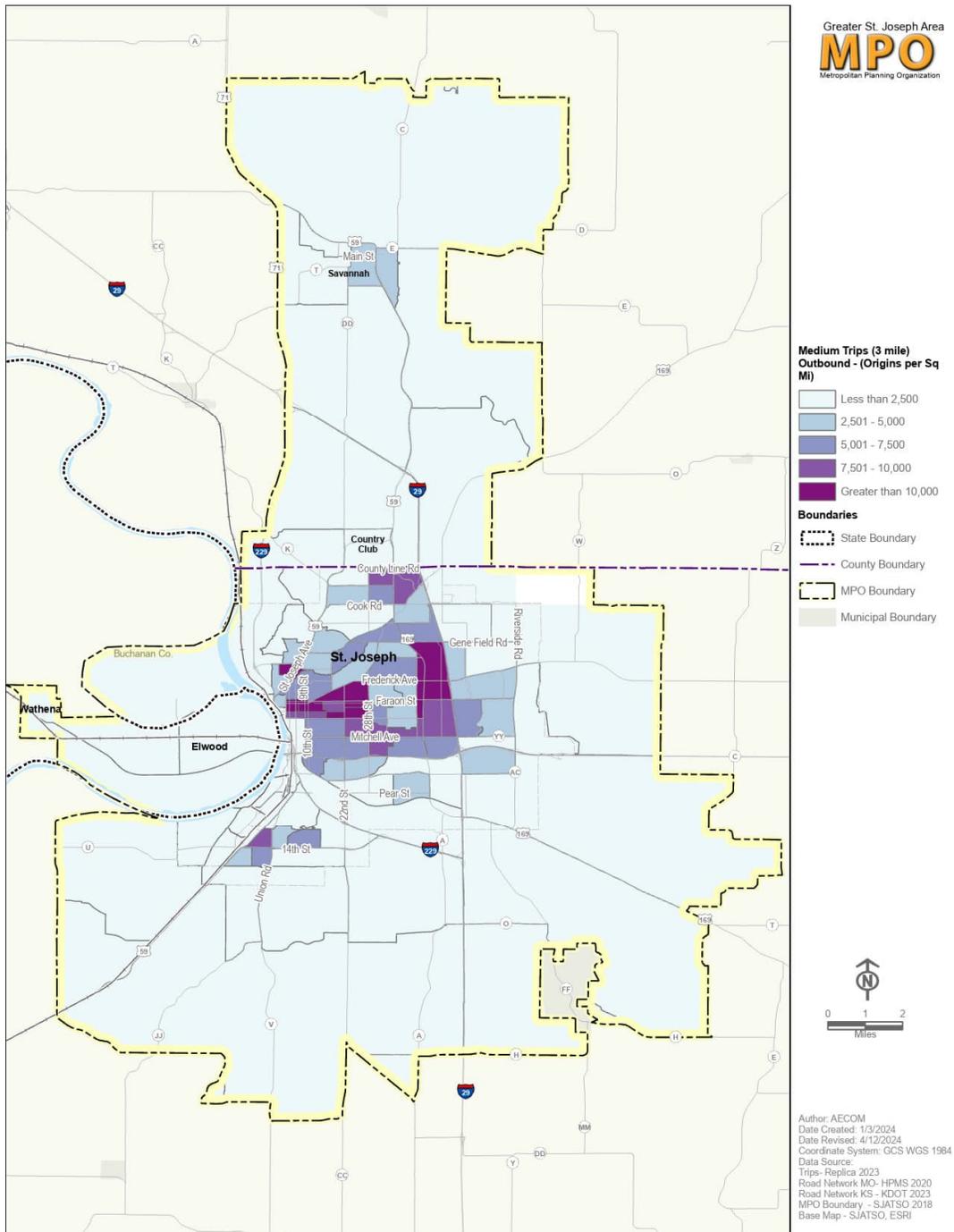


Figure 25: Medium Trips (3-mile) – City of St. Joseph, with Bicycle and Pedestrian Crashes

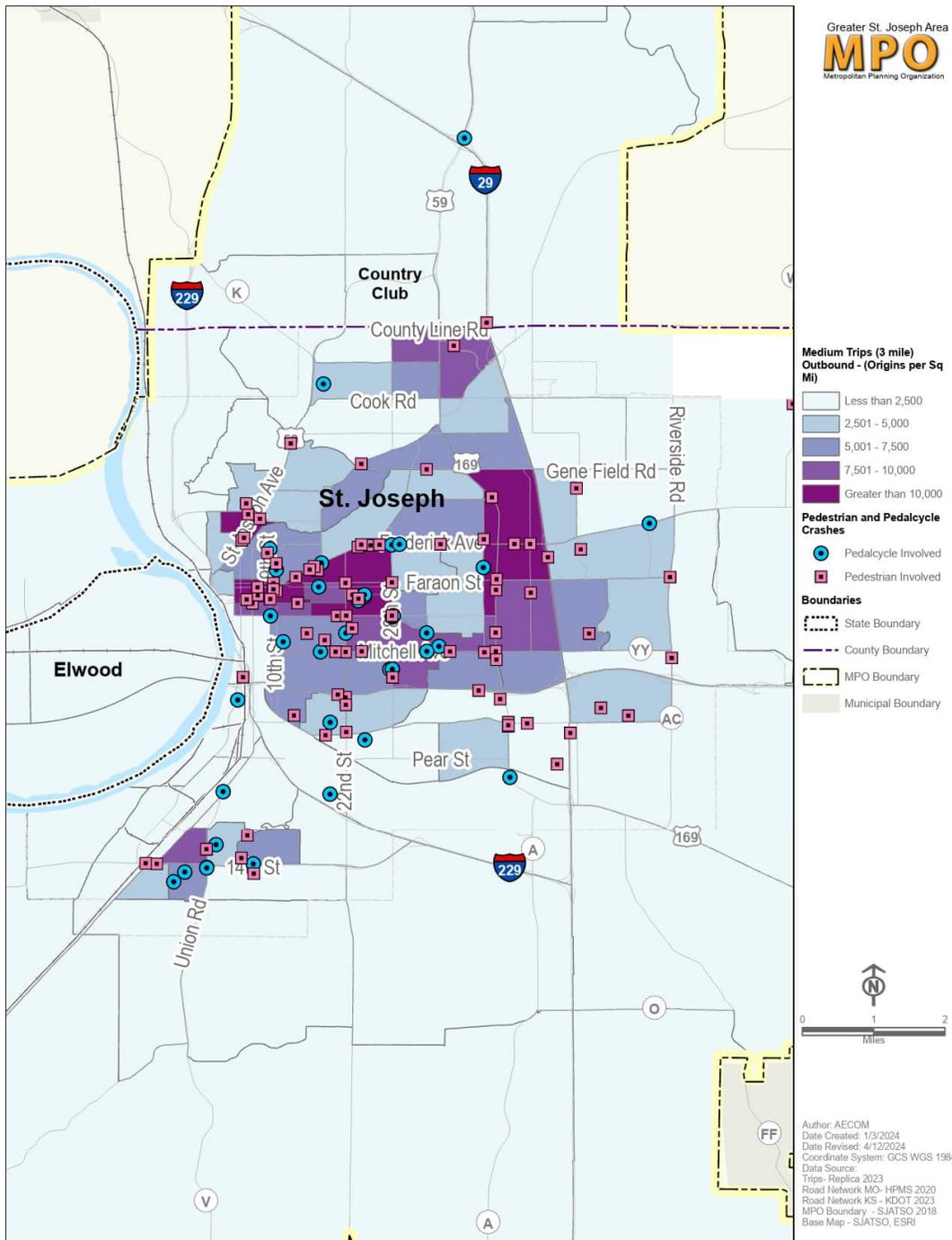


Figure 26: Short Trips (1-mile)

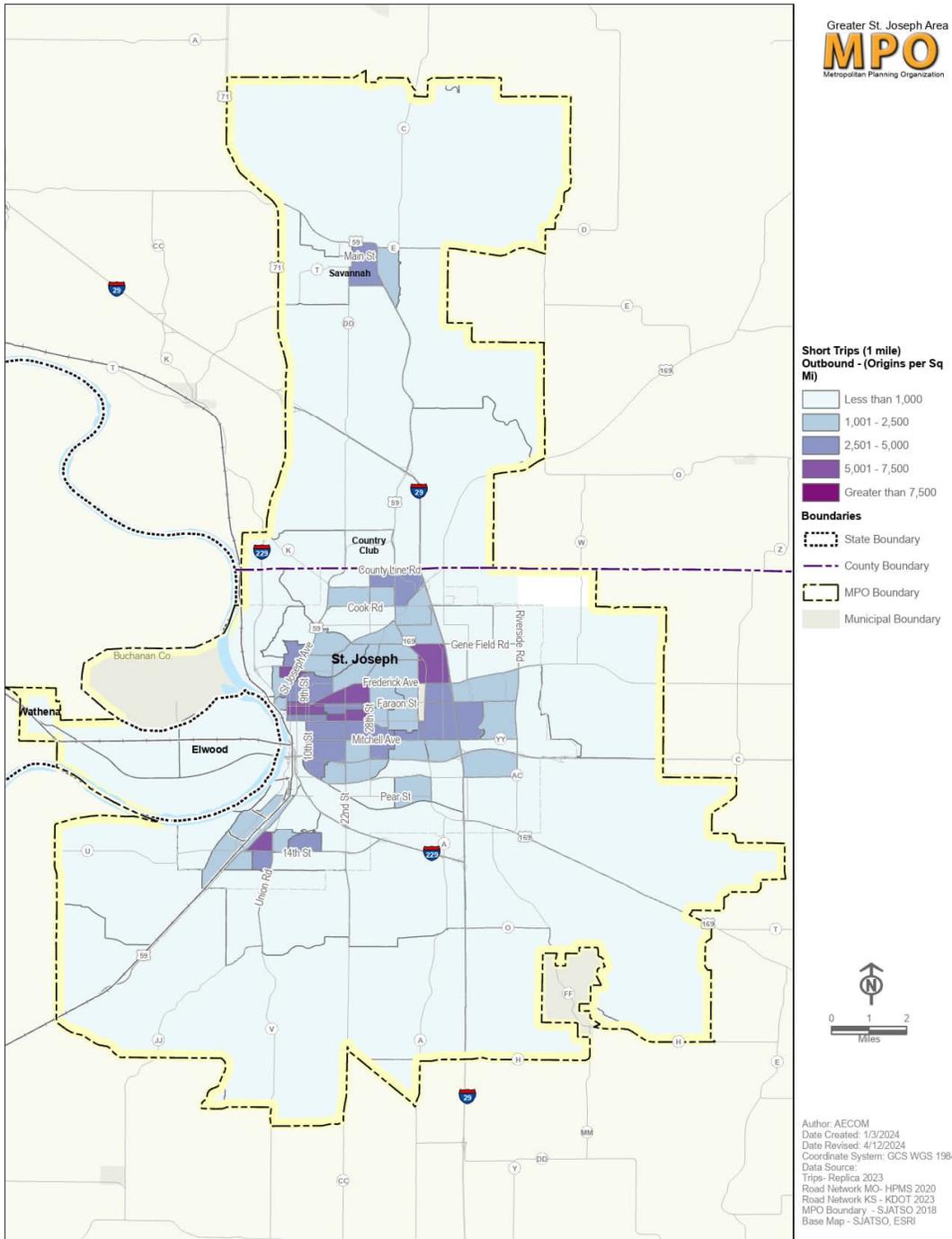


Figure 27: Short Trips (1-mile) – City of St. Joseph, with Bicycle and Pedestrian Crashes

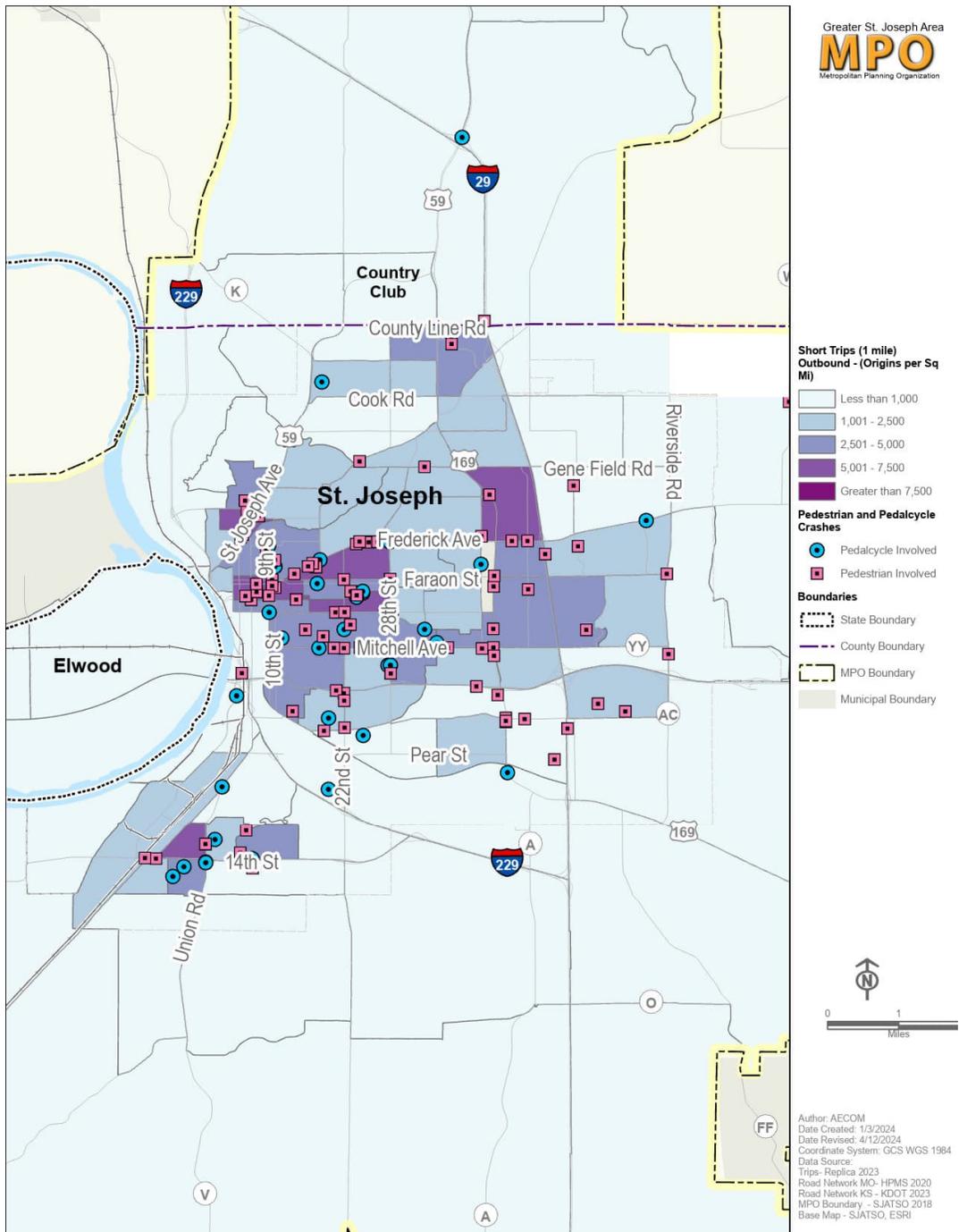
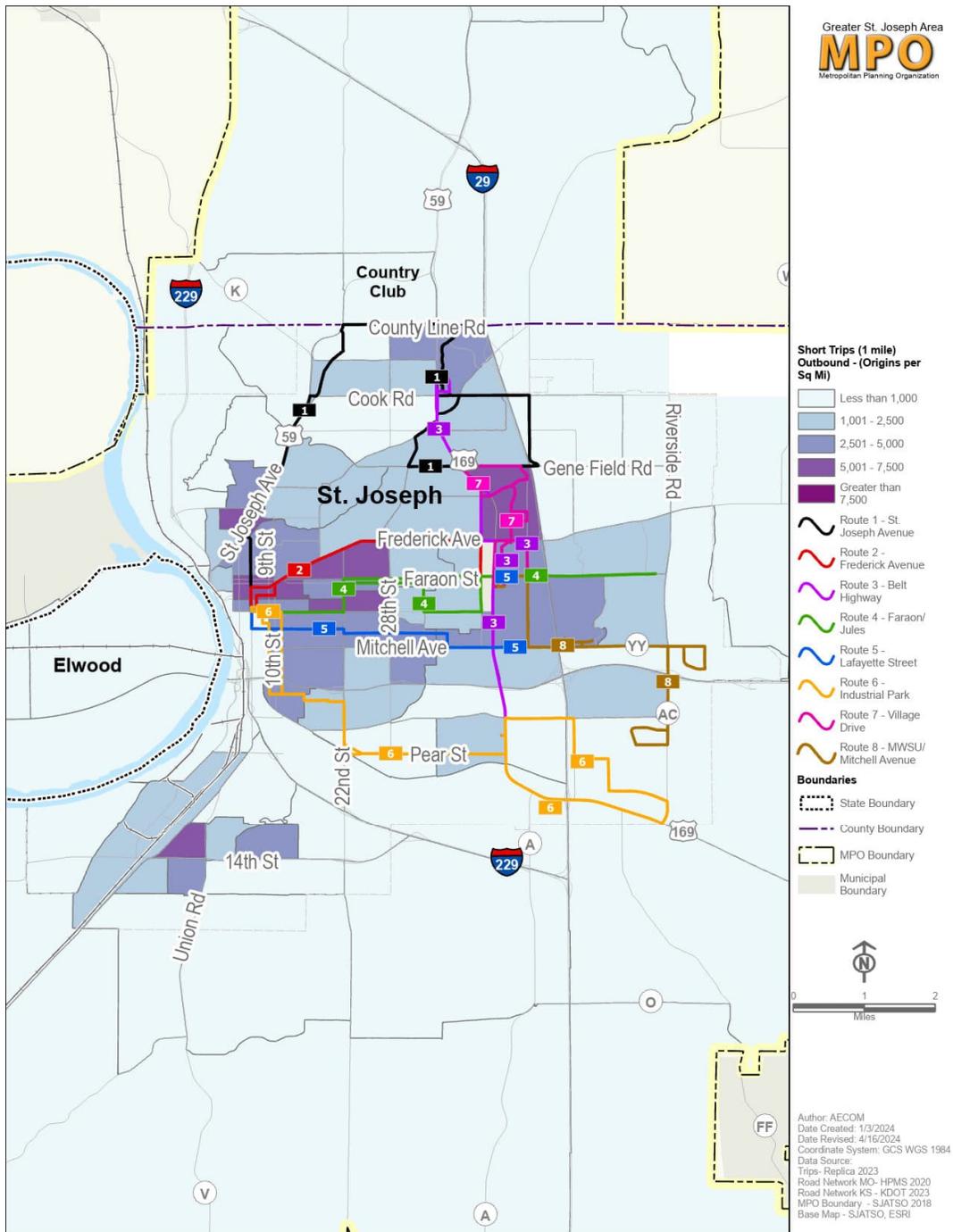


Figure 28: Short Trips (1-mile) – City of St. Joseph, with Transit Routes



## Freight

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This section summarizes freight activity within the SJATSO region. Since the days of the Pony Express, goods have traveled through the St. Joseph region using a variety of modes. Highways, rail lines, and waterways provide the primary infrastructure to facilitate the movement of freight within and through the region. The airport and pipelines are other regional assets that facilitate the movement of goods.

Consistent with the 2050 MTP goals, SJATSO is committed to developing a transportation network that supports the movement of goods and enhances economic development opportunities within the region.

### Statewide Programs/Plans

The BIL/IIJA requires state DOTs to establish freight advisory committees consisting of a cross-section of public and private freight stakeholders. States DOTs are also encouraged to develop comprehensive plans for freight related planning and investment. Missouri and Kansas have both developed statewide freight plans. The following summarizes the statewide plans as they relate to the SJATSO region.

#### Statewide Freight Plans

The 2022 Missouri State Freight and Rail Plan outlines Missouri's current multimodal transportation network, highlighting its critical role in national and international trade. The plan addresses challenges such as aging infrastructure, congestion, and safety concerns, while projecting significant growth in freight volumes by 2045. Strategic goals focus on improving safety, connectivity, economic growth, and environmental sustainability. The plan includes a \$2.5 billion investment strategy for highways, rail, ports, and air cargo, developed with extensive stakeholder input. Successful implementation requires ongoing public-private collaboration to enhance Missouri's transportation efficiency and support economic development. MoDOT continues to update the plan to reflect new projects and funding allocations. The latest updates can be found in the 2023 Appendix A of the Missouri Freight Investment Plan.

The KDOT Statewide Freight Plan (2023) outlines several key elements to enhance the state's freight transportation network including:

- **Infrastructure Improvements:** Focus on upgrading and maintaining critical freight corridors, including highways, railways, and intermodal facilities, to ensure efficient and safe movement of goods.
- **Economic Efficiency:** Strategies to boost economic growth by improving freight logistics and reducing transportation costs. This includes optimizing routes and enhancing connectivity between different modes of transport.
- **Safety Enhancements:** Initiatives to improve safety for all freight transportation modes, such as implementing advanced technologies and better safety protocols.

- Sustainability: Emphasis on sustainable practices, including reducing emissions and promoting environmentally friendly transportation options.
- Public and Stakeholder Engagement: Active involvement of local communities, businesses, and other stakeholders in the planning process to ensure the plan meets diverse needs and priorities.

## Freight Tonnage by Mode

The following section discusses the freight tonnage carried by mode based on findings from the Freight Analysis Framework (FAF) Data Tabulation Tool developed by the Center for Transportation Analysis. Nationally, the freight ton-miles by all modes have been increasing at a consistent rate of about 1.2 percent per year. Table 16 summarizes freight tonnage for primary freight modes in Missouri. Table 17 summarize 2023 freight shipments within, from, and to Missouri.

### Motor Carriers (Truck Traffic)

- From 2012 to 2023, truck freight has increased in tonnage transported from, to, or within Missouri. Over this period, truck freight tonnage increased from 198 kTons to over 450 kTons. Top Missouri truck exports by value include motorized vehicles, mixed freight, other foodstuffs, and transportation equipment. Top Missouri truck exports by tonnage include gravel, cereal grains, nonmetal mineral products, and natural sands.

### Railroads

- Rail freight tonnage transported over Missouri rails has decreased by 15.3% between 2012 and 2023. Tonnage transported via rail in Missouri has historically fluctuated between 10 to 30 kTons annually over the past 20 years. Top exports by value include motorized vehicles, cereal grains, other foodstuffs, and waste/scrap. Top exports by tonnage include cereal grains, gravel, waste/scrap, and nonmetal mineral materials.

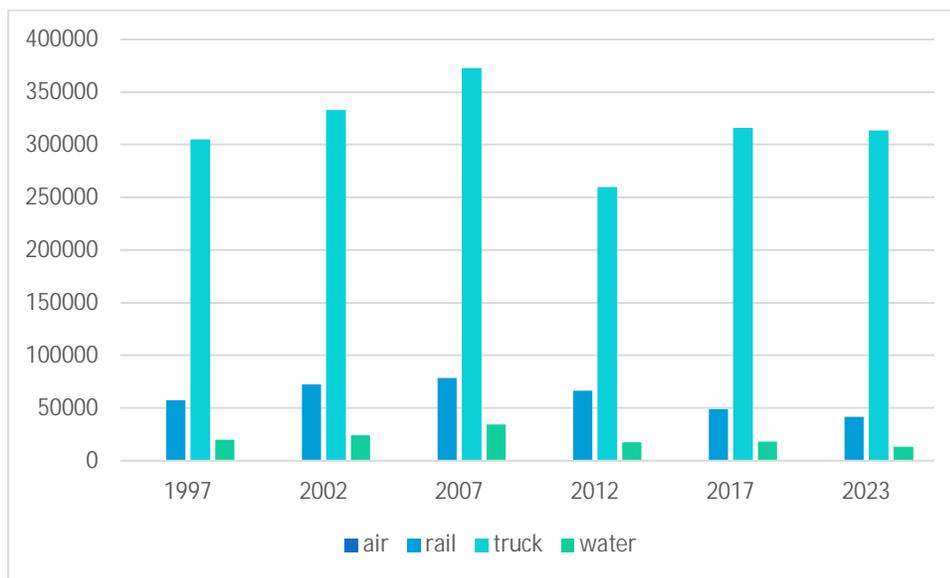
### Aviation

- Aviation freight tonnage accounts for a small portion of Missouri freight movements, accounting for 0.4% of freight movements among all modes. Air tonnage over the past 20 years has historically varied between 30 and 70 kTons. Top exports by value include electronics, precision instruments, pharmaceuticals, and transportation equipment. Top exports by tonnage include electronics, printed products, basic chemicals, and machinery.

### Water

- Port freight tonnage transported through Missouri waterways has increased from 11.8 kTons in 2012 to 18.5 kTons in 2023, a 56.8% boost. Top exports by value include cereal grains, other agricultural products, transportation equipment, and nonmetal mineral products. Top exports by tonnage include cereal grains, gravel, nonmetal mineral materials, and natural sands.

Table 16: Freight Tonnage by Mode (1997 – 2023)



Source: FHA Freight Analysis Framework, Summary Statistics.

Table 17 2023 Freight Shipments (Within, From, and To Missouri – Tonnage by Domestic Mode)

Mode	Within		From		To		Total	
	Weight	Percent	Weight	Percent	Weight	Percent	Weight	Percent
Truck	193,631.0	92.4%	56,872.2	49.2%	63,013.6	45.5%	315,516.8	75.9%
Rail	8,005.8	3.8%	9,574.3	8.3%	24,166.7	17.5%	41,746.0	9.2%
Water	1,151.2	0.5%	8,976.9	7.8%	3,283.4	2.4%	12,511.5	0.5%
Air (includes truck-air)	0.0	0.0%	13.8	0.0%	14.8	0.0%	28.6	0.0%
Multiple modes & mail	426.9	0.2%	12,485.8	10.8%	9,010.4	6.5%	21,922.3	0.2%
Pipeline	6,187.3	3.0%	14,281.2	12.4%	22,848.0	16.5%	43,316.3	3.0%
Other and unknown	51.1	0.0%	0.0	0.0%	0.0	0.0%	51.1	0.0%
<b>Total</b>	<b>209,453.3</b>	<b>100.0%</b>	<b>104,203</b>	<b>100.0%</b>	<b>122,336.9</b>	<b>100.0%</b>	<b>435,091.8</b>	<b>100.0%</b>

Source: FHA Freight Analysis Framework, Summary Statistics.

### Freight Generators/Facilities

Understanding where freight generators are located in the region is key to assessing the related freight infrastructure needs. Characteristics of selected truck-freight-generating employers in the region are listed in Table 18. Freight-related companies tend to be clustered in four areas within the SJATSO region: Elwood, Lower Lake, Stockyards, and Saxton. Figure 29 displays the locations of these freight generating facilities.

Table 18: Regional Freight Generators

ID	Name	# of Empls	Sector Description	Site Acreage	Notes
<b>Lower Lake Cluster</b>					
1	Ruan	5,000	Transportation and Warehousing	18.36	Public; Logistics / Warehousing
2	Triumph Foods	2400	Manufacturing	61.5	Meat Packing Plants
3	AG Processing	249	Transportation and Warehousing	0.16	Oilseed, Grain, and Related Products
4	Blue Scope Steel Manufacturing (East)	155	Manufacturing	13.09	Steel Bldg Mfct
5	Albaugh, LLC	120	Manufacturing	39.3	Herbicide, Insecticide
6	Evergy Power Plant	50	Manufacturing	97	Electric Utility
7	BlueScope Steel Manufacturing (West)	47	Retail Trade	22.77	Steel Bldg Mfct
8	Lowe's Flatbed Distribution	35	Manufacturing	24.47	Distribution
9	Sealed Air (East)	31	Manufacturing	12.17	Packaging Mfct
10	Sealed Air (West)	31	Manufacturing	13.51	Packaging Mfct
11	Sigan Containers	27	Manufacturing	9.06	Small Container Mfct
12	Pony Express Warehouse	16	Transportation and Warehousing	9.34	Public Warehousing & Distribution
<b>Stockyards Cluster</b>					
13	National Beef Leathers	1,113	Manufacturing	33.4	Leather Tanning and Finishing
14	HPI	60	Manufacturing	15.31	Pesticide Mfct
15	Nor-Am Cold Storage	19	Transportation and Warehousing	29.21	Packing, Cooling, Storing
16	ICM Biofuels	14	Mining, Quarrying, and Oil and Gas Extraction	41.3	Oil and Gas Extraction
17	Midwest Warehousing	10	Manufacturing	25	General Warehousing
18	Mfa Agri Services	8	Retail Trade	4.7	Farm Equipment and Supplies
19	Grain Inspection Services	5	Agriculture, Forestry, Fishing and Hunting	24.8	Inspection Service
<b>Elwood Cluster</b>					
20	Snorkel	500	Manufacturing	11.74	Lift Mfct
21	BMS Logistics (adj Snorkel)	185	Transportation and Warehousing	13.38	Warehouse
22	FedEx Freight	25	Transportation and Warehousing	5.74	Package Freight
23	St. Joe Concrete Products	24	Transportation and Warehousing	8.76	Concrete Mfct
24	Herzog Asphalt	20	Construction	38.7	Paving Contractor
25	Forge & Build	10	Retail Trade	5.64	Hardware Store
26	Stetson Hat Co	10	Retail Trade	4.52	Hat Retailer
27	Trailer Cleaning Service	10	Other Services (except Public Administration)	6.35	Pressure Washing Service
<b>Saxton Cluster</b>					
28	Purina	300	Manufacturing	9.95	Animal Food Mfct
29	BMS Logistics	216	Transportation and Warehousing	33.8	Motor Freight Transportation
30	Rite Pack	126	Retail Trade	7.82	Contract Mfct Liquids, Powders, Granules
31	Clarios	76	Manufacturing	24.6	Storage Battery Mfct
32	International Paper	56	Manufacturing	9.95	Paper and Allied Products

Figure 29: Regional Freight Generators



## Freight Traffic Overview

I-29 carries the most traffic of any facility in the region, as well as the most trucks, consistent with its national importance as a north-south freight route that connects the Kansas City region to the Canadian border. US-36 is a major east-west corridor that extends through Missouri and Kansas, bisecting the SJATSO MPA.

I-229 splits from I-29 at the north and south ends of the SJATSO MPA, running along the western edge of the City of St. Joseph, and providing access to the downtown area. Daily traffic volumes range from around 4,500 near the northern junction with I-29, to just over 23,000 near the downtown area. Historic traffic volumes indicate generally modest historical growth along I-229. The most notable growth on the facility has been in its southeast portion, west of MO-752 (about 4,000 vehicles per day in 24 years).

MO-752 is an important east-west route that runs along the south side of St. Joseph, connecting I-29/I-229 with US-59 and points beyond. Just west of US-59, MO-752 transitions to Alabama Street, which provides access to the large rail-served industrial area located between the main tracks and the Missouri River. Table 19 shows the range of AADT and truck volumes along freight corridors in the region.

Table 19: Freight Corridors, with AADT and Truck Volumes

Facility	Daily Traffic within SJATSO Boundaries	
	Total	Trucks
I-29	22,200 – 47,300	5,500 – 11,700
US-36	12,400 – 24,000	750 – 2,800
I-229	4,700 – 23,000	1,000 – 4,300
MO-752/Alabama St (4-lane)	7,000 – 12,700	800 – 2,600
MO-752/Alabama St (2-lane)	3,000 – 8,300	150 – 1,400
US-169/Belt Highway, west of I-29	5,800 – 26,000	500 – 1,800
US-71	8,000	1,800
Bus 71 (Savannah)	1,000	50
US-59/King Hill Ave / 6 <sup>th</sup> St	1,200 – 14,000	60 – 1,900
US-59/St Joseph Ave	2,700 – 12,500	270 – 2,000
US-59/Lake Ave	14,000	1,300
King Hill Ave	14,000	1,300
US-59/6 <sup>th</sup> St	3,700 – 14,000	300 – 1,300
MO-759/Stockyards Expwy	1,100 – 7,000	250 – 1,100
Bus 29/Pear St	6,300 – 8,000	400 – 700
Frederick Ave	6,700 – 9,500	170 – 500
22 <sup>nd</sup> St	3,500 – 9,500	200 – 700
Ashland Ave	8,400 – 9,400	300 – 500

### Regional Truck Traffic

In 2023, 70 percent of commodity flows by weight within the state of Missouri were by truck. The Federal Highway Administration projects truck traffic to continue to represent 70 percent of flows in 2050; however, the total tonnage is expected to increase by 58% from 408 million tons in 2012 to 644 million tons in 2050. Missouri's location at the center of the country's highway and rail networks means that much of the nation's goods will travel near the St. Joseph region. As displayed in Figure 30, the central location of the St. Joseph region places the majority of the country within a two-day drive.

Figure 30: One-Day and Two-Day Drive Area



Source: Missouri Partnership.

Heavy commercial vehicle (HCV) volumes on I-29, just east of I-229, reach as high as 31% of the daily traffic volumes. US-36, just east of the MPA boundary, consists of 23% truck traffic. I-229, just south of I-29, also carries 23% trucks; however, the daily volume on this stretch of I-229 is relatively low at 4,200 vehicles per day.

The conventional economic model for freight shipment is not expected to change by 2050. This model, in which low-value, high-weight goods are more often shipped by rail and water, and high-value, time-sensitive goods are shipped by air, and moderately priced goods are shipped on trucks, will likely persist. Just-in-time supply chain management has transformed the movement of goods into a globally integrated system, merging transportation functions and modes into a seamless intermodal system. This likely implies that the use of intermodal containers will continue to increase. The St. Joseph area's proximity to Kansas City could favor a truck linkage to expedite goods shipment to and from that city.

Another factor that may increase business reliance on trucks for freight movement is the legislated maximum weight of trucks. Current weight limits on semi-trucks (80,000 pounds gross vehicle weight) have not been increased since 1975. Meanwhile, costs of fuel, labor, and delays due to traffic congestion have increased. Nationwide issues that may impede the growth of freight movement by trucks include increased vehicular congestion that decreases the reliability of this mode and increases in insurance rates and fuel prices that erode the slim profit margin (estimated at 5 percent) in which trucking companies customarily operate.

It will be particularly important to continue to develop additional east-west arterials in the developing northern portion of the MPA to accommodate all transportation users. By doing so, motorists will be less inclined to utilize I-29 and I-229 for local trip purposes.

### Railroads

The SJATSO region is served by two railroad companies: BNSF and UP. Both feed off of BNSF's St. Joseph Subdivision, with UP having trackage rights between Atchison, KS and St. Joseph. The BNSF tracks generally follow the Missouri River from Kansas City and Omaha. There are many industry tracks and rail spurs south and west of downtown St. Joseph. The regional rail network is previously shown in Figure 29.

The mainline BNSF tracks carry approximately 32 trains per day per FRA reporting in December 2023. Most of the spur/industry tracks carry two or fewer trains per day, with many carrying as few as one per week. Two exceptions can be noted. The FRA reports ten trains per day along a UP spur near the at-grade crossing along E. Florence Street. Another UP spur is reported to carry 32 trains per day, near one of the at-grade crossings along SW Lower Lake Road.

In the St. Joseph area BNSF railway's tracks run north-south and mostly carry coal. According to BNSF, no track expansions or track realignments are planned through the study area. Union Pacific (UP) railway runs east-west within the area. Most of UP's rail assets are in the Stockyards area south of US-36. North of US-36, UP has an extension along the Missouri River, crossing the river into Elwood.

### Port of St. Joseph

The Missouri River, part of the nation's inland waterway system, is St. Joseph's gateway to the Gulf of Mexico. The river's flow is controlled by the U.S. Army Corps of Engineers using dams upstream, with the nearest one being the Gavins Point Dam in South Dakota. The navigation season is approximately eight months – from April 1 to December 1. The city's location on the river gives area businesses the affordable option of transporting via river barge.

The Port of St. Joseph is an intermodal facility owned by the St. Joseph Regional Port Authority and operated by TransPort 360, LLC, offering full intermodal capabilities of barge, rail and truck. The intermodal port facility houses the following services and facilities:

- Dock and storage yard
- Truck Scale
- Complete intermodal transloading service
- Loaders, fork lifts, and auxiliary equipment
- Crawler cranes with 51- and 31-ton capacity
- Under car off-load pit with conveyor for the Union Pacific railroad spur

The port was developed to serve the agricultural and industrial markets of northwestern Missouri and northeast Kansas. The UP Railway and the BNSF Railway serve the port. In addition to cargo transfer, the port can provide direct delivery of materials, or outside storage for wire and other products.

The Port Authority is governed by a seven-member board and is administered by an executive director housed in the Chamber of Commerce. The port was built through a partnership between the state of Missouri, Buchanan County and the City of St. Joseph. The port is located just south the US-36 Bridge that crosses into Kansas. The port has convenient access to I-29, I-229, US-36, and US-59. Table 20 summarizes unfunded port needs.

Table 20: Unfunded Port Needs

Description	Estimated Cost
Addition of heavy-duty loading pier south of existing dock system.	\$1,000,000
Concrete section repairs to existing concrete drive system	\$500,000
Existing conveyor system upgrades.	\$500,000
Fertilizer Mixing Tanks and Conveyors	\$1,150,000
Fertilizer Storage Hanger	\$450,000
Hard surface of area in front of rail spur to eliminate dust	\$2,000,000
Heavy-duty hard surfacing of existing hard-stand storage areas	\$3,000,000
Liquid storage bins for biofuels and agri-related businesses for quick trans of liquids to barge and rail.	\$3,000,000
Bulk storage facility and conveyor system.	\$2,500,000
Acquisition of land, cleanup and paving of block area to north of port.	\$500,000
Acquisition of land and new docking system to the south of U.S. 36 Highway Bridge.	\$5,000,000
Re-surfacing of Port Authority Stockyards Industrial Park Truck Staging area.	\$1,800,000
<b>Total of Unfunded Needs:</b>	<b>\$21,400,000</b>

Source: St. Joseph Port (March 2024).

Future expansion of port activities is constrained by the limited size of the Port Authority property and rail spur capacity. The port facility is approximately 15 acres and has limited contiguous land available for expansion purposes. There is a parcel of vacant, unused land to the north of the port facility that is owned by UP. Port Commissioners have made it a priority to renew the negotiations to acquire this land from the UP as a strategic effort to permit future growth of the port facility.

The capacity of the current rail spur at the port will eventually become inadequate as the port assists a growing number of businesses handle diverse products. As the port’s rail activity increases, another spur will be needed to facilitate the storage of cars waiting for the loading or unloading of product.

Security and lighting are other capital investments the Port Authority may need to consider. Currently, products handled at the port do not require security clearance under federal port guidelines and the nature of the product is such that it is not an issue. As such, at this time fencing is not an immediate need but could become a future issue.

### Utility Accommodations

Utility companies provide essential public services that are necessary to support existing and future development throughout SJATSO region. Utilities are frequently located within the public right-of-way and as such potentially impact the maintenance and operation of transportation (highway) system. The coordination between utility providers, local agencies, and MoDOT and KDOT is essential if public services are to be provided in an effective and efficient manner.

Previous MTPs have explored the connectivity of the natural gas or petroleum pipelines, water, communication ports, and electrical utilities. The purpose of reviewing this infrastructure, though not typically addressed in MTPs, is to plan and manage the development of this network. Communications and pipelines are important assets of the transportation network as they support local area businesses and industries. If these attributes are not fully developed, they can have a substantial impact on the rest of the transportation system (i.e., roadway network). Though this component of the transportation system is mainly controlled and planned by private companies, it is important that St. Joseph region consider these elements in developing the regional transportation system and economic development opportunities.

### Communications

The advancement of the telecommunications network has been one of the fastest evolving aspects of the transportation network across the nation. Not only does the communications network impact the transportation network, it is one of the key criteria for attracting new businesses and retaining existing businesses.

St. Joseph has access to trunk lines of fiber optic cable, which has been expanded and will likely continue to expand as demand increases. Southwestern Bell, the main provider of telecommunications in St. Joseph, has identified a plan to continue to expand as development continues in the region. Quality service to the east of St. Joseph, where substantial development has occurred and will continue to occur, has been an important expansion project because of the volume of service demand the businesses put on the network. The expansion to these developments has been accomplished using fiber optic cable to provide the fastest, clearest, and greatest capacity.

### Pipelines

Private pipeline companies, such as Amoco and Williams, along with Spire Missouri (formerly Missouri Gas Energy, MGE), report that there is sufficient capacity in the pipeline network. Spire Missouri, the direct provider to local users, has completed its pipeline replacement program, which has improved the safety of the system for its users.

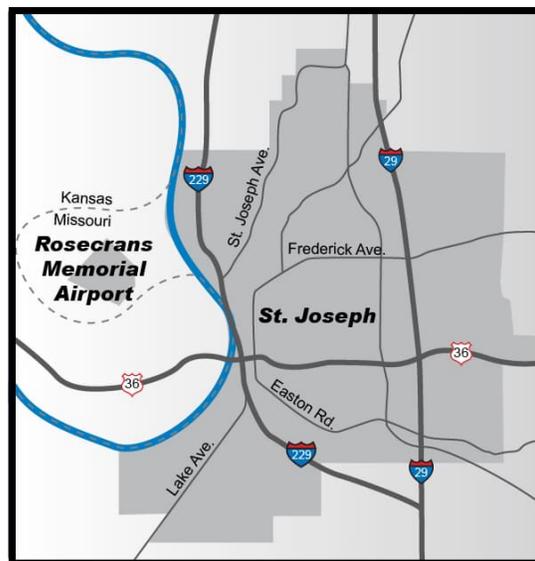
### Electricity

The main electricity provider in the St. Joseph area is Evergy, which was formed by the merger of Kansas City Power and Light (KCP&L) and Westar Energy. Evergy provides electricity service to more than 1.6 million customers in Kansas and Missouri. Although the majority of power generation historically came from coal, Evergy has significantly increased its renewable energy portfolio. The Spearville Wind Generation Facility, purchased in 2006, adds 100.5 megawatts of renewable energy to their production portfolio. The Spearville Wind Facility is located northeast of Dodge City, Kansas, and consists of 67 1.5 megawatt turbines and supporting plant equipment

## Aviation

The Rosecrans Memorial Airport (STJ) is owned and operated by the City of St. Joseph, although it is located in Buchanan County, Missouri, approximately 3 miles northwest of the City of St. Joseph and 60 miles north of downtown Kansas City. STJ is situated on approximately 1,700 acres of land. The Airport is a joint civil-military public airport, one of two Missouri Air National Guard (ANG) bases, and also serves general aviation. While the airport is in Missouri, there are no direct access roads or bridges over the Missouri River to the airport. The only way to access the airport is via Highway 36 to Route 238, which is a two-lane road in Elwood, Kansas. Home to the 139th Airlift Wing, STJ plays a significant economic and aeronautical role within the region and provides services to support aeronautical users. Figure 31 provides the airport's location in relation to the St. Joseph area.

Figure 31: Rosecrans Memorial Airport



Source: Rosecrans Memorial Airport – Airport Layout Plan Update.

### Facilities

The airport is equipped with an Approach Control open from 8 a.m. to 6 p.m. daily and an Air Traffic Control Tower open Monday through Friday from 7 a.m. to 7 p.m., and Saturday and Sunday from 8 a.m. to 6 p.m. Charter, air ambulance service, flight training, and aircraft services are available.

STJ has two runways; the primary Runway 17-35 and crosswind Runway 13-31. The crosswind runway is a visual runway serving both military aircraft conducting training operations and civilian general aviation aircraft. With a length of 8,061 feet, primary Runway 17-35 accommodates aircraft within the FAA Aircraft Approach Category C and Airplane Design Group IV. Category C aircraft include transport aircraft with an approach speed of 121 knots or more, but less than 141 knots. Airplane Design Group IV includes aircraft with 118' wingspans, up to but not including 171'. In 2013 STJ completed the construction of a new fire station (ARFF building).

STJ serves a wide-ranging civilian mix of aircraft from corporate jets to agricultural spray applicators. Significantly, STJ is also home to the Missouri Air National Guard (MOANG) 139th Airlift Wing. MOANG operates the Lockheed C-130 military transport aircraft. Currently there are 86 civilian and 10 military for a total of 96 aircraft based at STJ. The civilian based aircraft total includes one rotorcraft, an Air Ambulance Helicopter. Businesses at the airport facility, including MOANG, employ over 1,200 people.

Since 1948, STJ has been owned and operated by the City of St. Joseph as a division of the Department of Public Works and Transportation. The Airport Manager, and staff, are responsible for the maintenance and operation of STJ facilities, infrastructure improvement by securing grant funds, economic development, and tenant/lease management. The airport manager is also responsible for meeting with civic groups, news media, and concerned citizens regarding airport development, operations, and issues. Figure 32 depicts the current airport facility.

Figure 32: Rosecrans Memorial Airport Layout



Source: Rosecrans Memorial Airport – Airport Layout Plan Update (2018).

Table 21 summarizes aircraft operations at Rosecrans Memorial Airport between 1990 and 2023. Aircraft operations peaked in 2005 and since have generally declined. As outlined in the Rosecrans Memorial Airport – Airport Layout Plan Update, factors on the local, regional, and national level impact aviation activity at SJT. Factors such as number of licensed pilots, price of aviation fuel, the cost of new aircraft, national and state economies, security regulations, new technologies can result in aircraft operation fluctuation over time. Despite the decline since 2005, the plan suggests activity levels at SJT will rebound as population, employment, and per capita income has been steadily rising within the region. This is reflected in the recent 2023 data that shows total aircraft operations increasing to 11,357 (up from 8,305 in 2017).

Table 21: Aircraft Operations – Rosecrans Memorial Airport (1990-2023)

Type of Aircraft		1990	1995	2000	2005	2010	2015	2017	2023
Itinerant	Air Carrier	264	1	84	14	54	4	0	12
	Air Taxi	183	51	192	458	469	230	292	125
	General Aviation	7,592	11,974	12,678	14,043	12,549	8,913	6,105	7,337
	Military	4,405	4,310	4,170	4,804	6,031	3,331	1,908	3,883
	Total	12,444	16,336	17,124	19,319	19,103	12,478	8,305	11,357
Local	Civil	7,510	7,704	10,436	7,194	7,826	4,139	4,678	4,061
	Military	3,586	1,872	3,984	4,043	7,300	3,514	4,908	3,268
	Total	11,096	9,576	14,420	11,237	15,126	7,653	9,586	7,329
Total	Military	7,991	6,182	8,154	8,847	13,331	6,845	6,816	7,151
(Itinerant/Local)	%	33.9%	23.9%	25.8%	29.0%	38.9%	34.0%	38.1%	38.3%
	Civilian	15,549	19,730	23,390	21,709	20,898	13,286	11,075	11,398
	%	66.10%	76.10%	74.20%	71.00%	61.10%	66.00%	61.9%	61.7%

Source: FAA Air Traffic Activity Data System (ATADS), Rosecrans Memorial Airport.

## Intelligent Transportation Systems

This section summarizes Intelligent Transportation Systems (ITS) elements within the St. Joseph region. ITS refers to the application of a wide range of advanced information that collects, processes and distributes information about the movement of people and goods in a region. ITS is the integrated application of advanced technologies using electronics, computers, communications, and advanced sensors. ITS applications within a region can provide travelers with important information that allows them to make informed travel decisions, thereby improving the overall safety and efficiency of the regional transportation system.

The SJATSO reviews the ITS component every five years as part of the MTP updates. As stated in the goals and objectives, enhancing safety for the traveling public is a high priority within the region. Fulfilling this commitment to making transportation safer and more efficient is not as simple as building more roads or expanding existing ones. Traditional methods are often very expensive and, in some cases, may have adverse environmental and/or social impacts. Now more than ever, there is an increased emphasis on maximizing the use of the existing transportation infrastructure and assets, and ITS can play an important part in accomplishing this goal. Travelers throughout the St. Joseph region also need accurate, up-to-date, and relevant road condition information in order to make appropriate trip decisions.

### ITS Benefits

ITS can address a multitude of transportation issues, including improving operations and enhancing safety in a cost-effective manner. ITS applications have the potential to:

- Reduce crashes and fatalities when vehicles travel along roadways that are equipped with ITS components.
- Optimize traffic flow from one area to another.
- Monitor traffic conditions using ITS traffic management systems, which utilize permanent vehicle detection technologies in coordination with closed circuit television cameras (CCTV).
- Reduce the number of traffic stops, resulting in less congestion and ultimately translating into reduced fuel emissions and fewer negative impacts on the environment.

In summary the benefits of utilizing ITS include the following:

- Reduce delay and congestion
- Reduce incident response time
- Reduce travel time and variability in travel time
- Improve traveler information
- Inform travelers of current weather and pavement conditions
- Improve adverse pavement conditions with deicing equipment
- Reduce the number of accidents and secondary accidents

- Reduce emissions and fuel consumption
- Improve roadway capacity
- Improve traffic flow and travel speed

City of St. Joseph ITS Applications

The region (City of St. Joseph) has emergency vehicle preemption devices at signalized intersections along key emergency corridors. Emergency vehicle preemption (EVP) at signalized intersections allows approaching emergency vehicles to preempt the current signal timing to serve the direction of the vehicle’s travel. The authorized emergency vehicle communicates a short-range signal to a receiving device within the signal cabinet, which then commands the signal controller to provide a green light in the direction of travel from where the signal was received. Table 22 displays the location of emergency preemption devices.

Table 22: Emergency Preemption Device Intersection Locations

Location	Intersection
1	11 <sup>th</sup> Street/Frederick Avenue
2	22 <sup>nd</sup> Street/Jules Street
3	22 <sup>nd</sup> Street/Faraon Street
4	22 <sup>nd</sup> Street/Messanie Street
5	Noyes Boulevard/Jules Street
6	Noyes Boulevard/Faraon Street
7	36 <sup>th</sup> Street/Faraon Street
8	36 <sup>th</sup> Street/Frederick Avenue
9	Woodbine Road/Faraon Street
10	Kinghill Avenue/West Valley Street
11	Stockyards Expressway/Illinois Avenue
12	North Village Drive Road/North Pointe Drive

Source: City of St. Joseph.

St. Joseph Public Safety ITS Applications

The St. Joseph Police Department Communications Center has a combined dispatch center for the Police Department, Fire Department the Buchanan County Sheriff’s Department and seven Buchanan County Fire Departments. The Communications is served by an 800 MHz Trunking Radio System used by all police and fire agencies and paramedics at Heartland Hospital that provides communications to all of Buchanan County. Mobile Data Systems (MDS), which aid in communications, dispatch and

reporting, are equipped in St. Joseph Police squad units and St. Joseph Fire Department vehicles.

A number of administrative line calls are directed to the Communications Center from cell phone providers and are actually wireless 911 calls. Equipment to recognize these as 911 calls as wireless 911 calls is used to improve emergency response.

### MoDOT and KDOT ITS Applications

MoDOT has deployed 60 Dynamic Message Signs (DMS) on rural interstates statewide. Within the St. Joseph region, MoDOT operates six DMS on I-29 and I-229. Primary control of messages on the DMS is through the Kansas City Scout Traffic Management Center (TMC) via cellular communication. MoDOT Northwest District, serving the St. Joseph region, has secondary access to DMS control in the event KC Scout TMC staff is otherwise engaged with pressing local issues (e.g. ice storm).

As part of Phase 1 of the Belt Highway Arterial Mobility Plan, MoDOT has interconnected multiple traffic signals along the Business Loop 29 route, US-Highway 169, and Missouri Route 6, also known as the Belt Highway and Frederick Avenue. This has been done using spread spectrum broadband wireless radios. This project is considered the first step in establishing communications from the MoDOT NW District to all components located in the traffic signal cabinets along these major arterial routes in the St. Joseph region.

MoDOT has also has remote monitoring of generator sites in the region and includes backup generators for MoDOT's two-way radio tower sites. This allows the MoDOT NW District to access, via the internet, each generator's past maintenance logs and current operational status, with indications such as generator running, oil levels, and time until next maintenance. The system will also notify an electrician when a failure has occurred at any of the backup generators. This has been a good investment for MoDOT electricians given the number of two-way radio tower sites that need to be maintained, which are scattered throughout the northwestern 20 counties of the state.

The Kansas Statewide ITS Architecture Plan provides a long-term roadmap for the deployment and integration of ITS in Kansas. The plan captures current and planned ITS projects to identify opportunities to further integrate ITS systems. Identified in the plan are key ITS elements deployed or planned by KDOT including KC Scout Traffic Management Center (Kansas City), WICHway Traffic Management Center (Wichita), KDOT Dynamic Message Signs, KDOT ITS Motion Cameras, KDOT RWIS/KTA Stationary Cameras, and fiber lines along major roadways.

### **St. Joseph Regional ITS Architecture**

An ITS architecture represents a shared vision of how each agency's systems work together by sharing information and resources to enhance transportation safety, efficiency, capacity, mobility, and security. The information exchange among the

many transportation stakeholders helps illustrate various integration options, gain consensus on cost-effective ITS technologies and systems to be considered prior to investing in the design, development, and deployment of ITS, including. Connected and Automated Vehicle applications as described in the previous section.

Regional ITS Architectures are generally updated every five years to remain consistent with the National Reference ITS Architecture, also known as the Architecture Reference for Cooperative and Intelligent Transportation (ARC-IT). Regional ITS Architectures are also updated to meet FHWA and FTA requirements for receiving Federal funds for future ITS projects, which need to be reflected within the updated Regional ITS Architecture.

MoDOT has assisted in administering and maintaining Regional ITS Architectures throughout the state. To meet the requirement and ensure federal funding eligibility for ITS, MoDOT previously initiated the development of Regional ITS Architectures for three urban regions statewide including Springfield/Branson, St. Louis, and Kansas City. The SJATSO region is covered within the Kansas City Regional ITS Architecture.