ST. JOSEPH TRANSIT

GO St.Joe

Transit Service Development Plan

Prepared for St. Joseph Transit
City of St. Joseph, Missouri

Final Report
June 2022

This page intentionally left blank.

Transit Service Development Plan

Prepared for:

St. Joseph Transit, In coordination with St. Joseph Area Transportation Study Organization (SJATSO)

April 2022

Prepared by:

AECOM

Table of Contents

1. Introduction 1
Let's Go St. Joe! 1
Service Area 2
St. Joseph Transit Overview 2
Organizational Structure 2
Administrative Office and Transit Center 3
Other Transportation Services 3
OATS Transit 3
Jefferson Lines 4
2. Demographic and Land Use Assessment 5
Demographic Characteristics 5
Population Density 5
Employment Density 5
Environmental Justice Populations 8
Transit Dependent Populations 10
Land Use Assessment 14
Review of Relevant Studies 15
2045 Metropolitan Transportation Plan St. Joseph Area Transportation Study Organization (2019) 15
St. Joseph Area Coordinated Public Transit – Human Services Transportation Plan 16
2018 Missouri Department of Transportation Long Range Transportation Plan Update: Technical Memorandum 16
St. Joseph Area Active Transportation Plan: A Complete Streets Roadmap 17
SJATSO Public Participation Plan 17
3. Route System Overview 18
System Description 18
Fleet 21
Fares 22
Current Route Profiles 22
4. Performance 34
Key Operating Characteristics 34

Annual Passenger Trips 36
Annual Operating Costs 36
Annual Farebox Revenue 37
Performance Indicators 37
Passengers per Revenue Hour 37
Passengers per Revenue Mile 38
Cost-Effectiveness 38
Cost Per Passenger 38
Service Efficiency 39
Cost Per Revenue Hour 39
Farebox Recovery Ratio 39
5. Stakeholder Outreach 40
Supervisors Interview 40
Dispatchers Interview 41
Joyce Raye Patterson Senior Center 42
Missouri Western State University 42
Chamber of Commerce 43
OATS Transit 43
Family Service and Guidance Center 44
Open House Public Meeting 44
6. Key Issues and sTrategies 45
7. Service Recommendations 47
Service Recommendations 47
Remove flag stop service 47
Maintain route deviations 47
Demand Response Service 47
Direct connections to Transfer Centers 48
Proposed Service Plan 49
Key Components and Recommendations 50
Development of Runcuts 51
Overview of Proposed New Routes 51
Route 1: St. Joseph North 53

Route 2: Frederick Avenue 55
Route 3: Belt Highway 57
Route 4: Faraon/Jules 59
Route 5: Lafayette 61
Route 6: Industrial 63
Route 7: Village Drive 65
Route 8: MWSU/Mitchell Woods 67
Service Recommendations Summary 69
8. Financial Plan 70
Costs and Revenue Assumptions 70
Capital Costs 71
Implementation Plan 75

Figure 1. St. Joseph Transit Organizational Structure 2
Figure 2: Population Density 6
Figure 3: Employment Density 7
Figure 4: Minority Block Groups by Percent of Total Population 9
Figure 5: Hispanic or Latino Origin by Percent of Total Population by Block Group 11
Figure 6: Poverty as Percentage of Total Population by Block Group within the Study Area 12
Figure 7: Transit Dependent Populations 13
Figure 8: St. Joseph Land Use Plan 14
Figure 9: Ridership and Deviations, by Route (February 2019 – February 2020) 19
10: Fixed-Route System Map 20
Figure 11: Route 11 – St. Joseph Avenue System Map 23
Figure 12: Route 12 – Lovers Lane System Map 24
Figure 13: Route 13 – Frederick Avenue System Map 25
Figure 14: Route 14 – Faraon/Jules System Map 26
Figure 15: Route 15 – Missouri Western System Map 27
Figure 16: Route 16 – Industrial Park System Map 28
Figure 17: Route 17 – Stockyards System Map 29
Figure 18: Route 18 – King Hill and Elwood On Demand System Map 30
Figure 19: Route 19 – East System Map 31
Figure 20: Route 20 North System Map 32
Figure 21: Route 21 – South System Map 33
Figure 22: Annual Bus Passenger Trips 36
Figure 23: Annual Bus Operating Costs 36
Figure 24: Annual Bus Farebox Revenue 37
Figure 25: Bus Passengers per Revenue Hour 37
Figure 26: Bus Passengers per Revenue Mile 38
Figure 27: Bus Operating Costs per Passenger 38
Figure 28: Bus Operating Costs per Revenue Hour 39
Figure 29: Bus Farebox Recovery Ratio 39
Figure 30: Proposed Routes and Demand Response Zones 52
Figure 31: Proposed Route 1 (St. Joseph North) 54
Figure 32: Proposed Route 2 (Frederick Avenue) 56
Figure 33: Proposed Route 3 (Belt Highway) 58
Figure 34: Proposed Route 4 (Faraon/Jules) 60
Figure 35: Proposed Route 5 (Lafayette) 62
Figure 36: Proposed Route 6 (Industrial Park) 64
Figure 37: Proposed Route 7 (Village Drive) 66
Figure 38: Proposed Route 8 MWSU/Mitchell Woods 68
Figure 39: O&M Costs per Revenue Hour Assumptions 70

Table 1: Race and Ethnicity 8
Table 2: Route Characteristics 18
Table 3: Fleet Inventory 21
Table 4: Fare Pricing 22
Table 5: Operating Characteristics and Performance Measures 35
Table 6: Proposed Route Numbers and Names 49
Table 7: Proposed Route 1 (St. Joseph North) Operating Characteristics 53
Table 8: Proposed Route 2 (Frederick Avenue) Operating Characteristics 55
Table 9: Route 3 (Belt Highway) Operating Characteristics 57
Table 10: Route 4 (Faraon/Jules) Operating Characteristics 59
Table 11: Route 5 (Lafayette) Operating Characteristics 61
Table 12: Route 6 (Industrial Park) Operating Characteristics 63
Table 13: Route 7 Operating Characteristics 65
Table 14: Route 8 (MWSU/Mitchell Woods) Operating Characteristics 67
Table 15: 1 Service Recommendations 69
Table 16: Estimated Annual Revenue Hours 71
Table 17: O&M Cost Estimates 2022-2025 71
Table 18: Capital Cost Estimates, 2022 72
Table 19: Financial Plan 2022-2026 74

1. INTRODUCTION

AECOM, in coordination with The St. Joseph Area Transportation Study Organization (SJATSO), and St. Joseph Transit (also referred to as, *The Ride*), have completed this **Transit Service Development Plan** (TDP) to address the mobility needs of area residents. The overarching goal of the TDP focused on analyzing current transit services and operations to identify opportunities to improve reliability, enhance service delivery, and improve service efficiency (reduce service costs). The TPD explores alternative forms of service delivery and includes the identification of short- to mid-term needs, challenges, and opportunities. The TDP concludes with a summary of phased improvements, including actionable steps to implement future service enhancements.

Let's Go St. Joe!

The completion of this TDP coincides with SJATSO and St. Joseph Transit efforts to rebrand the transit system. ***Go St. Joe*** is about providing a reliable, safe, modern, and community-oriented transit service. This focus allows St. Joseph Transit to be accessible, responsive, and to provide unique amenities and services to all riders – across generations, race, and socioeconomic status. The following provides a brief look at our past, and more importantly it outlines our vision for the future of St. Joseph Transit.

HISTORY

The City of St. Joseph Missouri has a storied past in transportation. Representing a gateway city to the West, St. Joseph is historically an intersection of industry, trade, and commerce.

St. Joseph Transit is known to be the oldest transit system west of the Mississsisppi. Originally operating as electric horse cars as early as 1887, the system has seen significant evolution, shifting from electric street cars, to trolleys, and eventually trackless buses.

FUTURE

St. Joseph Transit system is unlike any other of it's kind. As of 2021, the system operates 12 routes, and offers route deviations for individuals to access door-to-door service.

The system is innovative, with a 21st century fleet of busses, as well as special programs designed to meet the needs of it's riders. The travel ambassador program, and strong community partnerships helps integrate Go St. Joe as a transportation lifeline to connect workers, families, students, and residents of the area to opportunities.

Service Area

The City of St. Joseph, Missouri has a population of approximately 77,000 and is the county seat of Buchannan County. Located approximately 30 miles north of Kansas City, Missouri and 125 miles south of Omaha, Nebraska, the St. Joseph region has played a significant role in the development of transportation services within the United States.

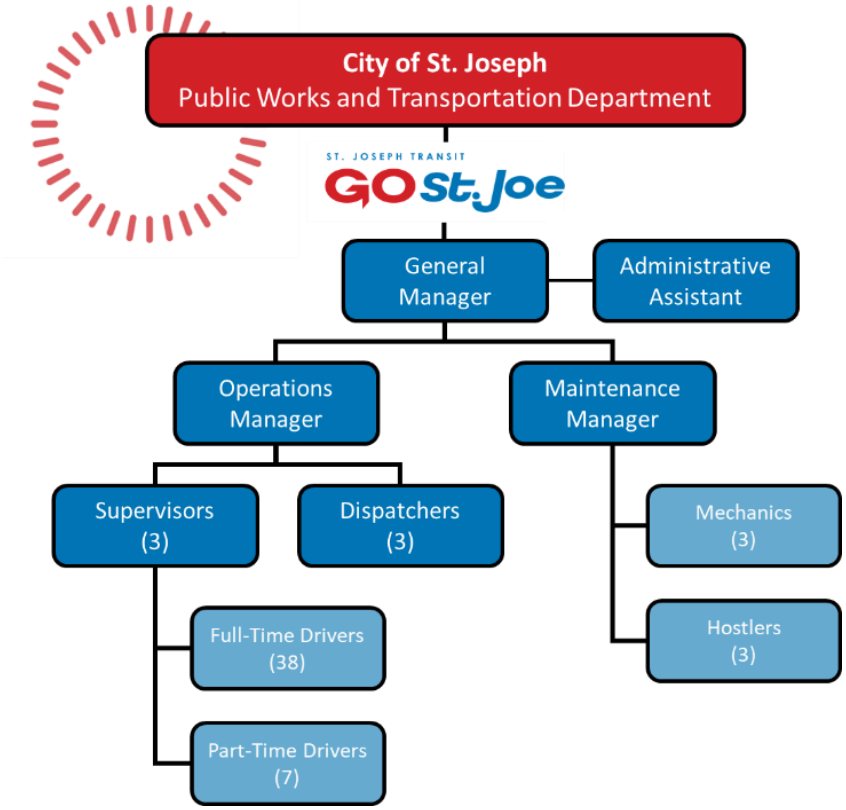
St. Joseph Transit currently services eight fixed-routes which encompass the city limits of St. Joseph and Elwood, Kansas. Curb-to-curb route deviations are available, on a scheduled or walk-on basis. All users of the transit system may schedule or request deviations.

St. Joseph Transit Overview

Organizational Structure

St. Joseph Transit provides transit services under the umbrella of the Public Works and Transportation Department of the City of St. Joseph. St. Joseph Transit is led by a General Manager who oversees the agency as a division within the City. Supporting staff include a maintenance manager who oversees fleet maintenance and an operations manager who oversees the dispatchers, supervisors, and drivers. The organizational structure is displayed in **Figure 1**.

Figure 1. St. Joseph Transit Organizational Structure



Source: St. Joseph Transit.

Administrative Office and Transit Center

The St. Joseph Transit Administrative Office and Fleet Maintenance Building is located at 702 South 5th Street. The primary transfer hub is the Downtown Transit Center located at 611 Angelique Street. The system includes additional secondary transfer points where multiple routes meet including North Walmart, Hy-Vee, and South Walmart. St. Joseph Transit operates a hub and spoke route system with timed transfers at the Downtown Transit Center at :15 of the hour.

Other Transportation Services

OATS Transit

OATS Transit is a 501(c)3 nonprofit corporation providing transportation to 87 counties in Missouri. OATS Transit provides shared-ride, on-demand, and door-to-door service. The OATS Transit office for St. Joseph, and Buchanan County, is located at 1306 South 58th Street (located along *St. Joseph Transit's* Route 15). One-way fares within the county are $3 while long-distance trips (travel beyond two counties) include an additional fee of $2 per county.

Services offered by OATS include:

- **Local medical, essential shopping and business errands trips** (operating Monday through Friday between 8:00 a.m. and 5:00 p.m.)
- **Long-distance medical to Kansas City** (second Tuesday of each month)
- **East Hills Shopping Center and Walmart** (first and third Tuesday of each month between 9:30 a.m. and 1:00 p.m.)
- **Grocery Shopping** (second and fourth Thursday of each month)

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. The express trips include:

Express to St. Joseph

- 1st Friday each month: route travels along Highways 6, 65, and 36 through the communities of Galt, Trenton, Chillicothe, Hamilton, Cameron and St. Joseph
- 2nd Friday each month: route travels along Highways 6, 13, 36, and Interstate 35 through the communities of Trenton, Bethany, and St. Joseph
- 3rd Friday each month: route travels along Highways 6,13, and 36 through the communities of Galt, Trenton, Gallatin, Cameron, and St. Joseph

Express to Kansas City

- *Tuesdays each month:* route travels along Highways, 6,65, and 36 through Galt, Trenton, Chillicothe, Hamilton, Cameron, and Kansas City.

Jefferson Lines

Jefferson Lines is a long-range bus operator that operates in fourteen states. The service provides transportation as far south as Arkansas/Oklahoma and as far north as Canada. Jefferson Lines provides non-stop service to Omaha, Nebraska, and Kansas City, Missouri from St. Joseph.

The St. Joseph Jefferson Line station is located at St. Joseph Transit's Downtown Transfer Center. The ticketing facility is operated by St. Joseph Transit and is open Monday – Friday from 8:30 a.m. to 4:30 p.m. and Saturdays from 9:00 a.m. to 1:15 p.m. It is closed on Sundays and on federal holidays.

2. DEMOGRAPHIC AND LAND USE ASSESSMENT

This section provides an overview of the St. Joseph Transit baseline operational characteristics and sets the stage for future analysis, as a part of the TDP. The demographics and land use assessment provide detailed insight into the St. Joseph area's demographic makeup, land use patterns, and potential transit needs.

Demographic Characteristics

The following documents demographic characteristics of the study area, which include population density, employment types and density, and transit-dependency. These demographic categories are important to identify high-density populations and jobs which could support various types of transit modes. The assessment was conducted using data from the U.S. Census Bureau (USCB) American Community Survey (ACS) 2019 5-year estimates.

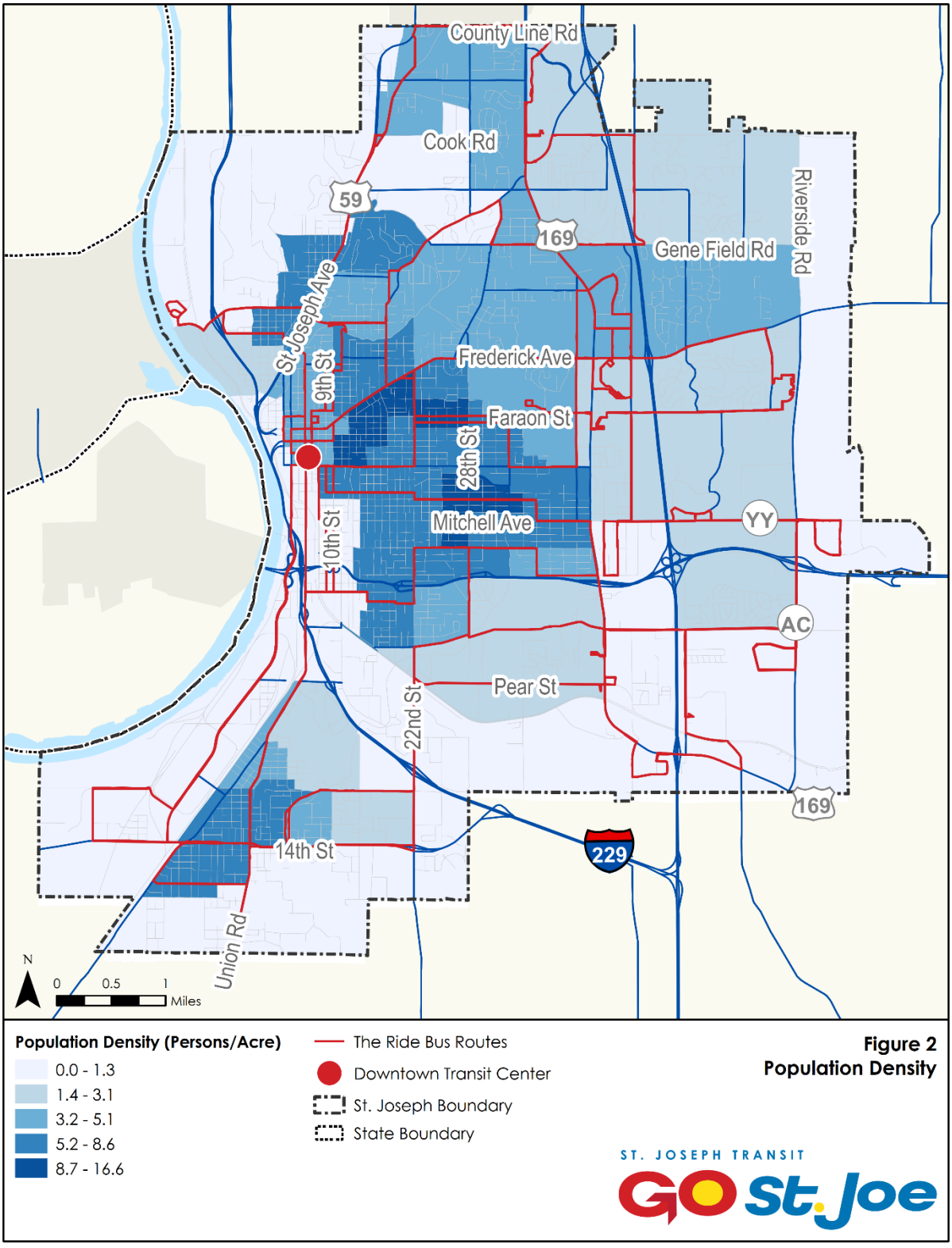
Population Density

Population data was mapped at a block group level to identify density per acre. **Figure 2** displays dark shaded areas where a higher density calculation was observed. Population density is highest just east of the Downtown Transit Center and in the city center. Other areas of high population density include the southwest part of the city near King Hill Avenue and Alabama Street (near the Stockyards Industrial area) and just north of downtown along St. Joseph Avenue. In general, the existing transit routes intersect the highest density locations within the service area.

Employment Density

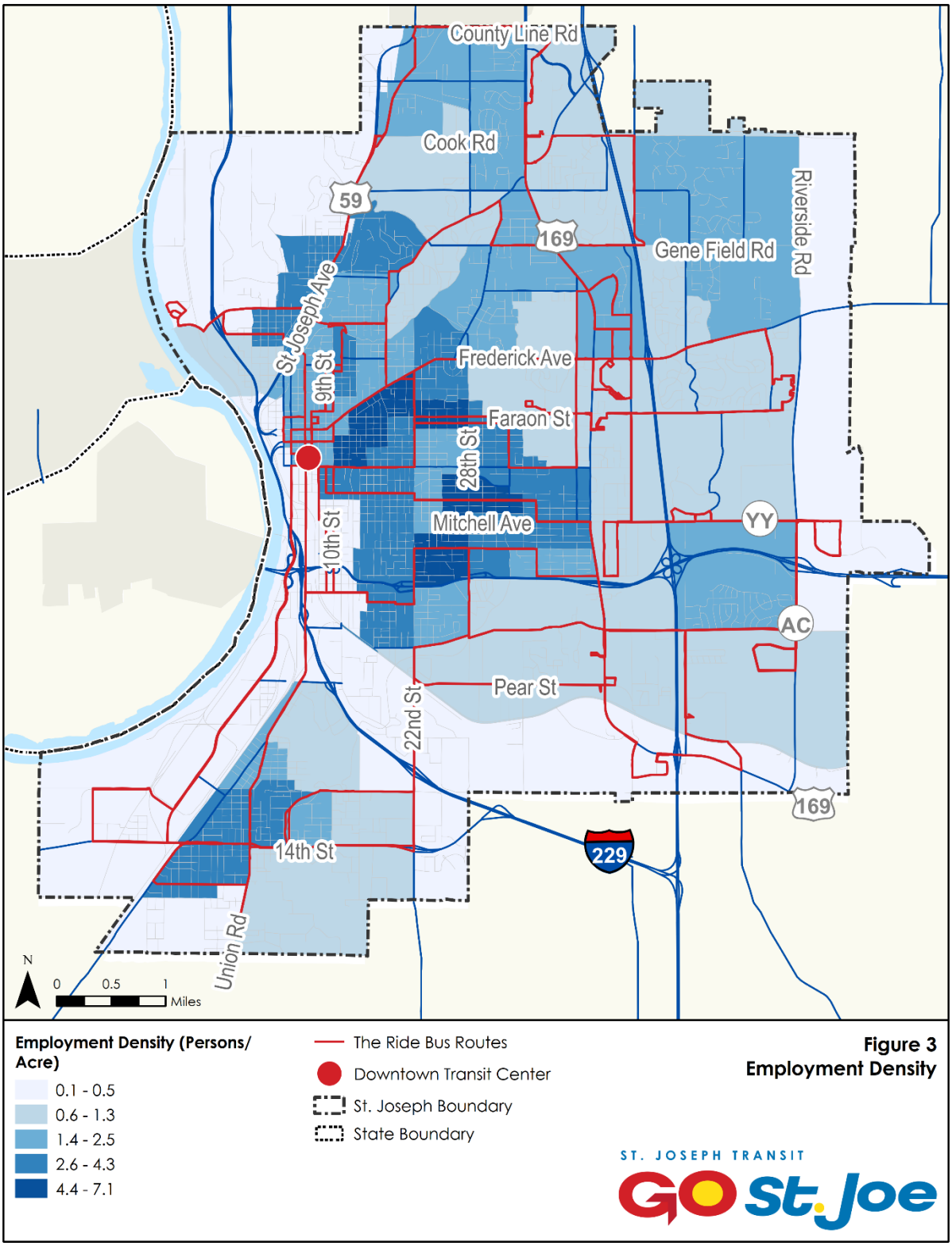
For some individuals, public transportation serves as a primary mode of travel to commute to and from work. **Figure 3** displays employment densities, using employment status information from the USCB (2019), within the St. Joseph Transit service area. The employment density trends generally reflect the population density results with high-density locations near the city center, the southwestern part of the city, and locations in the northeast portion of the city.

Figure 2: Population Density



Source: U.S. Census Bureau 2019 American Community Survey 5-Year Estimates

Figure 3: Employment Density



Source: U.S. Census Bureau 2019 American Community Survey 5-Year Estimates

Environmental Justice Populations

Per the Federal Transit Administration *Circular 4703.1 Environmental Justice Policy Guidance for Federal Transit Administration Recipients*, environmental justice analysis seeks to determine minority and/or low-income populations. This analysis is important to ensure that transit is being distributed fairly for all members of the community regardless of race, color, national origin, or income.

Table 1 provides an overview of ethnicity within the study area. Persons with White Alone ethnicity made up more than three-quarter of the entire population whiles those with Hispanic or Latino background came up second with 7.3% followed by Black or African American Alone (5.9%).

Table 1: Race and Ethnicity

Demographic Characteristic	Study Area Population Estimates*	Percent (%) of Population*
Total Population	75,913,	100
Hispanic or Latino Origin	5,521	7.3
White Alone	61,953	81.6
Black or African American Alone	4,466	5.9
American Indian and Alaska Native Alone	308	0.4
Asian Alone	910	1.2
Native Hawaiian and Other Pacific Island Alone	252	0.3
Some other race alone	14	0.0
Two or more races	2,489	3.3
Two races include some other race	17	0.0
Two races excluding some other race, and three or more races	2,472	3.3

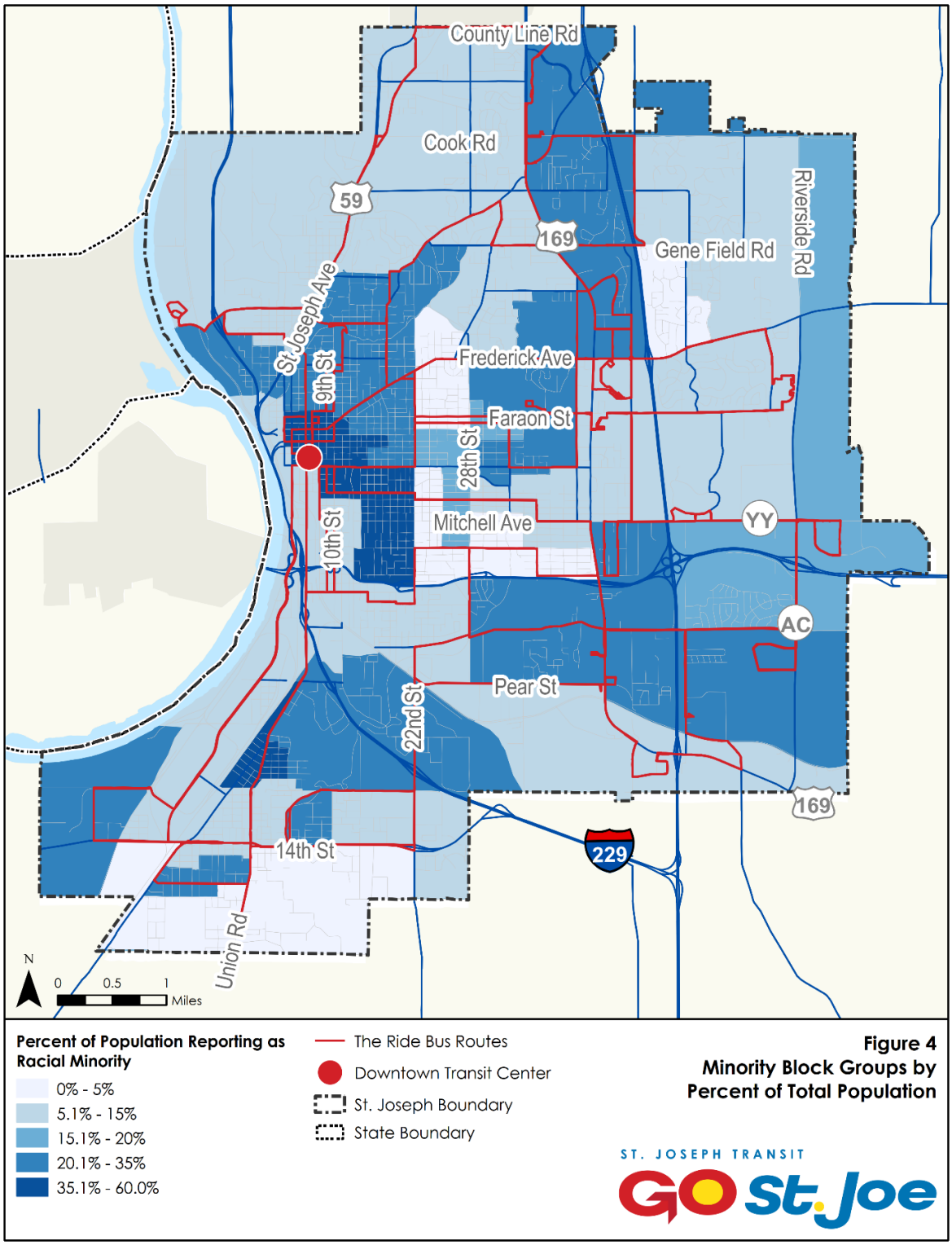
*Population totals and percentages show a minor discrepancy in total values. USCB captures data on Hispanic or Latino origin as an ethnicity separate from race data; therefore, duplication of counting occurs.
Source: U.S. Census Bureau 2019 American Community Survey 5-Year Estimates

Population data from the USCB ACS 5-year 2019 estimates were compiled to identify block groups where minority and/or low-income populations may be present. **Figure 4** displays block groups by race using categories defined for the ACS. For minority groups, these categories include:

- Black or African American
- American Indian and Alaska Native
- Asian
- Native Hawaiian and Other Pacific Islander
- Other Race
- Two or more races

The highest percentage of minority populations are located near the city's urban center; east and north of downtown. Approximately 58 percent of the population within the block group near Olivia Street reported being minority in race. Other high percentage locations are along major transportation corridors including in the north along I-29 (25 percent), Belt Highway (32 percent), and in the south along I-229 (24 percent).

Figure 4: Minority Block Groups by Percent of Total Population



Source: U.S. Census Bureau 2019 American Community Survey 5-Year Estimates

Figure 5 displays block groups by the percentage of total population reporting as Hispanic or Latino origin. Similar trends were observed as a high percentage of block groups exist near the urban center and along major transportation corridors on the east side of the city. Approximately, 40 percent near Olivia Street, 25 percent along the North Belt Highway, and 30 percent near King Hill Road and the stockyard's industrial areas.

Figure 6 displays poverty as a percent of the total population by block group within the study area. Similar to Figures 4 and 5, the highest percentages of persons reporting poverty status exist near the urban center and in locations east of downtown.

Transit Dependent Populations

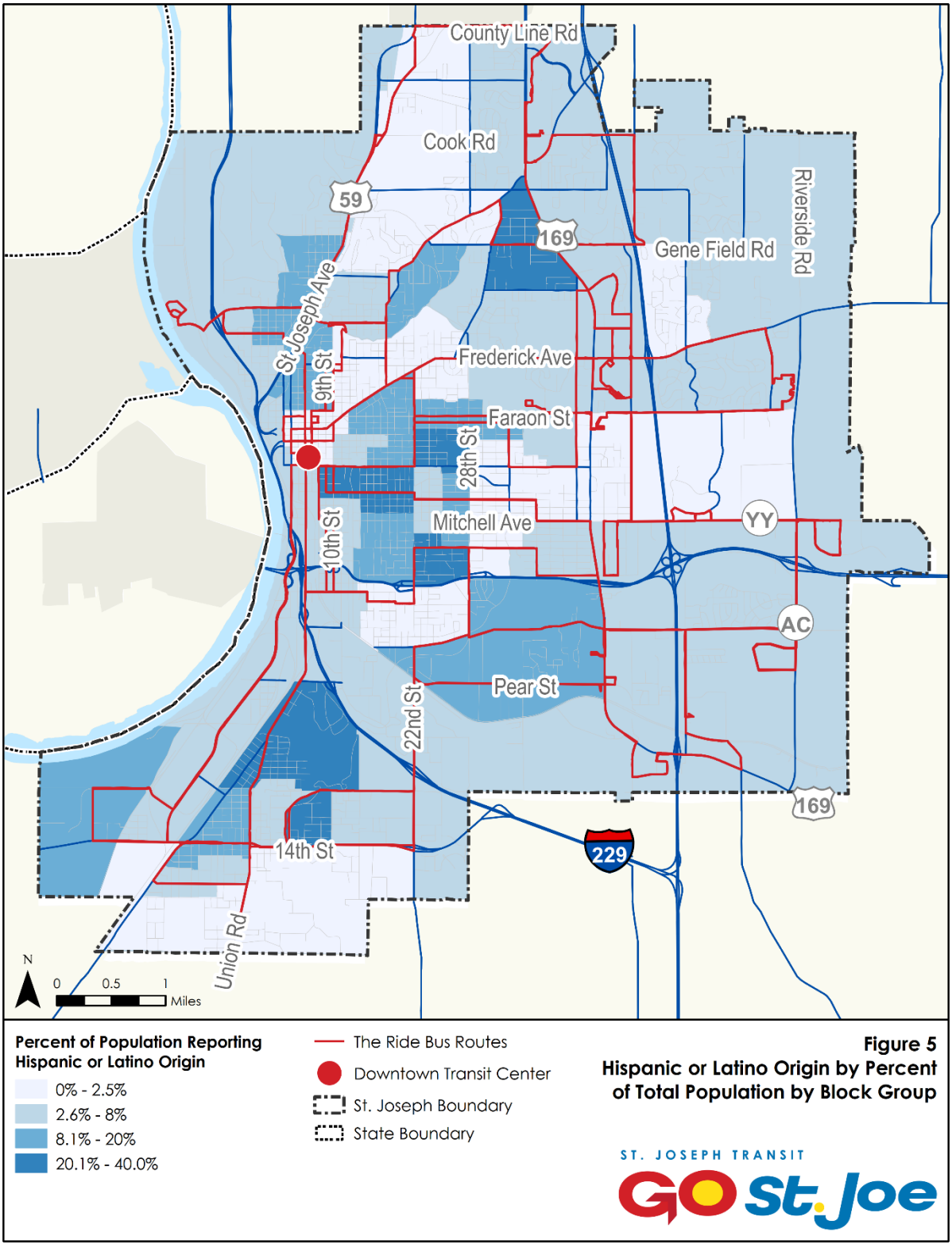
The Transit Dependency Index map is a composite of five USCB datasets including:

- Households without access to a vehicle
- Persons with disabilities
- Low-income (poverty status)
- Youth population (under 18 years of age)
- Elderly population (over 65 years of age)

This data is overlayed at a block group level and scored to identify areas where transit service may be an individual's primary form of transportation. The score is calculated by assigning weights to the natural breaks identified in the previous demographic categories. For transit planning purposes, the Transit Dependency Index provides a geographic representation of the datasetsto identify where compounding demographic trends may make mmobility difficultfor vulnerable populations.

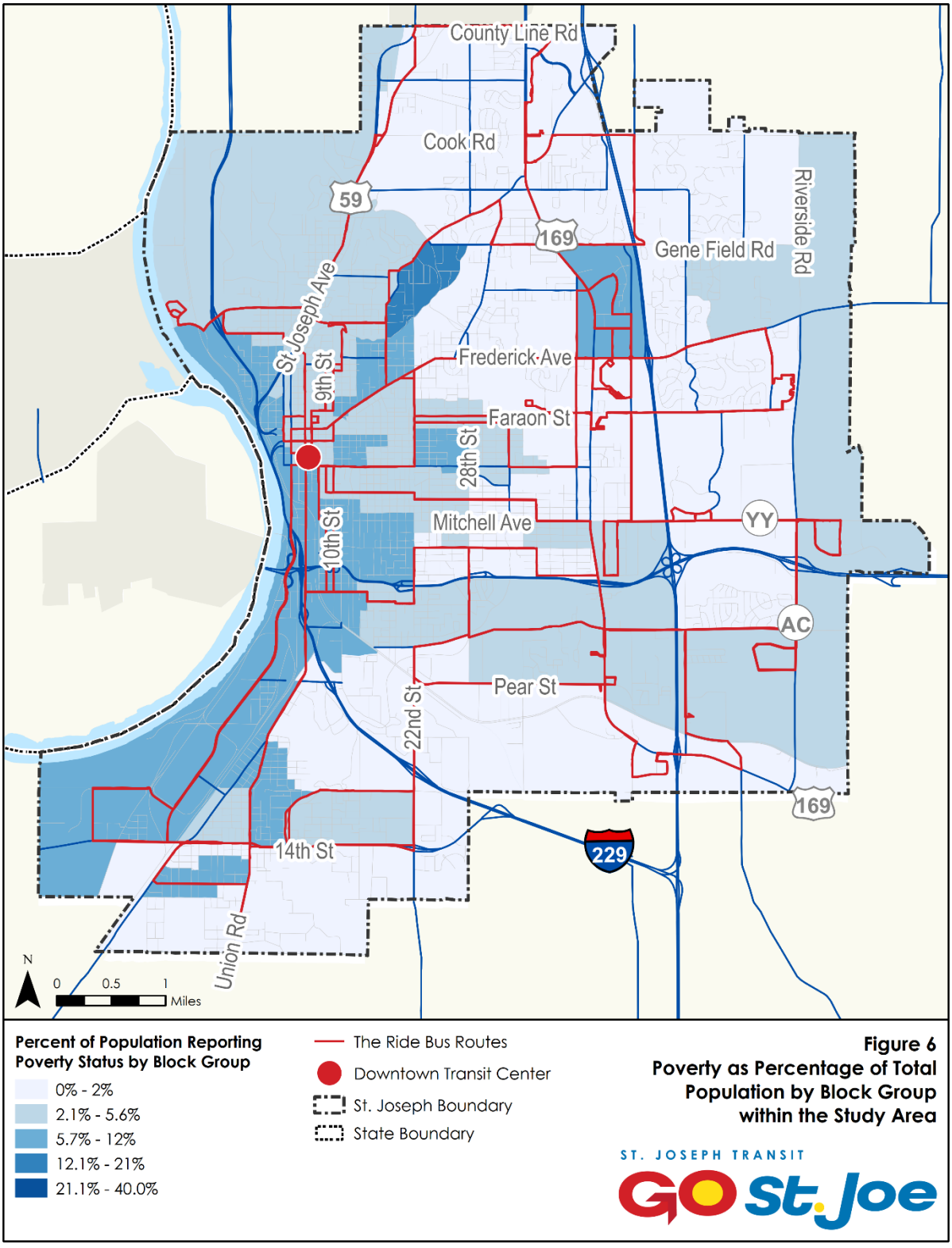
Figure 7 displays the results of the transit dependency analysis. The scoring results indicate that the hitransit-dependententendent populations are east of downtown, located east of the Belt Highway between Gene Field Road and Frederick Avenue. Currently, Routes 13 and 14 provide service to these areas.

Figure 5: Hispanic or Latino Origin by Percent of Total Population by Block Group



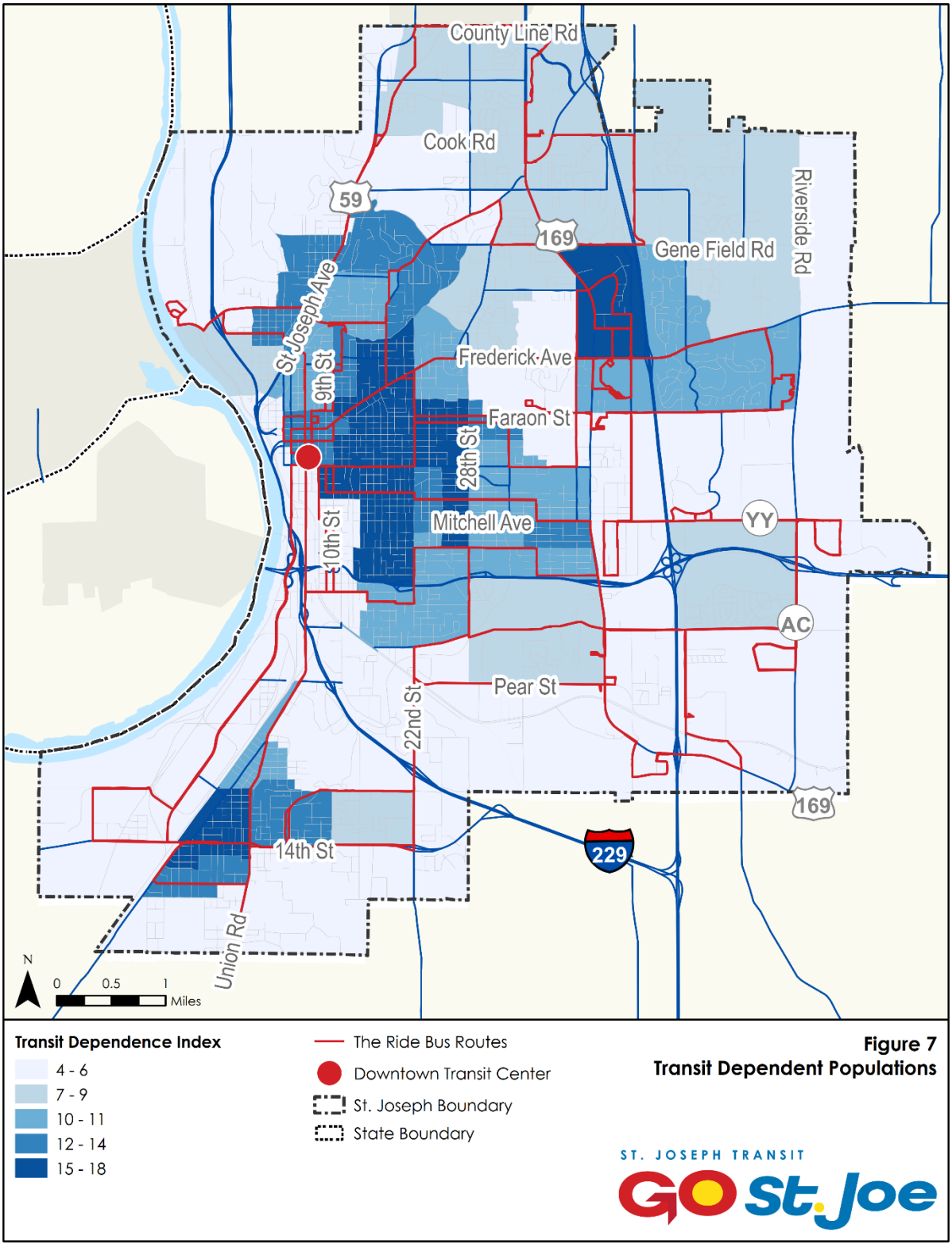
Source: U.S. Census Bureau 2019 American Community Survey 5-Year Estimates

Figure 6: Poverty as Percentage of Total Population by Block Group within the Study Area



Source: U.S. Census Bureau 2019 American Community Survey 5-Year Estimates

Figure 7: Transit Dependent Populations



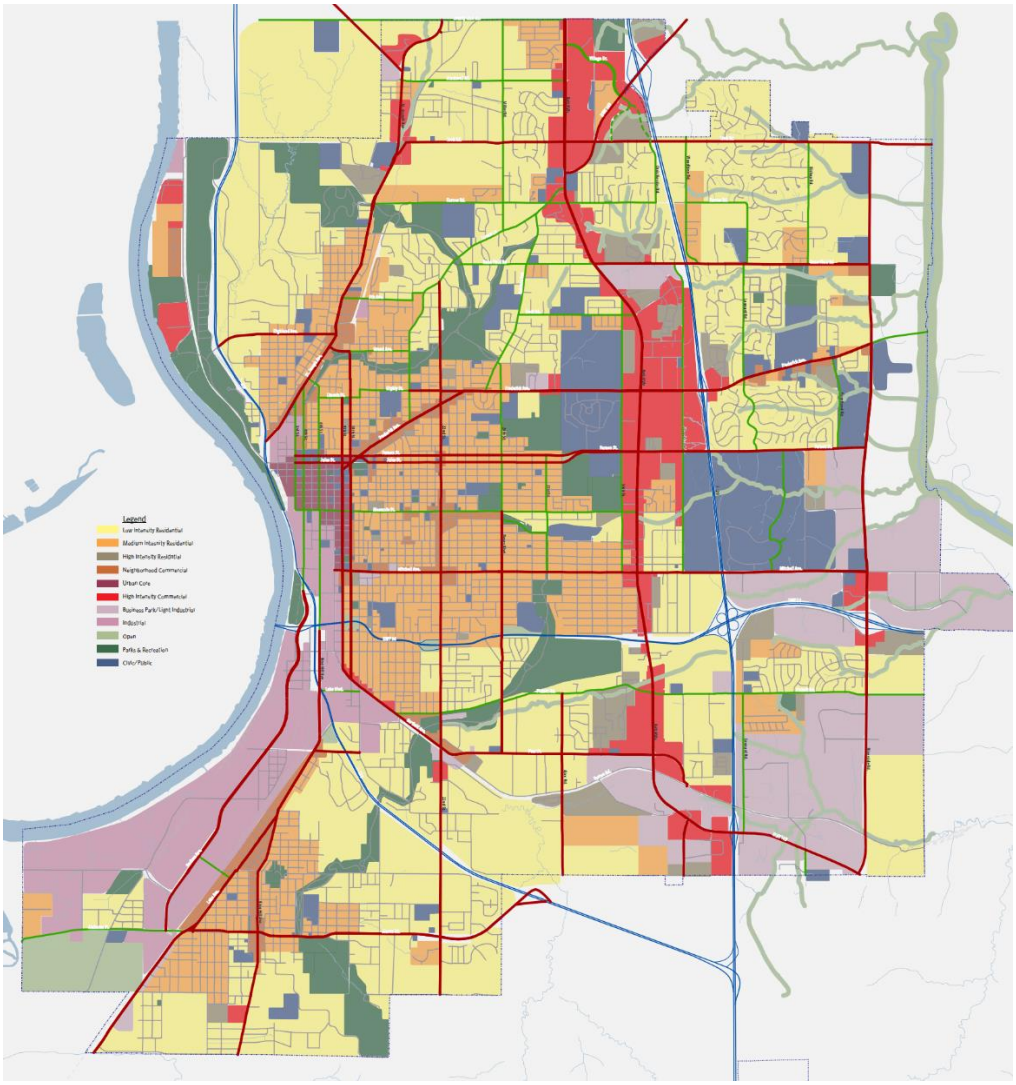
Source: AECOM, 2021.

Land Use Assessment

The *City of St. Joseph's Land Use Plan*, adopted in 2022 (**Figure 8**), provides an overview of the land-use patterns in the city. Commercial uses typically are found along major corridors including the Belt Highway and I-229 near downtown. Industrial zones extend along the riverfront, from downtown to the Stockyards Industrial area, and along major transportation corridors including the east side of the City, in proximity to the US 36 and Riverside Road (Route AC) corridors.

When compared to the results of the demographic analysis, many block groups that scored high for potential transit dependence are in medium-density residential areas near the urban center. Notably, a few isolated pockets of high-density residential is in the eastern portion of the city, which coincides with areas having a high transit dependence index.

Figure 8: St. Joseph Land Use Plan



Source: City of St. Joseph; Future Land Use Plan 2022.

Review of Relevant Studies

The following review of relevant studies helps support the development of the TDP. A clear understanding of regional transportation initiatives allows St. Joseph Transit to develop complementary short- and long-term services to support other local and regional mobility initiatives.

2045 Metropolitan Transportation Plan St. Joseph Area Transportation Study Organization (2019)

The Metropolitan Transportation Plan (MTP) is the official Long Range Transportation Plan document outlining the transportation vision for the St. Joseph metropolitan planning area (MPA) through the year 2045. The MTP sets goals, and priorities, and "…guides the development of an integrated, multimodal transportation system that facilitates the efficient movement of people and goods via all transportation modes, supports community development, and advances social and environmental goals…"

The MTP was developed in collaboration with technical planning, public input, and stakeholder outreach to identify priority projects and implementation support. The MTP goals include:

- Provide a safer transportation system that balances the travel needs of all users, including the general public and area businesses Keep all travelers safe, no matter the mode of transportation
- Ensure the St. Joseph metropolitan area's economic growth and competitiveness by providing a safe, secure, reliable, and efficient transportation system
- Supports local and regional transportation and land use planning needs
- Promote alternative transportation options for area residents and employees that are reliable and accessible to all users
- Develop innovative funding sources and strategies for transportation improvements
- Improve transportation and land use coordination
- Protect the environment, promote energy conservation, increase safety and improve the quality of life
- Preserve and maintain the existing transportation system
- Support community involvement in the transportation planning process

The MTP identifies four core concepts to enhance transit services within the St. Joseph MPA. These include Belt Highway Improvements, Growth Corridor/Areas, Regional Service and overall Service Enhancements. Details about goals for each concept are listed below:

- *Belt Highway Improvements:* add a new north/south route on Belt Highway and a new transit center to allow for expanded service coverage to growing areas on the fridge of the city's urbanized area.

- *Growth Corridor/Areas:* add bus service to Riverside Road and Cook Road to support service expansion. Additionally, add new and enhanced services to Savannah, Elwood, and Wathena.
- *Regional Service:* provide service to Kansas City to address the growing demand of travelers between St. Joseph and Kansas. Additionally, expand park-n-ride facilities throughout the area to promote carpooling and support regional transit service to Kansas City.
- *Service Enhancements:* provide later evening/earlier morning service to industrial areas of St. Joseph to support shift workers. Additionally, enhance Missouri Western State University's service to address increased interest that has been expressed by students and staff at the university.

St. Joseph Area Coordinated Public Transit – Human Services Transportation Plan

The *St. Joseph Area Coordinated Public Transit – Human Services Transportation Plan* was developed in conjunction with the development of the SJATSO 2045 MTP. The *Coordinated Public Transit – Human Services Transportation Plan* identifies existing public, private and nonprofit transportation services in the area. It also identifies the transportation needs of individuals with disabilities, seniors, and individuals with low incomes, and provides strategies to meet future mobility needs of area residents.

The plan includes strategies and recommendations to address transportation needs and service gaps. Core strategies that directly relate to St. Joseph Transit services include:

- Explore expanded weekend services, including adding Sunday service
- Expand regional transit services to Kansas City, especially for medical-related trips
- Study fixed-route deviations to make sure they did not impact overall fixed-route operations and on-time performance
- Improve sidewalk connectivity and conditions
- Explore adding a north-south fixed-route and a relocated transit center to provide improved service coverage and faster travel times by eliminating the need to transfer downtown
- Explore opportunities to enhance coordination between service and dispatch

2018 Missouri Department of Transportation Long Range Transportation Plan Update: Technical Memorandum

The MoDOT statewide LRTP documents demographic trends with an aging population and movement of people from rural to urban areas as trends that are expected to continue in the future. These trends illustrate the potential need for increased transit investment. However, the LRTP begins by noting that, "Less than two percent of Missourians use public transit for commuting compared to the national average of five percent." The plan states that transit is vital to those who do not have an automobile and rely on public transportation for everyday commuting. Comparatively, passenger rail (number of trips) in the state has continued to increase since 2013.

Recommendations for multimodal transportation options are listed under the category of "Unfunded Needs" and while no specific project recommendations are included, Section 6.2.6 Improve Multimodal Transportation Options, outlines the potential demand for improving multimodal options and highlights that little state funding goes toward supporting these

transportation options. The section suggests that investment is necessary for economic development, safety, and access opportunities to for all Missourians.

St. Joseph Area Active Transportation Plan: A Complete Streets Roadmap

The *St. Joseph Area Active Transportation Plan: A Complete Streets Roadmap* aims to ensure that the entire right of way is designed and operated to allow for safe access for all users. The plan emphasizes the importance that pedestrians, bicyclists, motorists, and transit riders should be able to safely move along and use the street network.

The plan further outlines the goals of SJATSO to support complete streets. Goal 1 aims to "provide safe and comfortable routes for walking, bicycling, and public transportation to increase the use of these modes of transportation." The plan also encourages transit-oriented development that "provides public transportation in close proximity to employment, housing, schools, retailers and other services and amenities."

Increasing safety for bicyclists, pedestrians, and transit riders is also specifically identified as a priority. The plan supports physical improvements that will make an entire transit ride safer – including accessing bus stops by walking and biking. The plan further recommends developing safety solutions at intersections where collisions and/or injuries have occurred.

Finally, a major focus of the plan is to make transit an interconnected part of the entire St. Joseph transportation network. Fist-mile/last-mile improvements are recommended, including references to ensuring safe and accessible pedestrian routes to transit stops and improving bicycle access at transit stops.

SJATSO Public Participation Plan

The SJATSO *Public Participation Plan* outlines methods to engage the public during the transportation planning and decision-making process. The plan identifies opportunities to inform the public regarding ongoing planning activities and includes various methods for how the public can participate or be kept up to date regarding various planning studies.

SJATSO strives to make the transportation planning process accessible to all to ensure sensitive populations are accommodated in the planning process. This includes Title VI populations, persons with disabilities, the Limited English Proficiency (LEP) population, the Environmental Justice populations, and other traditionally underserved communities/groups. The *Public Participation Plan* also documents where these communities are generally located in the area.

The project team followed the overarching principles of the *Public Participation Plan*; however, the TDP was developed during the COVID-19 pandemic which limited in-person outreach activities, and in-person meetings with key stakeholders. With this said, the project team was able to utilize virtual online meetings to conduct stakeholder outreach, and an in-person public open house was conducted in August 2021.

3. ROUTE SYSTEM OVERVIEW

This section provides an overview of St. Joseph Transit system, including its operating characteristics, fares, fleet inventory, system performance, and route profiles.

System Description

St. Joseph Transit has a service area within the city limits of St. Joseph, Missouri, and Elwood, Kansas (on-demand service). The system includes eight fixed-routes that operate at 60 minutes headways on weekdays and120-minutee headways on Saturdays utilizing 16 vehicles in peak pullout. In addition, there are three fixed-routes (routes 19, 20, 21) that operate on Saturdays only. There is no Sunday service.

Table 2 summarizes the overall route characteristics. All routes meet for a timed transfer at the Downtown Transit Center at :15 of the hour. The system also includes secondary transfer hubs where routes connect at North Walmart, Hy-Vee, and South Walmart.

The routes follow the same service patterns throughout the day, except for Route 15 which provides service to Special Industries instead of South Walmart on the 7:15 a.m. and 3:15 p.m. trips. Additionally, Routes 11 through 18 have modified 'snow routes' where alignments are adjusted during inclement weather to avoid difficult to serve, or potentially unsafe areas.

Table 2: Route Characteristics

Route	Weekday Service Hours	Weekday Frequency (minutes)	Saturday Service Hours	Saturday Frequency (minutes)	Peak Weekday Vehicle Requirement
11 St. Joseph Avenue	5:15 a.m. – 8:05 p.m.	60	9:15 a.m. – 6:15 p.m.	120	2
12 Lovers Lane	5:15 a.m. – 8:05 p.m.	60	9:15 a.m. – 5:15 p.m.	120	2
13 Frederick Avenue	5:15 a.m. – 9:05 p.m.	60	9:15 a.m. – 6:15 p.m.	120	2
14 Faraon/Jules	5:15 a.m. – 9:05 p.m.	60	9:15 a.m. – 5:15 p.m.	120	2
15 Missouri Western	5:15 a.m. – 9:05 p.m.	60	9:15 a.m. – 6:15 p.m.	120	2
16 Industrial Park	5:15 a.m. – 8:05 p.m.	60	9:15 a.m. – 5:15 p.m.	120	2
17 Stockyards	5:15 a.m. – 8:05 p.m.	60	9:15 a.m. – 6:15 p.m.	120	2
18 King Hill *	5:15 a.m. – 8:05 p.m.	60	9:15 a.m. – 5:15 p.m.	120	2
19 East	N/A	N/A	10:15 a.m. – 5:15 p.m.	120	1
20 North	N/A	N/A	10:15 a.m. – 5:15 p.m.	120	1
21 South	N/A	N/A	10:15 a.m. – 5:15 p.m.	120	1

Source: St. Joseph Transit

*Provides on-demand service to Elwood, Kansas.

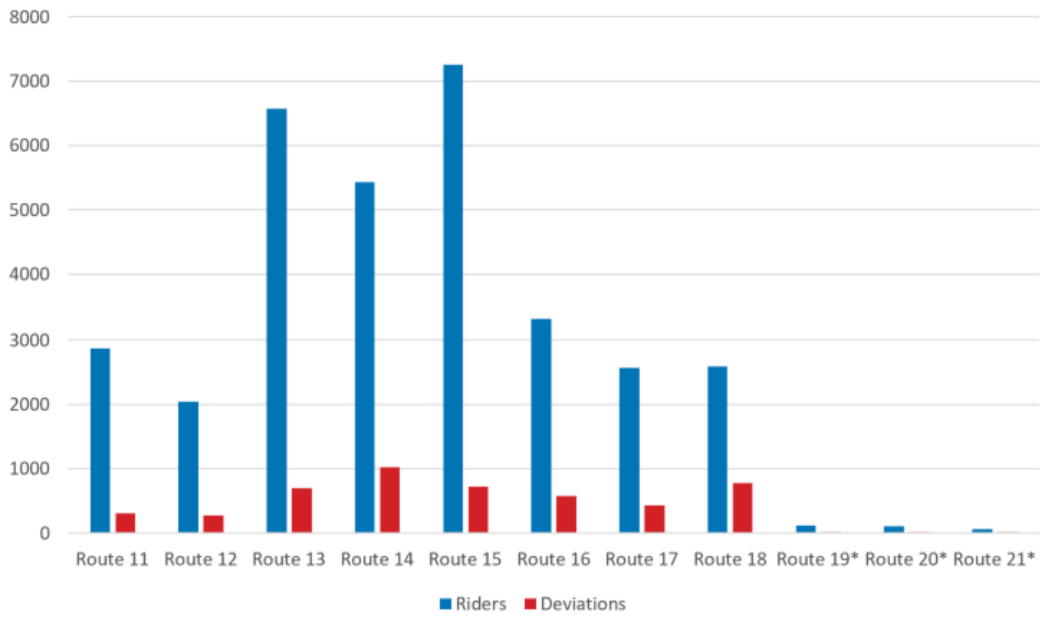
Route Deviations and On-Time Performance

St. Joseph Transit drivers may deviate ¾-mile from a fixed-route for passengers that call in advance to schedule a ride. Deviations may also be scheduled with the driver when a passenger boards the bus. The route deviation service meets the requirements of a paratransit service.

Due to the extra time built into the schedule to allow for deviations, St. Joseph Transit can adhere to designated time points and schedules. Overall, on-time performance for the fixed-route service averages 98%, with no route operating less than 95%. If a route is operating ahead of schedule, due to no or limited deviations on a trip, drivers are instructed to wait at designated stops to adhere to the posted schedule.

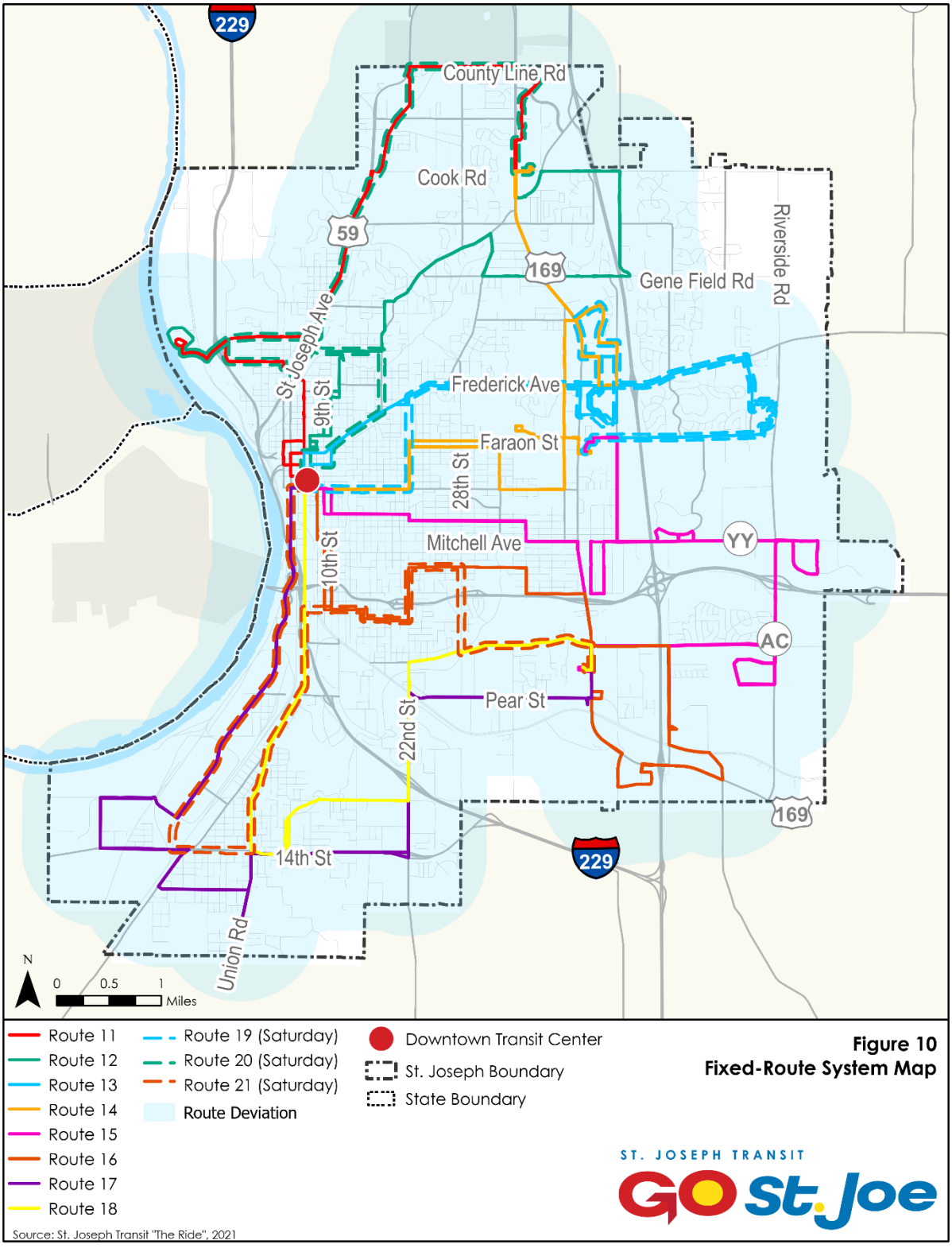
Figure 9 illustrates the average monthly ridership and deviations for all fixed-routes from 2019 - 2020. For weekday routes, Route 12 has the fewest deviations with 277 while Route 14 has the most with 1,024 deviations. Route 15 and Route 13 had the most riders, with 7,254 and 6,574, respectively. Deviations on Saturday-only trips are low, generally 15 or fewer. **Figure 10** displays the system map of the fixed-route network.

Figure 9: Ridership and Deviations, by Route (February 2019 – February 2020)



**Saturday-only routes (Route 19 has 20 deviations; Route 20 has 10 deviations; Route 21 has 17 deviations)*
Source: St. Joseph Transit, February 2019 through February 2020
Note: Average of monthly ridership and deviations from February 2019 through February 2020 (13 months total) was included in this table.

10: Fixed-Route System Map



Source: St. Joseph Transit, 2021

Fleet

The St. Joseph Transit fleet consists of 26 Gillig 30' buses and one Ford 15-passenger van (cutaway vehicle). 90% of the fleet includes 2019 or 2020 models. St. Joseph Transit also operates four support vehicles including a Dodge Caravan van, a Nissan Quest van, a pickup truck, and a Ford van. **Table 3** summarizes the characteristics of St. Joseph Transit's fleet.

Table 3: Fleet Inventory

Vehicle ID	Type	Year	Make	Model	Seating/Wheelchair
1242	Fixed	2012	Gillig	Lowfloor	19/2
1243	Fixed	2012	Gillig	Lowfloor	19/2
1744	Fixed	2017	Ford	Cutaway	12/2
1945	Fixed	2019	Gillig	Lowfloor	19/2
1946	Fixed	2019	Gillig	Lowfloor	19/2
1947	Fixed	2019	Gillig	Lowfloor	19/2
1948	Fixed	2019	Gillig	Lowfloor	19/2
1949	Fixed	2019	Gillig	Lowfloor	19/2
1950	Fixed	2019	Gillig	Lowfloor	19/2
1951	Fixed	2019	Gillig	Lowfloor	19/2
1952	Fixed	2019	Gillig	Lowfloor	19/2
1953	Fixed	2019	Gillig	Lowfloor	19/2
2054	Fixed	2020	Gillig	Lowfloor	19/2
2055	Fixed	2020	Gillig	Lowfloor	19/2
2056	Fixed	2020	Gillig	Lowfloor	19/2
2057	Fixed	2020	Gillig	Lowfloor	19/2
2058	Fixed	2020	Gillig	Lowfloor	19/2
2059	Fixed	2020	Gillig	Lowfloor	19/2
2060	Fixed	2020	Gillig	Lowfloor	19/2
2061	Fixed	2020	Gillig	Lowfloor	19/2
2062	Fixed	2020	Gillig	Lowfloor	19/2
2063	Fixed	2020	Gillig	Lowfloor	19/2
2064	Fixed	2020	Gillig	Lowfloor	19/2
2065	Fixed	2020	Gillig	Lowfloor	19/2
2066	Fixed	2020	Gillig	Lowfloor	19/2
2067	Fixed	2020	Gillig	Lowfloor	19/2
2068	Fixed	2020	Gillig	Lowfloor	19/2

Source: St. Joseph Transit, October 2020

Fares

The one-way cash regular/full fare is $1.00. Discounted fares are available for persons with disabilities, youth and seniors. A monthly pass ($40.00) and a 10-trip ticket book can be purchased in advance at the St Joseph Transit Office, City Hall, and Hy-Vee. Transfers are free with the purchase of a fare and route deviations cost an extra 50 cents per trip. St. Joseph Transit also offers mobile ticket payment through the Transit Token app. Passengers have the option to purchase single-ride ride tickets or passes on the app prior to boarding the bus. **Table 4** illustrates the fare pricing for St. Joseph Transit.

Table 4: Fare Pricing

	Cash Fares	Monthly Pass	10-Trip Ticket Book
Regular/full Fare	$1.00	$40.00	$10.00
Youth (age 6 - 18)	$0.75	$30.00	$7.50
Children under 6	FREE	FREE	FREE
Seniors (over age 60)	$0.50	$20.00	$5.00
Disabled	$0.50	$20.00	$5.00

Source: St. Joseph Transit, 2021

Current Route Profiles

The following pages summarize the operating characteristics, key areas served, and ridership performance for St. Joseph Transit's fixed-route service. Each route is also ranked to demonstrate how each individual route is performing compared to the overall system. In addition, a map of each route is provided.

Route 11 – St. Joseph Avenue

Route 11, shown in **Figure 11**, operates between the Downtown Transit Center and North Walmart at Cook Road and North Belt Highway. The route travels north through downtown to the St. Jo Frontier Casino before traveling east on Highland Avenue. The route continues north and east along St. Joseph Avenue and Savannah (US 59) to Belt Highway where it travels south to North Walmart. The route operates Monday through Friday from 5:15 a.m. to 8:05 p.m. and Saturday from 8:15 a.m. to 6:15 p.m. There is no Sunday service.

Key Destinations/Area of Service

- St. Joe Frontier Casino
- North Belt Highway retail corridor
- North Walmart

Connecting Routes

Downtown: 12, 13, 14, 15,16, 17, 18
North Walmart: 12, 14

At a Glance

Data is from February 2020

Average Boardings (rank)
2,715 (5/11)

Passengers per Hour (rank)
4.5 (5/11)

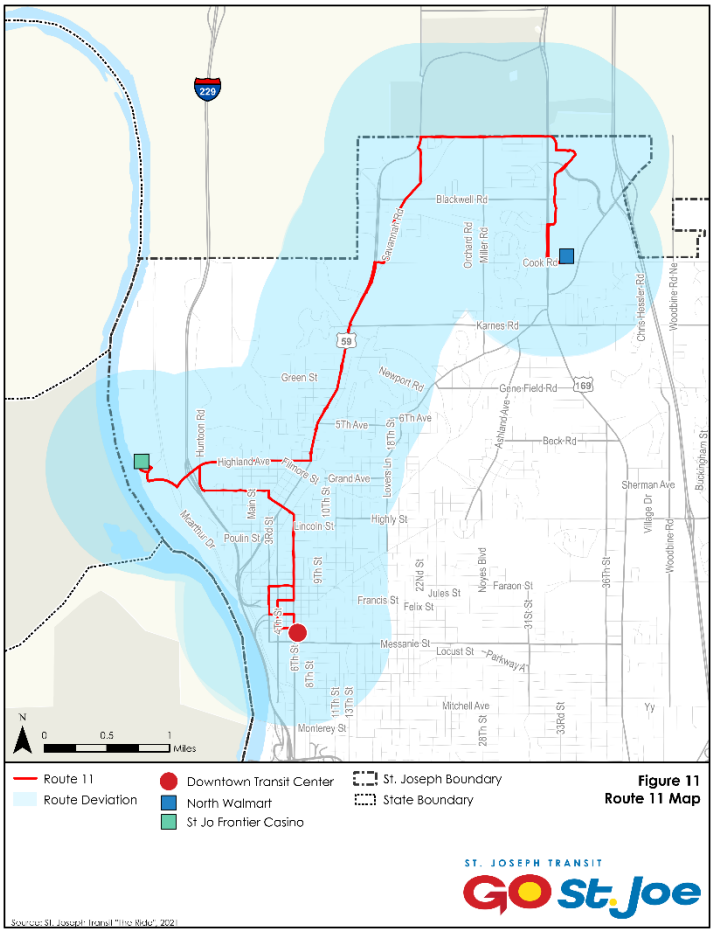
Span of Service (Monday – Friday)
5:15 a.m. – 8:05 p.m.

Span of Service (Saturday)
8:15 a.m. – 6:15 p.m.

Peak Frequency (Monday – Friday)
60 minutes

Off-Peak Frequency (Saturday)
120 minutes

Figure 11: Route 11 – St. Joseph Avenue System Map



Route 12 – Lovers Lane

Route 12, shown in **Figure 12**, begins service at the Downtown Transit Center. The route travels north on Robidoux Street and northeast on Lovers Lane, east on Gene Field Road, north on Woodbine Road, and ends at the North Walmart at the intersection of Belt Highway and Cook Road. Route 12 operates Monday through Friday from 5:15 a.m. to 8:05 p.m. and Saturday from 8:15 a.m. to 5:15 p.m. There is no Sunday service.

Key Destinations/Area of Service

- North K-Mart
- Lovers Lane
- North Walmart

Connecting Routes

Downtown: 11, 13,14,15,16,17,18
North Walmart: 11, 14

At a Glance

Data is from February 2020

Average Boardings (rank)
1,598 (8/11)

Passengers per Hour (rank)
2.8 (10/11)

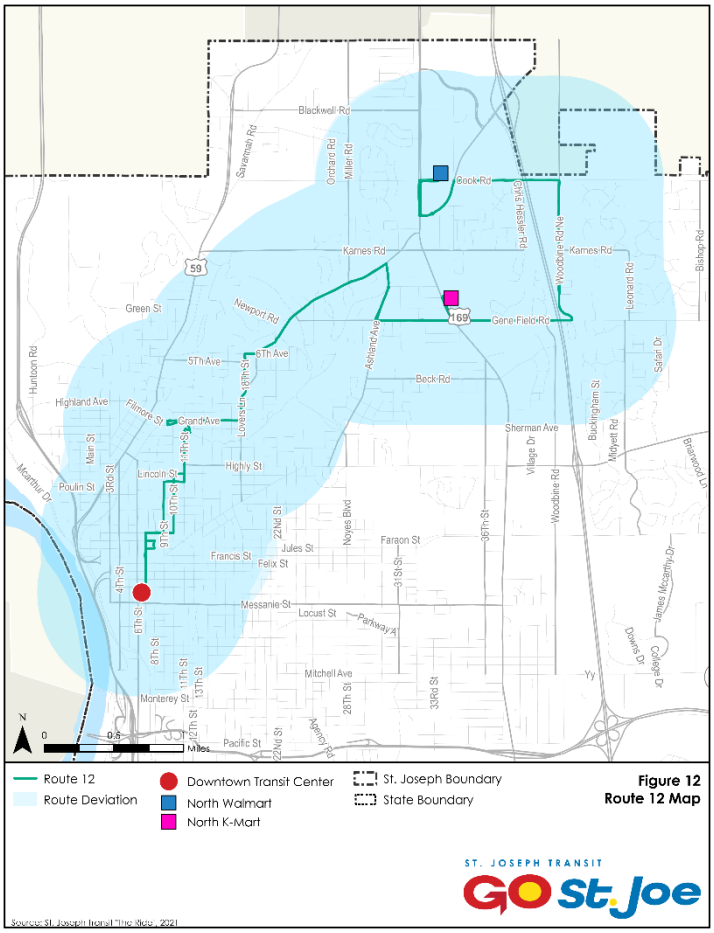
Span of Service (Monday – Friday)
5:15 a.m. – 8:05 p.m.

Span of Service (Saturday)
8:15 a.m. – 5:15 p.m.

Peak Frequency (Monday – Friday)
60 minutes

Off-Peak Frequency (Saturday)
120 minutes

Figure 12: Route 12 – Lovers Lane System Map



Route 13 – Frederick Avenue

Route 13, shown in **Figure 13**, begins service at the Downtown Transit Center. The route travels north and east along Frederick Avenue, then travels south on Heartland Road to Faraon Street where it travels west to the Hy-Vee at North Belt Highway (US 169). The route serves key destinations including the library and the Mosaic Medical Center. Route 13 operates Monday through Friday from 5:15 a.m. to 9:05 p.m. and Saturday from 8:15 a.m. to 6:15 p.m. There is no Sunday service.

Key Destinations/Area of Service

- East Hills Mall
- East Hills Library
- Mosaic Medical Center
- Hy-Vee

Connecting Routes

Downtown: 11, 12,14,15,16,17,18
Hy-Vee (North Belt Highway): 14, 15

At a Glance

Data is from February 2020

Average Boardings (rank)
5,796 (2/11)

Passengers per Hour (rank)
8.9 (2/11)

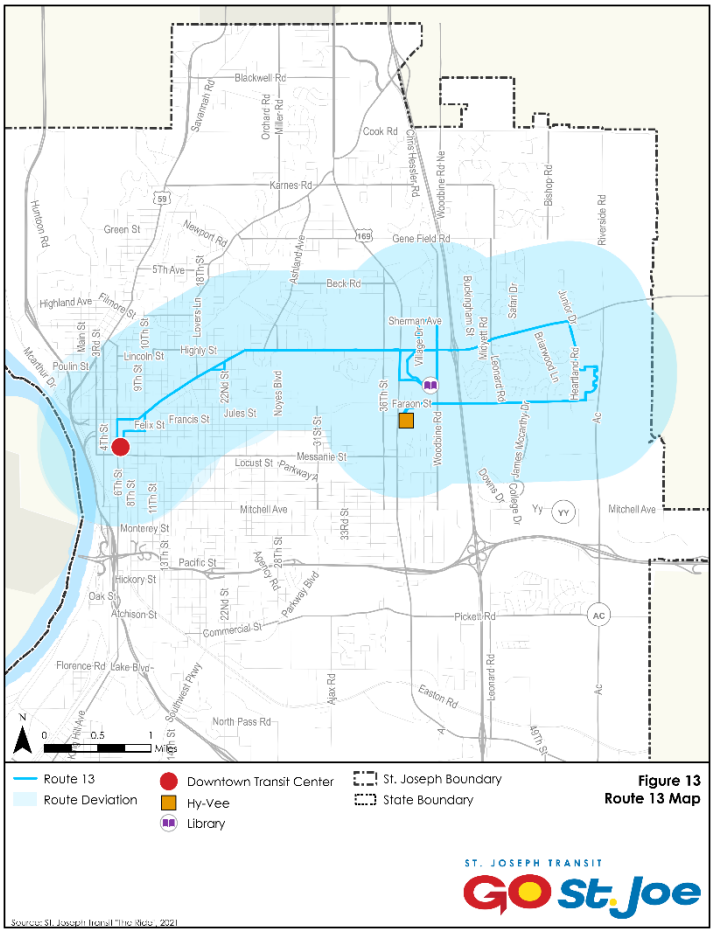
Span of Service (Monday – Friday)
5:15 a.m. – 9:05 p.m.

Span of Service (Saturday)
8:15 a.m. – 6:15 p.m.

Peak Frequency (Monday – Friday)
60 minutes

Off-Peak Frequency (Saturday)
120 minutes

Figure 13: Route 13 – Frederick Avenue System Map



Route 14 – Faraon/Jules

Route 14, shown in **Figure 14**, begins service at the Downtown Transit Center and travels east generally along Messanie Street, north up 22nd Street, east down Jules Street, and north along 36th Street. It should be noted that Faraon Street and Jules Streets, between 22nd and 32nd Streets, operate as a one-way pair. For westbound travel, Route 14 uses Faraon Street, and eastbound travel use Jules Street. The route serves key destinations including the St. Joseph Community Supervision Center and Hy-Vee before it ends at the North Walmart at the intersection of Belt Highway and Cook Road. Route 14 operates Monday through Friday from 5:15 a.m. to 9:05 p.m. and Saturday from 8:15 a.m. to 5:15 p.m. There is no Sunday service.

Key Destinations/Area of Service

- St. Joseph Community Supervision Center (Probation and Parole)
- Hy-Vee
- North Walmart

Connecting Routes

Downtown: 11, 12,13, 15,16,17,18
North Walmart: 11, 12

At a Glance

Data is from February 2020

Average Boardings (rank)
5,068 (3/11)

Passengers per Hour (rank)
7.6 (3/11)

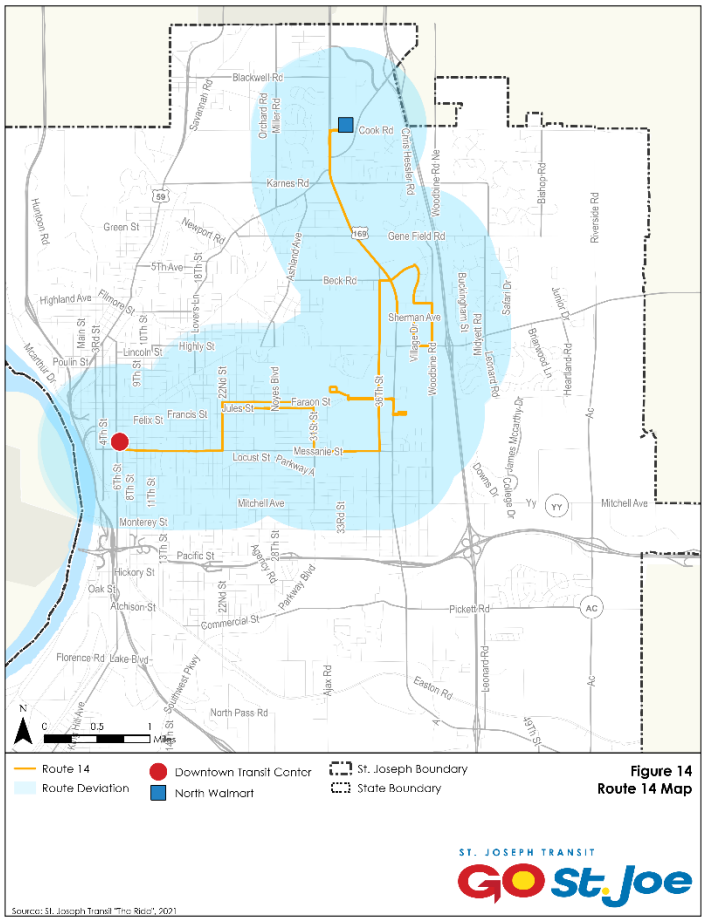
Span of Service (Monday – Friday)
5:15 a.m. – 9:05 p.m.

Span of Service (Saturday)
8:15 a.m. – 5:15 p.m.

Peak Frequency (Monday – Friday)
60 minutes

Off-Peak Frequency (Saturday)
120 minutes

Figure 14: Route 14 – Faraon/Jules System Map



Route 15 – Missouri Western

Route 15, shown in **Figure 15**, begins service at the Downtown Transit Center and travels east mainly on Olive Street and Lafayette Street before traveling south on 33rd Street. The route continues east on Mitchell Avenue and south along Belt Highway to the South Walmart at Pear Street. The route continues east along Pickett Road and Beechwood Drive, north on Riverside Road and Mitchell Avenue to Missouri Western State University before heading north on Woodbine Road to the Hy-Vee at the intersection of Faraon Street and Belt Highway (US 169). Route 15 operates Monday through Friday from 5:15 a.m. to 9:05 p.m. and on Saturday from 8:15 a.m. to 6:15 p.m. There is no Sunday service.

Key Destinations/Area of Service

- South Walmart
- Missouri Western State University
- Hy-Vee

Connecting Routes

Downtown: 11, 12, 13,14,16,17,18
South Walmart: 16,17,18
Hy-Vee: 13, 14

At a Glance

Data is from February 2020

Average Boardings (rank)
7,069 (1/11)

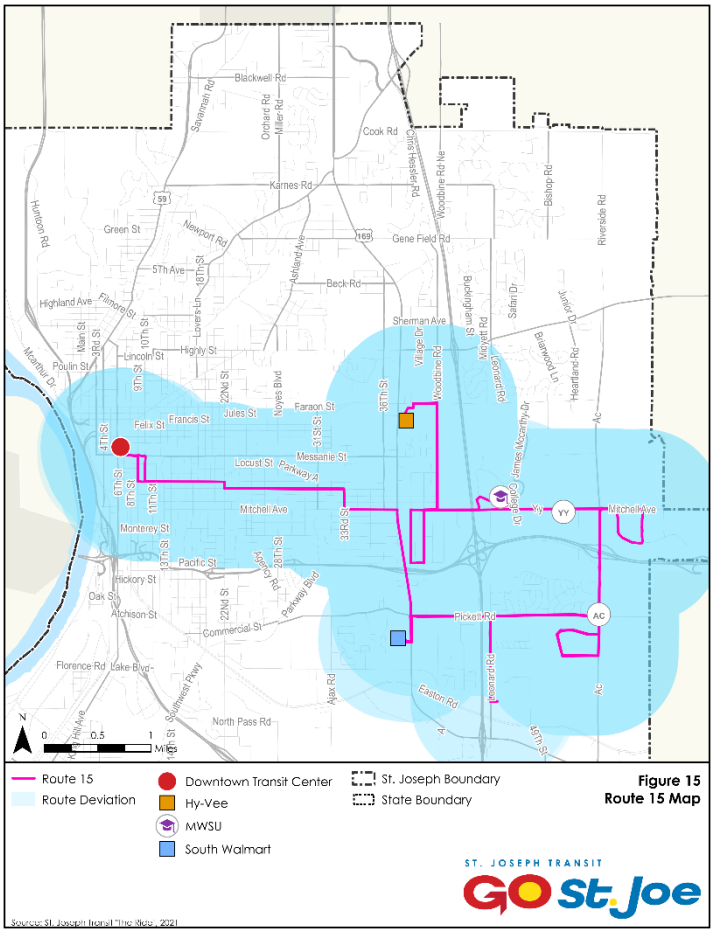
Passengers per Hour (rank)
10.0 (1/11)

Span of Service (Monday – Friday)
5:15 a.m. – 9:05 p.m.

Span of Service (Saturday)
8:15 a.m. – 6:15 p.m.

Peak Frequency (Monday – Friday)
60 minutes

Figure 15: Route 15 – Missouri Western System Map



Route 16 – Industrial Park

Route 16, shown in **Figure 16**, begins service at the Downtown Transit Center and then travels south on 9th Street and east mainly on Hickory and Walnut Streets. The route continues north on 22nd Street and east on Duncan Street and south on 33rd Street. The route then travels southeast to the industrial park area near Picket Road and 48th Street before connecting to the South Walmart on Belt Highway (US 169) near the intersection of Pear Street. Route 16 operates Monday through Friday from 5:15 a.m. to 8:05 p.m. and on Saturday from 8:15 a.m. to 5:15 p.m. There is no Sunday service.

Key Destinations/Area of Service

- Industrial Park
- South Walmart

Connecting Routes

Downtown: 11, 12, 13,14,15,17,18
South Walmart: 15,17,18

At a Glance

Data is from February 2020

Average Boardings (rank)
3,344 (4/11)

Passengers per Hour (rank)
5.4 (4/11)

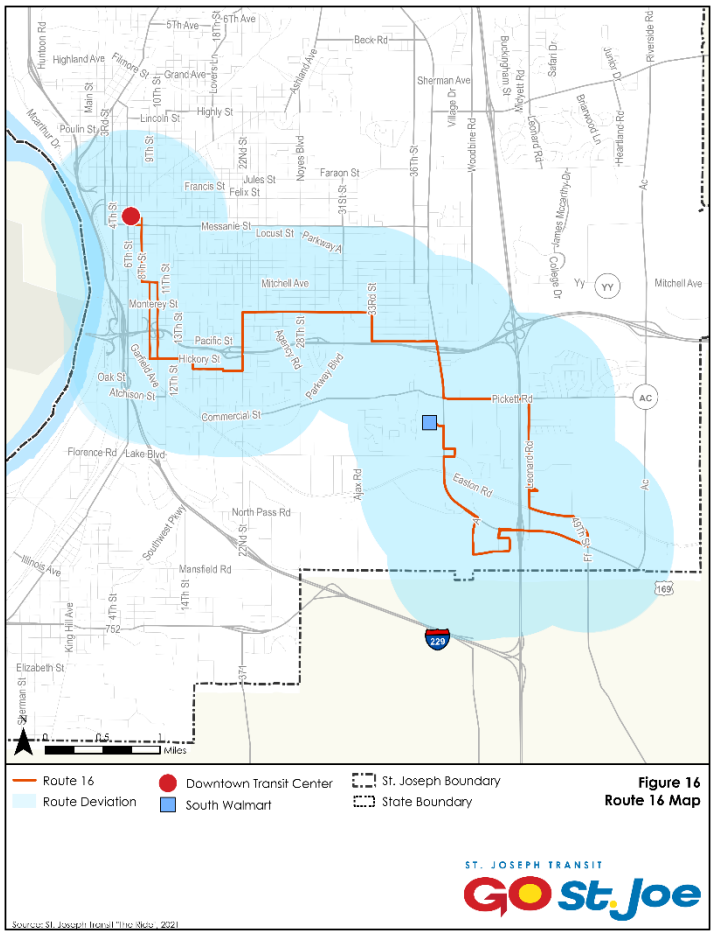
Span of Service (Monday – Friday)
5:15 a.m. – 8:05 p.m.

Span of Service (Saturday)
8:15 a.m. – 5:15 p.m.

Peak Frequency (Monday – Friday)
60 minutes

Off-Peak Frequency (Saturday)
120 minutes

Figure 16: Route 16 – Industrial Park System Map



Route 17 – Stockyards

Route 17, shown in **Figure 17**, begins service at the Downtown Transit Center and travels south along the Stockyard Expressway, and continues to the King Hall Shopping Plaza before heading east along Mason Road and north along 22nd Street to connect to the South Walmart on Belt Highway (US 169) near the intersection of Pear Street. Route 17 operates Monday through Friday from 5:15 a.m. to 8:05 p.m. and on Saturday from 8:15 a.m. to 6:15 p.m. There is no Sunday service.

Key Destinations/Area of Service

- King Hills Plaza
- Southwest St. Joseph
- South Walmart

Connecting Routes

Downtown: 11, 12, 13,14,15,16,18
South Walmart: 15, 16, 18

At a Glance

Data is from February 2020

Average Boardings (rank)
2,429 (6/11)

Passengers per Hour (rank)
3.7 (6/11)

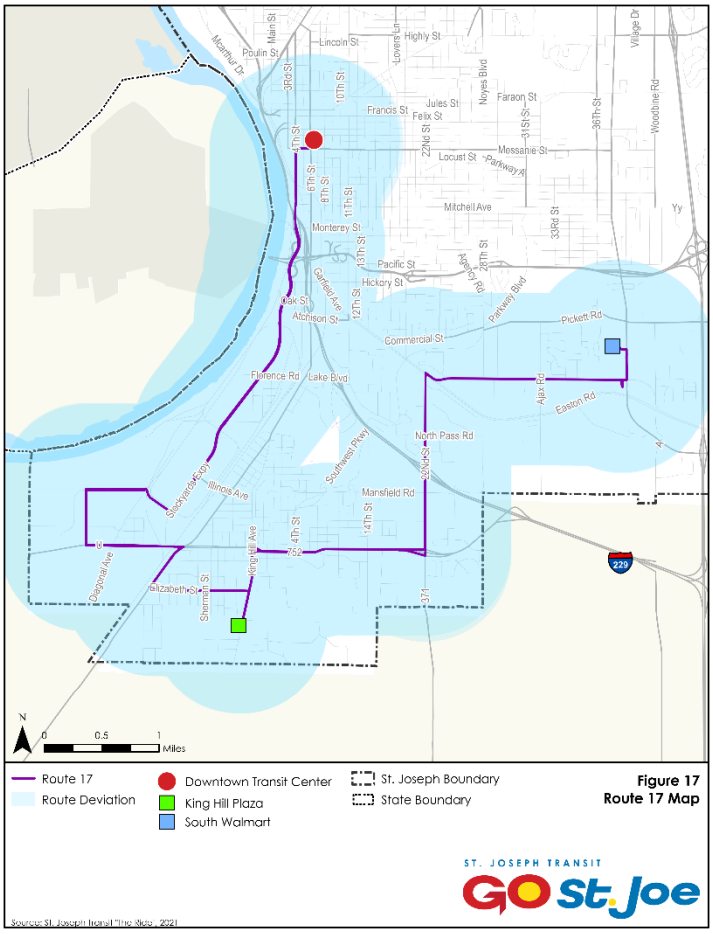
Span of Service (Monday – Friday)
5:15 a.m. – 8:05 p.m.

Span of Service (Saturday)
8:15 a.m. – 6:15 p.m.

Peak Frequency (Monday – Friday)
60 minutes

Off-Peak Frequency (Saturday)
120 minutes

Figure 17: Route 17 – Stockyards System Map



Route 18 – King Hill and Elwood On Demand

Route 18, shown in **Figure 18**, begins service at the Downtown Transit Center and travels south down 6th Street and King Hill Avenue, east on Alabama Street to the South Walmart along 22nd Street and Pear Street. Route 18 also provides on-demand service to Elwood, KS when rides are scheduled. The service deviates from downtown St. Joseph and serves Elwood via US 36. Route 18 operates Monday through Friday from 5:15 a.m. to 8:05 p.m. and on Saturday from 8:15 a.m. to 5:15 p.m. There is no Sunday service.

Key Destinations/Area of Service

- Benton High School
- South Walmart

Connecting Routes

Downtown: 11, 12, 13,14,15,16,17
South Walmart: 15, 16, 17

At a Glance

Data is from February 2020

Average Boardings (rank)
2,195 (7/11)

Passengers per Hour (rank)
3.6 (7/11)

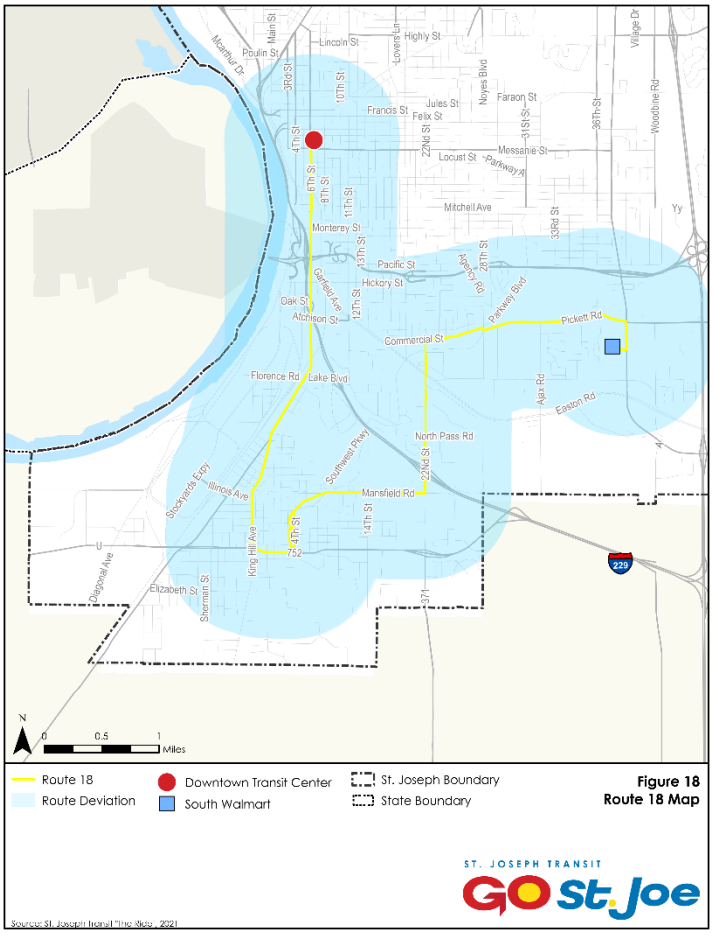
Span of Service (Monday – Friday)
5:15 a.m. – 8:05 p.m.

Span of Service (Saturday)
8:15 a.m. – 5:15 p.m.

Peak Frequency (Monday – Friday)
60 minutes

Off-Peak Frequency (Saturday)
120 minutes

Figure 18: Route 18 – King Hill and Elwood On Demand System Map



Route 19 – East (Saturday Only)

Route 19, shown in **Figure 19**, is a Saturday-only route that serves the central and eastern portions of St. Joseph that are served by Route 13 (Frederick) during weekday service. Route 19 begins service at the Downtown Transit Center and travels east down Angelique Street, east to 22nd Street, and north to Frederick Avenue. The route serves the East Hills Mall and travels east to the Mosaic Medical Center and west on Faraon Street to the Hy-Vee. The route operates from 10:15 a.m. to 6:15 p.m.

Key Destinations/Area of Service

- Hy-Vee
- Mosaic Medical Center
- East Hills Library
- East Hills Mall

Connecting Routes

N/A

At a Glance

Data is from February 2020

Average Boardings (rank)
105 (10/11)
(2 out of 3 for Saturday rank)

Passengers per Hour (rank)
3.5 (8/11)

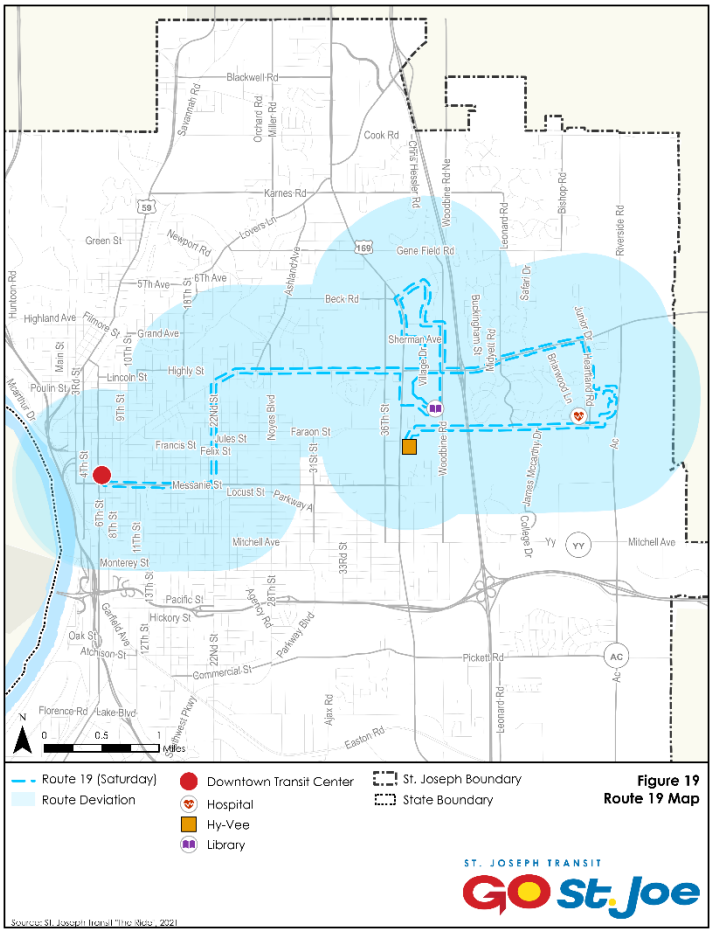
Span of Service (Monday – Friday)
n/a

Span of Service (Saturday)
10:15 a.m. – 6:15 p.m.

Peak Frequency (Saturday)
120 minutes

Off-Peak Frequency (Saturday)
120 minutes

Figure 19: Route 19 – East System Map



Route 20 – North (Saturday Only)

Route 20, shown in **Figure 20**, is a Saturday-only route that is served by Route 11 (St. Joseph Avenue) during weekday service. This route serves the city of St. Joseph and operates on the western and northern edges of the community. Route 20 begins service at the Downtown Transit Center and travels north to St. Jo Frontier Casino and continues north and east mainly on St Joseph Avenue (US 59), east to the North Walmart at the intersection of Belt Highway and Cook Road. The route operates from 10:15 a.m. to 6:15 p.m.

Key Destinations/Area of Service

- St. Joe Frontier Casino
- North Walmart

Connecting Routes

N/A

At a Glance

Data is from February 2020

Average Boardings (rank)
169 (9/11)
(1 out of 3 for Saturday rank)

Passengers per Hour (rank)
3.3 (9/11)

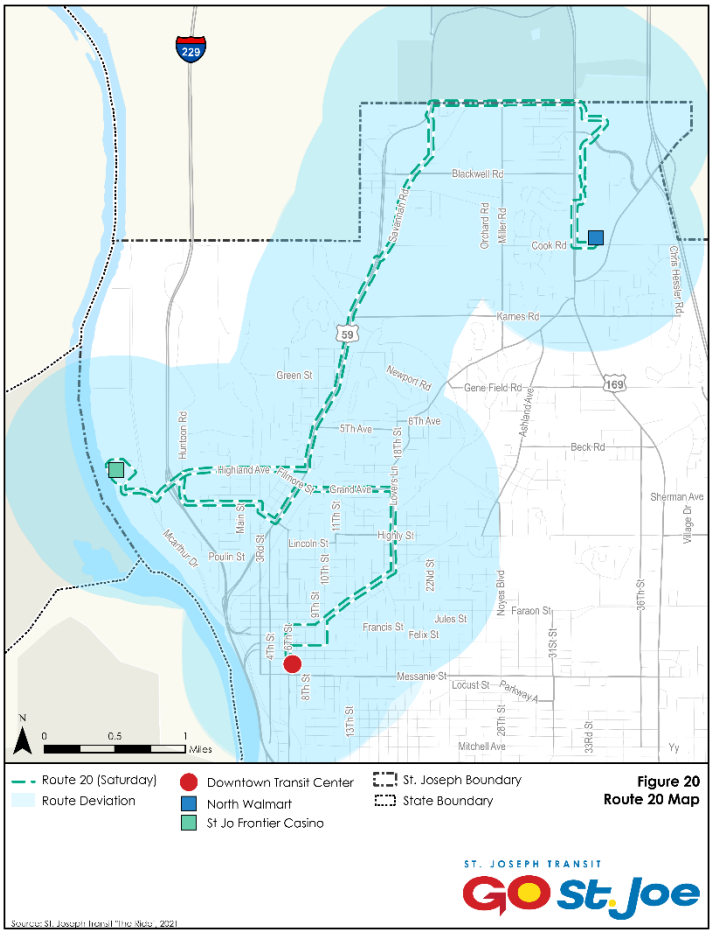
Span of Service (Monday – Friday)
n/a

Span of Service (Saturday)
10:15 a.m. – 6:15 p.m.

Peak Frequency (Saturday)
120 minutes

Off-Peak Frequency (Saturday)
120 minutes

Figure 20: Route 20 North System Map



Route 21 – South (Saturday Only)

Route 21, shown in **Figure 21**, is a Saturday-only route. This route serves the city of St. Joseph and operates in the southern areas of the community. The route serves similar areas as Route 18 (King Hill) during weekday service. Route 21 begins service at the Downtown Transit Center and travels south down 6th Street, east to 22nd Street and, connects to the South Walmart on Belt Highway (US 169) near the intersection of Pear Street. The route operates from 10:15 a.m. to 6:15 p.m.

Key Destinations/Area of Service

- South Walmart
- Southwest St. Joseph

Connecting Routes

N/A

At a Glance

Data is from February 2020

Average Boardings (rank)
69 (11/11)
(3 out of 3 for Saturday rank)

Passengers per Hour (rank)
1.8 (11/11)

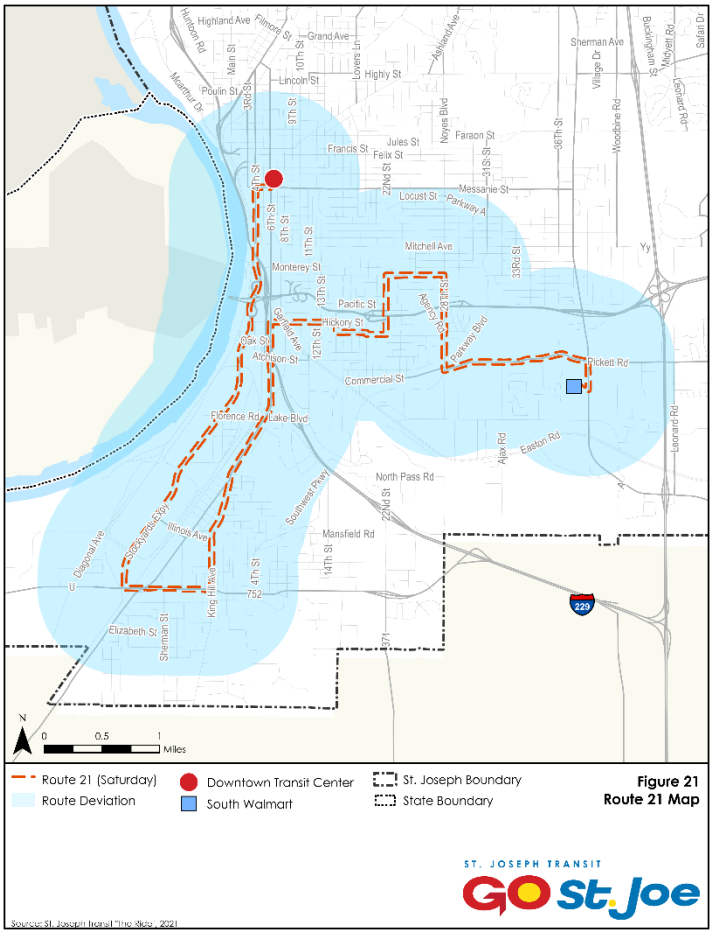
Span of Service (Monday – Friday)
n/a

Span of Service (Saturday)
10:15 a.m. – 6:15 p.m.

Peak Frequency (Saturday)
120 minutes

Off-Peak Frequency (Saturday)
120 minutes

Figure 21: Route 21 – South System Map



4. PERFORMANCE

This section provides a six-year overview of St. Joseph Transit's operational characteristics and performance from 2015 to 2020. At the time this study was being completed, the 2020 National Transit Database (NTD) data was not available. As such, 2020 data was obtained from St. Joseph Transit to track the most recent operational trends. As like all transit agencies across the country, St. Joseph Transit was significantly impacted by COVID-19 with ridership and productivity levels decreasing at varying levels throughout 2020 and into early 2021. By 2021 ridership stabilized to about 66% of pre-COVID levels.

Key Operating Characteristics

The following section provides an overview of key metrics for St. Joseph Transit's service and operations over the past six years. This assessment includes identifying trends for productivity measures such as passengers per revenue hour and cost-effectiveness measures such as cost per passenger. The data includes information from 2020 that shows the impacts of COVID on the service and how the data is an outlier compared with previous years. It is recommended that St. Joseph Transit staff continue to track the data to better understand the trends over time during and after COVID.

Passenger trips decreased significantly after March 2020 when the COVID-19 pandemic greatly impacted the agency – as well as transit agencies nationwide. After a low of approximately 14,700 passenger trips in April 2020, the number of trips gradually increased through the rest of 2020.

Table 5 shows that the overall system has been relatively consistent over the past six years with ridership increasing to its highest levels in 2018 with a slight decrease in 2019. Service levels increased between 2017 and 2018 with a jump in revenue miles, operating costs, and cost per revenue hour. Overall productivity measures, such as passengers per revenue hour and farebox recovery ratio, have been consistent between 2015 and 2019.

An analysis of peer agencies shows St. Joseph Transit performing at the lower end of productivity measures compared to other agencies of similar size. Peer agencies included in the assessment were St. Cloud Metropolitan Transit (St. Cloud, Minnesota) and River Valley Metro (Kankakee, Illinois). In 2019, for the metric of passengers per vehicle revenue hour, St. Joseph Transit (6.6) was lower than River Valley Metro (10.0) and St. Cloud Metropolitan Transit (15.2). St. Joseph Transit also had a slightly lower farebox recovery ratio at 5.4% compared to River Valley Metro at 7.4% and St. Cloud Metropolitan Transit at 6.1%. This may be due to the combining of fixed-route and general public on-demand service with deviations, as other agencies often separate the two services.

Table 5: Operating Characteristics and Performance Measures

	2015	2016	2017	2018	2019	2020
Passenger Trips	410,945	414,198	417,497	428,748	427,563	264,783
Operating Costs	$4,961,948	$4,884,021	$4,953,253	$5,357,035	$5,408,711	$5,156,628
Farebox Revenue	$278,642	$264,658	$283,382	$303,568	$293,941	N/A
Other Revenue – Advertising, Rent, etc.	$63,725	$80,369	$128,295	$276,133	$275,299	N/A
Revenue Miles	731,946	748,005	755,895	771,956	803,847	726,180
Revenue Hour	63,550	63,699	63,616	64,289	64,332	44,878
Vehicles Operated in Annual Maximum Service (VOMS)	16/16	16/16	16/16	16/16	16/16	16/16

PERFORMANCE MEASURES

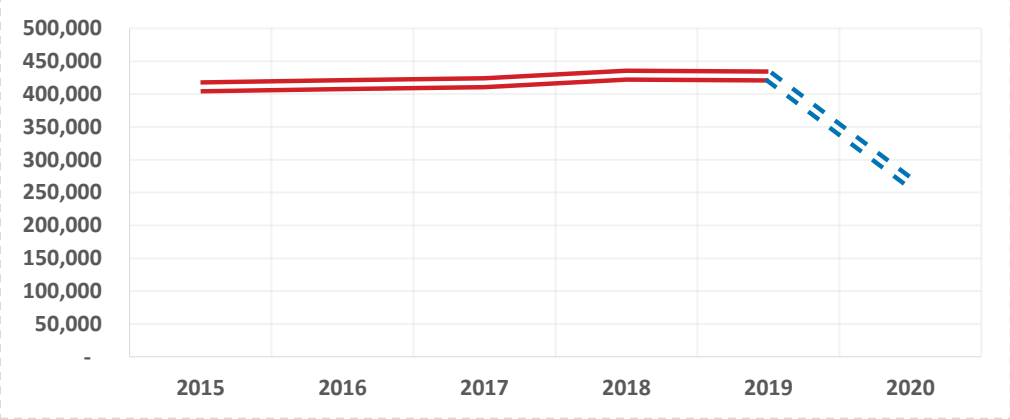
Passengers per Revenue Hour	6.5	6.5	6.6	6.7	6.6	5.9
Passengers per Revenue Mile	0.6	0.6	0.6	0.6	0.5	0.4
Operating Costs per Passenger	$12.07	$11.79	$11.86	$12.49	$12.65	$19.47
Operating Costs per Revenue Hour	$78.08	$76.67	$77.86	$83.33	$84.07	$114.9
Farebox Recovery Ratio	5.62%	5.42%	5.72%	5.67%	5.43%	N/A

Source: National Transit Database 2015 - 2019; St. Joseph Transit (2020 data).

Annual Passenger Trips

Figure 22 shows passenger trips grew steadily from approximately 411,000 trips in 2015 to approximately 428,800 trips in 2018 (a 4.3% increase). In 2019, there was a slight decrease to approximately 427,500 trips but this total remained above the number of annual trips observed between 2015 and 2017. Passenger trips in 2018 and 2019 were the highest on record since 2008 when St. Joseph Transit provided 441,700 trips. As expected, due to the COVID-19, the 2020 passenger trips decreased to approximately 264,800.

Figure 22: Annual Bus Passenger Trips

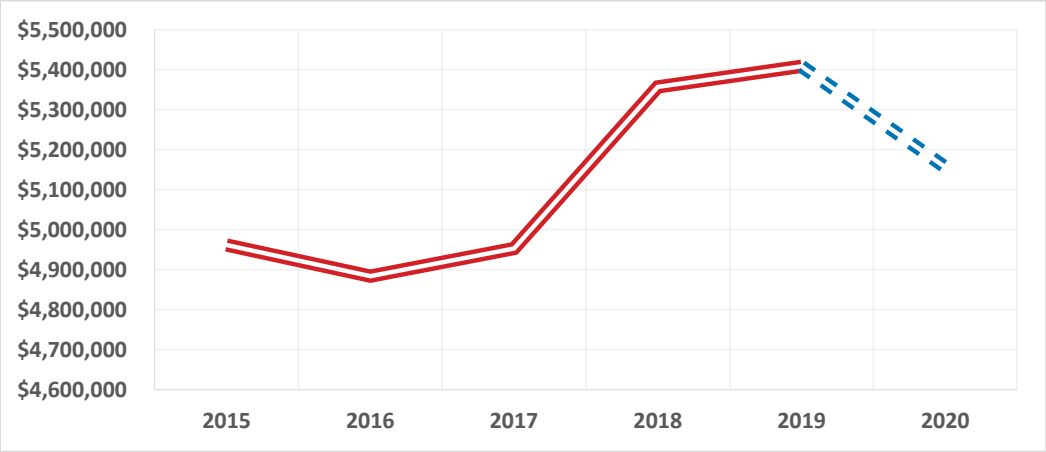


Source: National Transit Database; St. Joseph Transit

Annual Operating Costs

Figure 23 shows operating costs have been increasing since a low of approximately $4.9 million in 2016. Between 2017 and 2018, operating costs increased by about $400,000 (approximately 8%) to exceed $5.3 million. Operating costs for 2020 decreased from 2019 but remained higher than 2015 to 2017 operating costs.

Figure 23: Annual Bus Operating Costs

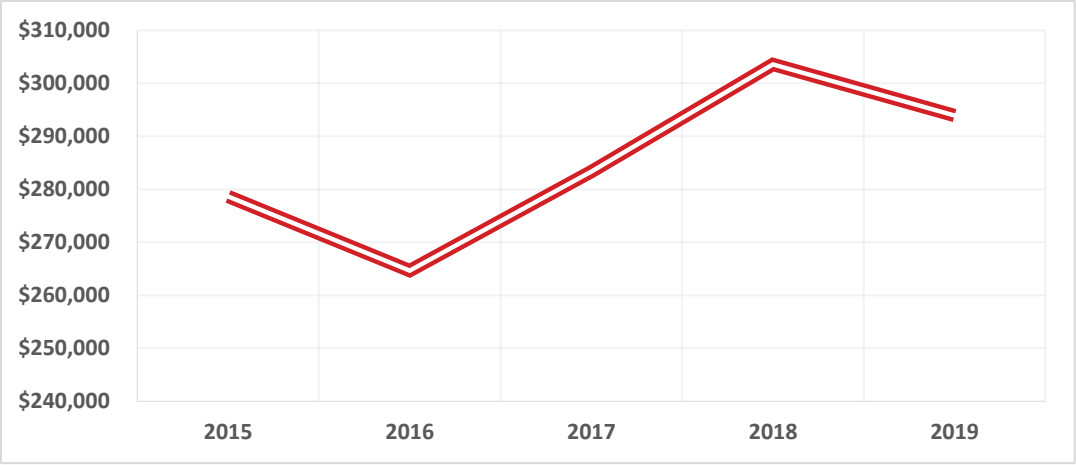


Source: National Transit Database; St. Joseph Transit

Annual Farebox Revenue

Figure 24 shows farebox revenue has fluctuated each year, starting with a slight decrease from 2015 to 2016. Farebox revenue grew from a low in 2016 to a high in 2018, with an increase of approximately $39,000, or 14%. A slight decrease occurred for 2019 but generally, the farebox revenues remained higher compared to previous years. Data was not available for 2020.

Figure 24: Annual Bus Farebox Revenue



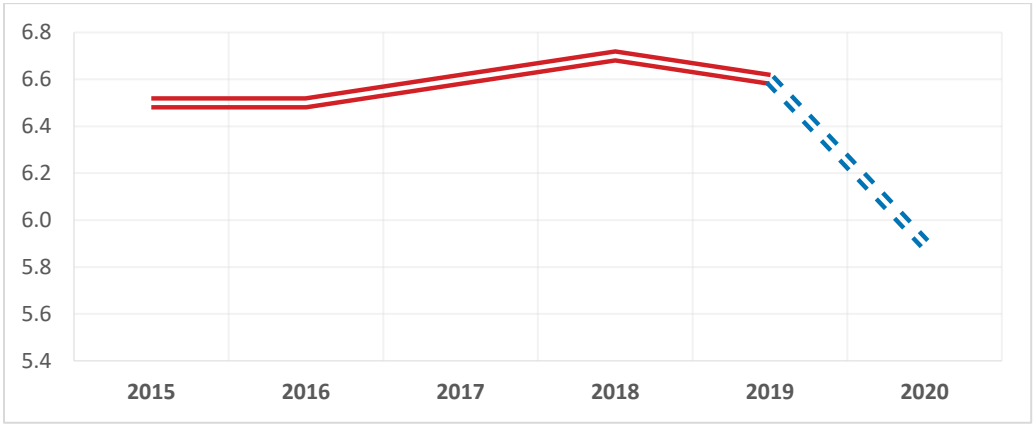
Source: National Transit Database

Performance Indicators

Passengers per Revenue Hour

The number of passengers who are served per hour of revenue service is an indication of the productivity of the service. **Figure 25** shows the passengers served per revenue hour has remained around 6.6, fluctuating up to 6.7 in 2018. Productivity decreased significantly in 2020 due to the impacts of COVID-19.

Figure 25: Bus Passengers per Revenue Hour

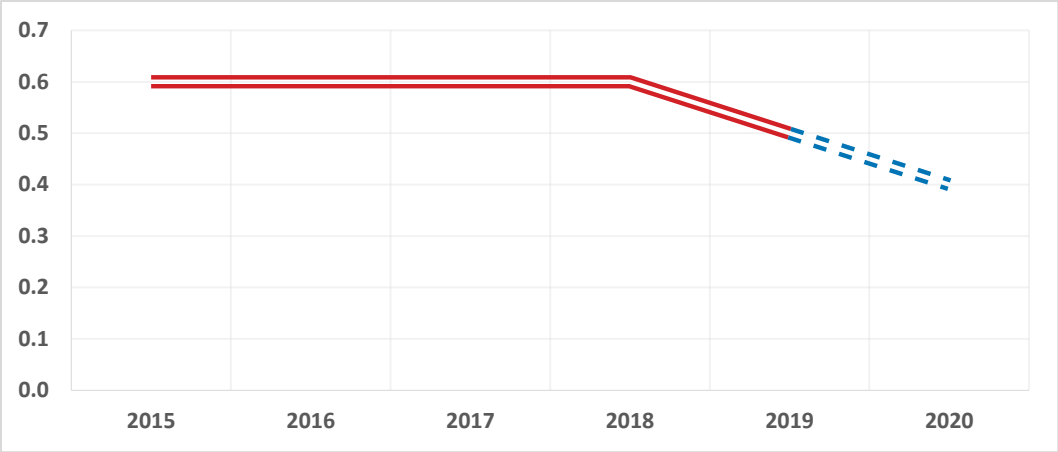


Source: National Transit Database; St. Joseph Transit

Passengers per Revenue Mile

The number of passengers who are served per mile of revenue service is also an indication of the productivity of the service. **Figure 26** shows passengers per revenue mile has generally remained a constant at 0.6 passengers per revenue mile, though it dipped slightly to 0.5 for 2019. 2020 saw a pronounced decrease due to the COVID-19 pandemic.

Figure 26: Bus Passengers per Revenue Mile



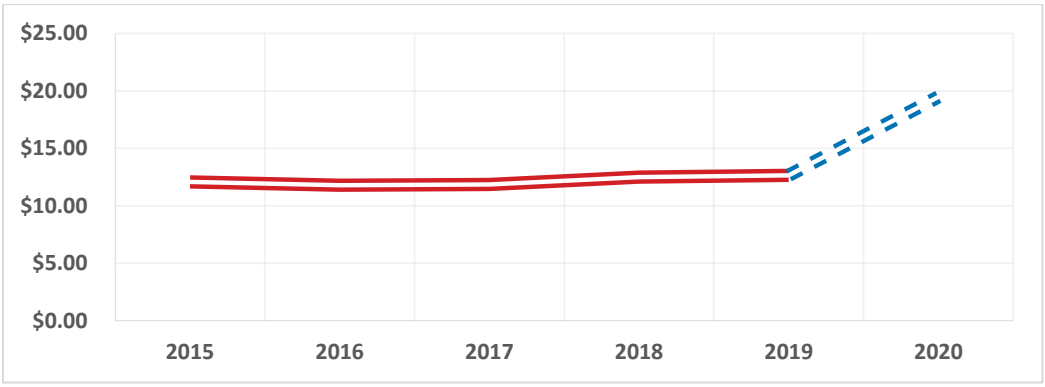
Source: National Transit Database; St. Joseph Transit

Cost-Effectiveness

Cost Per Passenger

Operating costs per passenger is an indication of how cost-effective the service is operating. A higher operating cost per passenger ratio indicates the service is less cost-effective. **Figure 27** shows operating costs per passenger have fluctuated each year in the range of $11.80 to almost $20.00 per passenger. Costs before the COVID-19 pandemic were the highest in 2019 ($12.65).

Figure 27: Bus Operating Costs per Passenger



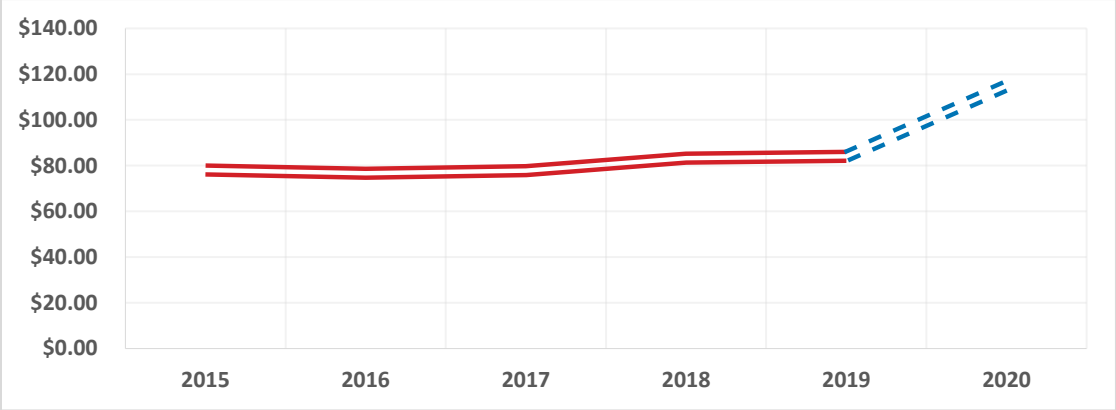
Source: National Transit Database; St. Joseph Transit

Service Efficiency

Cost Per Revenue Hour

High operating costs per revenue hour indicate the service has lower service efficiency. **Figure 28** shows costs per hour have increased approximately 10% from a low in 2016. In 2019, costs continued to grow to $84.07. For 2020, the operating cost per revenue hour increased to approximately $114.00, again due to the impact of COVID-19.

Figure 28: Bus Operating Costs per Revenue Hour

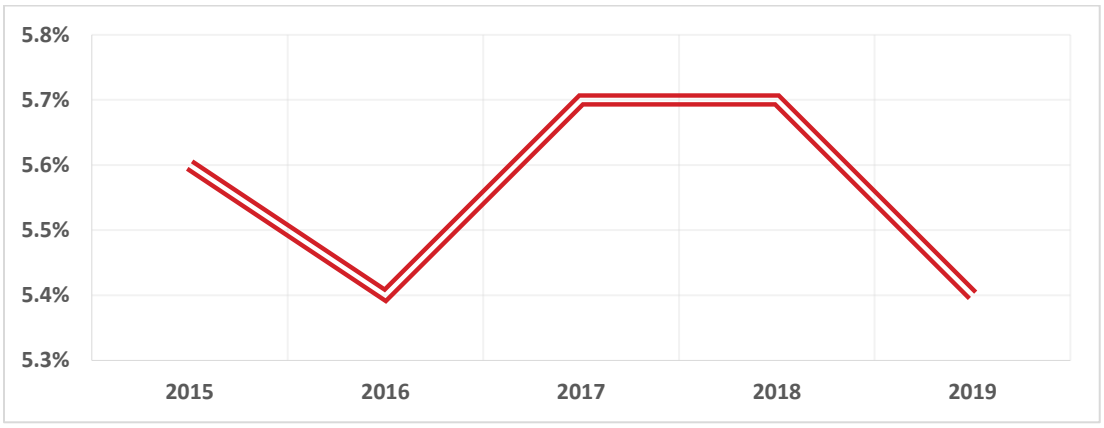


Source: National Transit Database; St. Joseph Transit

Farebox Recovery Ratio

The farebox recovery ratio indicates the percentage of a service's operating costs that are being covered by the fares paid by passengers. The higher the ratio or percentage, the greater the proportion of operating costs being paid for by passenger fares. **Figure 29** shows the farebox recovery ratio was at the highest level at 5.7% in 2017 and 2018. The lowest level was observed in 2016 and 2019 at 5.4%. Data was not available for 2020.

Figure 29: Bus Farebox Recovery Ratio



Source: National Transit Database

5. STAKEHOLDER OUTREACH

This section summarizes the outreach activities conducted in preparing the TDP. These activities include stakeholder and staff interviews and an open house public meeting. Outreach with St. Joseph Transit staff and stakeholders occurred in early spring 2021 and public feedback was gathered in August 2021.

Supervisors Interview

The consulting team conducted interviews with St. Joseph Transit supervisors on April 6, 2021. The goal of the meeting was to discuss operations issues, strengths and weaknesses observed with the current system, potential service improvements, and future service and operational recommendations for St. Joseph Transit.

The supervisors generally indicated that the fixed-route service was not experiencing major issues that needed immediate attention but there were a few minor improvements identified that could potentially improve overall service. The supervisors identified potential route changes (i.e., a new north/south route and adjustments to Routes 17 and 18 to address inefficiencies), concerns about the negative effect on the reliability of service caused by the existing flag stops, and general concerns related to updating ticketing and on-board navigation technology. Service-related comments from supervisors are outlined in the following:

- **Belt Highway.** A crosstown route to connect the North Walmart to the South Walmart was recommended. This route would likely operate along the Belt Highway – a major north-south corridor within St. Joseph. A key challenge to implementing this service is the lack of safe locations for designating bus stops along the Belt Highway. Current bus service operating along the Belt Highway corridor uses parking lots to pick up and drop off passengers. Having buses travel in the parking lots was identified as a potential safety concern for passengers and potential conflicts with other vehicles.

- **North-side service needs to expand.** Most of the growth in St. Joseph was identified in the northern part of the City and supervisors expressed the need for route expansion to accommodate the growth. This includes large areas of new retail at The Shoppes at North Village. Supervisors expressed the importance of providing enhanced service along both Frederick Avenue and Cook Road based on ridership potential. This northern area of St. Joseph is currently served by Routes 11, 12, 14, and partially by Route 13.

- **Updated fareboxes.** Supervisors noted the need to move away from paper passes and paper transfers. Updated fareboxes would allow passengers to board the bus faster and streamline the overall boarding process.

- **Technology.** Supervisors emphasized that the Gillig buses in operation today are adequate. The addition of onboard bus navigation technology, however, was strongly encouraged. Without a

map function on the tablets, drivers must call dispatchers for directions to some route deviation locations. Supervisors recommended that the RouteMatch technology be updated to provide turn-by-turn functionality.

- **Downtown Transit center.** The supervisors indicated that about half of all passengers must pass through the downtown transit center to make connections. Supervisors indicated that riders often voice their displeasure with the distance required to transfer to other routes. They also included that some passengers have concerns about perceived safety issues related to the downtown transit center.

- **Flag stops.** Supervisors suggested the system move away from flag stops to a designated stop service. Flag stops contribute to poor on-time performance and unpredictability of service for Routes 13, 14, and 15. Route 14 was noted as having the most flag stop-related on-time performance issues.

Dispatchers Interview

The consulting team conducted interviews with St. Joseph Transit dispatchers on April 8, 2021. Overall, the dispatcher's comments were similar to those of the supervisors' comments. The dispatchers primarily focused on potential technology improvements (onboard technology and ticketing) and changes to deviation and flag stop policies to improve operations. Specific comments from the dispatchers included the following:

- **Flag stops.** Like the supervisor comments, dispatchers stated that flag stops create issues along all routes, but in particular along Routes 13, 14, and 15. Dispatchers noted that Route 14 is a particularly busy route and flag stops negatively effect on-time performance and can result in delays traveling to the **Downtown Transit Center.** Dispatchers stated that riders prefer to use transfer points at the North Walmart, South Walmart, and the Hy-Vee grocery store as opposed to downtown. The reason for this is a perceived safety concern related to the Downtown Transit Center.

- **North-side service needs to expand.** Dispatchers stated that more routes are needed to serve the North Walmart and retail around The Shoppes at North Village. Dispatchers noted that this area has experienced new retail and commercial centers.

- **Technology**. Dispatchers stated that drivers are currently unable to access maps on the tablets in the buses (the *RouteMatch* program used by drivers does not provide a map function). Without a map function available, drivers will sometimes need to call dispatchers to obtain directions to some route deviation locations. Dispatchers would like to see the *RouteMatch* software upgraded to include turn-by-turn functionality.

- **Deviations**. Dispatchers stated that deviations should only be provided for ADA and senior riders, not the general public due to the impacts that deviations have on service reliability and travel times.

- **Fares**. Dispatchers stated that tighter restrictions should be made on half-fare criteria, as it is believed that currently, too many riders qualify. Additionally, there is a concern that college students may be using old/expired college identification cards to ride the bus at a reduced cost. Dispatchers feel there is a need to work with Missouri Western State University to eliminate or reduce infractions.

    - In general, the dispatchers offered several recommendations related to fares including new fareboxes, implementation of day passes, tighter control of college students passes, and raising the cost of deviations to $1.00 (currently 50 cents).

Joyce Raye Patterson Senior Center

The consulting team interviewed with the Joyce Raye Patterson Senior Center on May 19, 2021. The goal of the meeting was to better understand how members of the center interact with the existing transit network and to discuss potential opportunities for improvement.

The center is open to individuals 50 years and older. Some of their members tend to use transit regularly, either St. Joseph Transit or OATS. There are three core areas of St. Joseph where users are typically traveling to/from. These core areas include:

- Apartments near the intersection of 36th Street and Messanie Street. The Brookdale East Apartments are located at this intersection and is home to a high number of transit-dependent riders who frequent the senior center.
- Low-income complexes near the intersection of Belt Highway and Beck Road.
- Brittany Village Apartments on 36th Street (between Beck Road and Frederick Avenue).

On a typical day, 150 to 200 seniors visit the Joyce Raye Patterson Senior Center. The busiest times are around noon for lunch (served Tuesday through Friday).

It was noted in the interview that the senior center could use additional marketing materials for St. Joseph Transit to educate members on the services that are offered. In-person informational sessions were recommended to educate members on how to use St. Joseph Transit service.

Missouri Western State University

The consulting team conducted an interview with Missouri Western State University administrative staff on May 26, 2021. The goal of the meeting was to discuss how students, staff, and faculty use transit and to identify potential areas for improvement.

The university is currently served by Route 15. Students mainly use the route to travel to retail and shopping needs, specifically the Hy-Vee grocery store and to the Walmart South. Participants specifically expressed that connections to the Hy-Vee grocery be maintained.

Recommended improvements included:

- Extending service hours later into the evening.

- Increase marketing and distribution of transit brochures to students (increase awareness of service).
- Increase the size of current shelters to accommodate peak travel periods.
- Extend routing along Downs Drive and University Drive (i.e., James McCarthy Drive) to connect to more residential housing and to provide faster routing to Hy-Vee.

Chamber of Commerce

The consulting team conducted an interview with the Chamber of Commerce on May 18, 2021. The main challenge that was identified was focused on the difficulty for low-income riders to drop children off at a daycare facility while traveling to work. Participants suggested improvements that would make it easier for transit riders to travel to jobs. Recommended areas to focus service included:

- **Workplaces**
  - Need for additional bus stops in the Eastside Business Park (FedEx and other warehouse facilities)
  - Tyson Foods
  - Specialty Industries
  - Triumph Foods

- **Residential areas**
  - Brittany Village Apartments
  - Parkway Apartments
  - Apartments near the intersection of Beck Road and Belt Highway

The Chamber stated that additional stops and connections to workplaces and apartments throughout St. Joseph are needed. Additionally, they noted that smaller buses might provide greater flexibility for future service.

OATS Transit

The consulting team conducted an interview with OATS Transit on May 24, 2021. The goal of the interview was to discuss OATS operations within the St. Joseph area. The OATS regional office is located in St. Joseph, but the services cover a larger 18-country service area in northwest Missouri. The service runs six to seven daily buses in St. Joseph, Monday through Friday. Most riders are seniors/disabled and 80% of trips are for medical purposes.

OATS also provides trips to retail centers – such as the North Walmart and South Walmart. According to OATS representatives, most riders do not transfer between OATS and St. Joseph Transit. It was suggested that improvements could be explored to encourage riders to use both services.

Family Service and Guidance Center

The consulting team interviewed with the Family Service and Guidance Center on May 28, 2021. This facility is a mental health center where most clients utilize transit and qualify for a discounted fare. The center purchases transit passes from St. Joseph Transit and distributes them to clients. Generally speaking, there is a strong partnership between the Family Service and Guidance Center and St. Joseph Transit. Clients actively use the transit service and are daily riders.

Some potential areas of improvement include:

- Removing deviations to improve route predictability.
- Improve headways to at least 60 minutes on Saturday.
- Consider adding Sunday service.

Open House Public Meeting

SJATSO and St. Joseph Transit hosted a public meeting on August 12, 2021, to obtain feedback related to potential transit service improvements. The goals of the TDP were provided and potential future service concepts were presented. The service concepts that were presented reflected the input and suggestions presented from stakeholders, as well as the technical analysis completed by the consulting team.

The service concepts that were presented were primarily focused on decreasing travel time, reducing transfers, and improving on-time reliability. General comments and concerns from the public open house include:

- The southeastern portion of St. Joseph is home to many industrial and warehouse facilities. This area is also expanding job opportunities. The public noted the importance of connecting riders to jobs in this area.
    - Riders expressed the need for the routes to be as efficient as possible and to cut down on travel time. Some routes could be straightened to decrease travel time.

6. KEY ISSUES AND STRATEGIES

The following section outlines the key issues for the transit service based on the technical evaluation from the existing conditions assessment and the information received through the stakeholder and public outreach effort. These key issues are the focus areas for the improvements outlined in the Service Plan section of the report. The key issues include:

Provide faster service

The current fixed-route service operates most routes with 60-minute one-way trip times. Travel times are longer due to the added time of route deviations. New service will look at ways to improve travel time by reducing the number of one-way loops on the fixed route, making the service more direct, and transitioning low ridership segments to new demand response zones.

Improve overall service efficiency

The system currently provides a fairly direct bi-directional service in the central core of the city. However, the route structure in the outlying areas tends to be less direct and operates out of direction. The introduction of a new service delivery method such as demand response zones will allow the fixed-route service to operate more efficiently in the higher density areas and provide transit coverage in the lower ridership areas.

Enhance safety for riders, drivers, and general traffic

A key element of the service changes will be the transition from flag stop service to fixed stops. A designated stop system provides a safer environment for the passengers to wait for the bus and it improves safety for drivers as they will know where to expect passengers to board and alight the bus.

Another safety issue is the operations of full-size buses in retail parking lots. It will be important to move the fixed route service out of parking lots along the Belt Highway to reduce potential conflicts with cars and pedestrians. The buses should operate on the main streets and corridors and the small-bus demand response service can provide a more flexible curb-to-curb option.

Improve connectivity between routes

The service recommendations will look at options to provide improved direct, one-seat trips between the transfer centers including Downtown St. Joseph Transfer Center (6th Street/Angelique Street), North Walmart, South Walmart, and the Hy-Vee/new East Hills Transfer Center.

Implement user-friendly practices

For the passengers, the plan will look to establish faster and more predictable travel times by unhooking the fixed-routes from some of the out-of-direction travel patterns and taking over those segments with demand response service. The demand response service will provide app-based service and with curb-to-curb pickups which will allow for streamlined trip planning for St. Joseph Transit staff.

7. SERVICE RECOMMENDATIONS

This chapter sets forth the recommended service changes for St. Joseph Transit to implement in the next two years. The recommendations build upon the key issues and strategies as described in Chapter 6. The proposed service recommendations were developed through technical analysis that documented system performance, operational characteristics, and overall service efficiency. Public and stakeholder input was also critical to developing the service recommendations.

Service Recommendations

The service plan includes recommendations that focus on improving the service efficiency, on-time performance, and increasing ridership. Systemwide recommendations include removing flag stop service, maintaining deviations, and adding new demand response zones.

Remove flag stop service

St. Joseph Transit currently uses a flag-stop system which allows bus drivers to stop along the fixed-routes to pick up or drop off passengers at non-designated stops. As previously documented, St. Joseph Transit dispatchers and supervisors expressed their concern that flag stops negatively impact travel times and contribute to poor systemwide on-time performance. Furthermore, flag stop passengers are also not guaranteed a pick-up, even though bus drivers make every attempt to fulfill requests. Finally, the use of flag stops was also noted as a potential safety concern. As such, the TDP recommends that flag stop service be phased out to improve system efficiencies and safety for bus riders, bus drivers, and the traveling

Maintain route deviations

The current operating procedure allows riders to request a drop-off or pick-up within ¾-mile of a designated fixed-route. The ¾-mile area is consistent with ADA paratransit guidelines and by making route deviations available to all transit riders, St. Joseph Transit does not need to operate a separate paratransit service. In preparing the TDP, this was an important factor that St. Joseph Transit representatives stressed the importance of maintaining this provision.

Demand Response Service

Demand response service uses smaller vehicles to provide more flexibility in the areas it serves including neighborhoods, first/last mile connections, and low-density commercial parks. Vehicles used for demand response range from smaller minivans to larger cutaway buses. In some cases, demand response service is provided by using a mixed service that combines the transit agency's wheelchair-accessible vehicles with taxi or transportation network company (TNC) vehicles. Demand response can provide improved access to transit for people and places that fixed bus routes do not serve well, more directly matched supply of service to the demand

for rides, shorter wait times, and greater flexibility to hail a ride when you need one via an app or phone call. St. Joseph Transit should be able to leverage its current contract with RouteMatch/Uber to implement either a software-only or turnkey demand response service. In the software-only option, St. Joseph Transit would use the vendor's technology for trip planning and use their own drivers and vehicles. With the turnkey option, the vendor provides the technology, vehicles, and drivers.

As documented, the fixed-route service, with route deviations, provide the bulk of coverage to the service area. Southwest St. Joseph and some areas north of downtown would be served by a new demand response service. During the development of the service plan, the project team used the demand response planning tool, Spare Realize, to evaluate the e demand for potential demand response zones. The analysis included the potential origin and destinations and overall ridership for the proposed demand response zones. The analysis also looked at the density of trips in areas and demographic information. Although stop level ridership data for the current fixed-route service was not available at the time of the study, the project team used information from the Spare Realize tool, route level data from St. Joseph Transit and information from the drivers to determine locations that would be best suited for demand response.

The TDP recommends the development of three demand response zones:

- **Northwest/St. Jo Frontier Casino**: this zone would serve the St. Jo Frontier Casino and would provide a connection that is currently provided by Route 11. The fixed-route to the casino would be replaced by a new demand response zone that would provide riders enhanced, and expanded connections and accessibility to and from the casino. The demand response service would also provide connections to the downtown transit center.
- **Southwest St. Joseph (i.e., Stockyards)**: A demand response zone would be created to serve the area in southwest St. Joseph which is currently served by Routes 17 and 18. The demand response zone would provide direct connections to the downtown transit center and to South Walmart to facilitate transfers to other fixed-route serving the area.
- **Elwood, Kansas**: Elwood is currently served by an on-demand service that is provided by Route 18. The recommendations would combine the Elwood demand response service with the Southwest St. Joseph demand response zone. This demand response service would also connect directly to the downtown transit center.

Direct connections to Transfer Centers

The TDP recommendations look to connect the fixed-routes to four primary anchor transfer centers throughout the city. The transfer centers allow riders to easily connect to other routes to ultimately shorten the trip and to arrive at the desired destination more quickly. There are four transfer centers:

- Downtown St. Joseph – connections to Routes 1, 2, 4, 5 and 6
- North Walmart – connections to Route 1 and Route 3
- Hy-Vee (soon to transition to East Hills Transfer Center) - connections to Routes 2, 3, 4, 5, 7 and 8

- South Walmart - connections to Route 3 and Route 6

The Hy-Vee grocery store (201 North Belt Highway) is located next to the site of a proposed new transfer center called the East Hills Transfer Center. The Hy-Vee site would be a major hub for transfers as it serves the new Belt Highway north/south route and connects to multiple routes on the east side of St. Joseph. When the East Hills Transfer Center is constructed, it is assumed that the routes that currently connect to the Hy-Vee transfer center will transition to the newly constructed facility. Riders will still be able to easily access the Hy-Vee from the East Hills Transfer Center; however, it is recommended that enhanced pedestrian accommodations be considered to help facilitate a safe connection from the East Hills Transfer Center to Hy-Vee.

Proposed Service Plan

As part of the proposed service plan, the route names, and corresponding numbering, will change to reflect the primary corridors and/or destinations served. In developing the new routes, the consulting team made every effort to maintain the geographic areas of the current route operations. **Table 6** illustrates the proposed route numbers, colors, and route names. **Figure 30** illustrates the proposed routing for the improvements. Routes 3 and 7 are new alignments while the remaining six routes generally follow existing route segments.

Table 6: Proposed Route Numbers and Names

Route Number	Route Name	Color
1	St. Joseph North	**Black**
2	Frederick Avenue	**Red**
3	Belt Highway	**Purple**
4	Faraon/Jules	**Green**
5	Lafayette	**Blue**
6	Industrial Park	**Orange**
7	Village Drive	**Pink**
8	MWSU/Mitchell Woods	**Brown**

Key Components and Recommendations

The following summarizes the key elements and recommendations associated with the TDP.

- Three routes will see improved frequencies, improving from every 60-minutes to every 30-minutes on weekdays. This will benefit the new proposed routes 2, 4, and 5.
    - A dense population and employment base along these routes support the demand for 30-minute frequencies.
- A new north/south limited-stop route along Belt Highway (proposed Route 3)
    - This route would operate with a 45-minute frequency on weekdays and on Saturday
    - Responds to overwhelming support and requests from the public and stakeholders to provide a north/south transit route to serve the Belt Highway.
    - The route would serve three of the four transfer centers in St. Joseph: North Walmart, Hy-Vee (future East Hills Transfer Center), and South Walmart. This would increase the opportunities to make transfers without traveling to the downtown transit center, thus shortening trips for many riders.
    - Maintaining on-time performance along this new north-south route is critical to the overall system operations. As such, this new Belt Highway route would not deviate (all other fixed-routes would deviate).
- Improved Saturday service
    - Routes operating on Saturday will be the same as the routes operating on weekdays. This will eliminate the current system of different routes on weekdays and Saturdays.
    - Most Saturday routes would improve from 120-minute headways to 60-minute headways
    - All Saturday routes will operate with the same route name and number as weekday routes, making it easier for riders to use the system.
- Elwood and the St. Jo Frontier Casino would be served by Demand Response Zones
    - This improvement directly responds to the public and stakeholders that expressed a desire to have greater flexibility to connect to these destinations. Introducing the demand response zones provides this flexibility, in addition to still connecting to the downtown transit center.
- Southwest St. Joseph Demand Response Zone
    - Provides on-demand service in the southwest areas of St. Joseph and provides direct connections to the South Walmart and to the downtown transfer center
- Route 8 would provide fixed-route service to the industrial and warehouse areas located in southeast St. Joseph (i.e., Mitchell Woods).
- A new route is recommended to serve the dense retail/office/multi-family land uses located near East Hills Mall
    - Route 7 Village Drive would require one vehicle and would operate on a 60-minute frequency

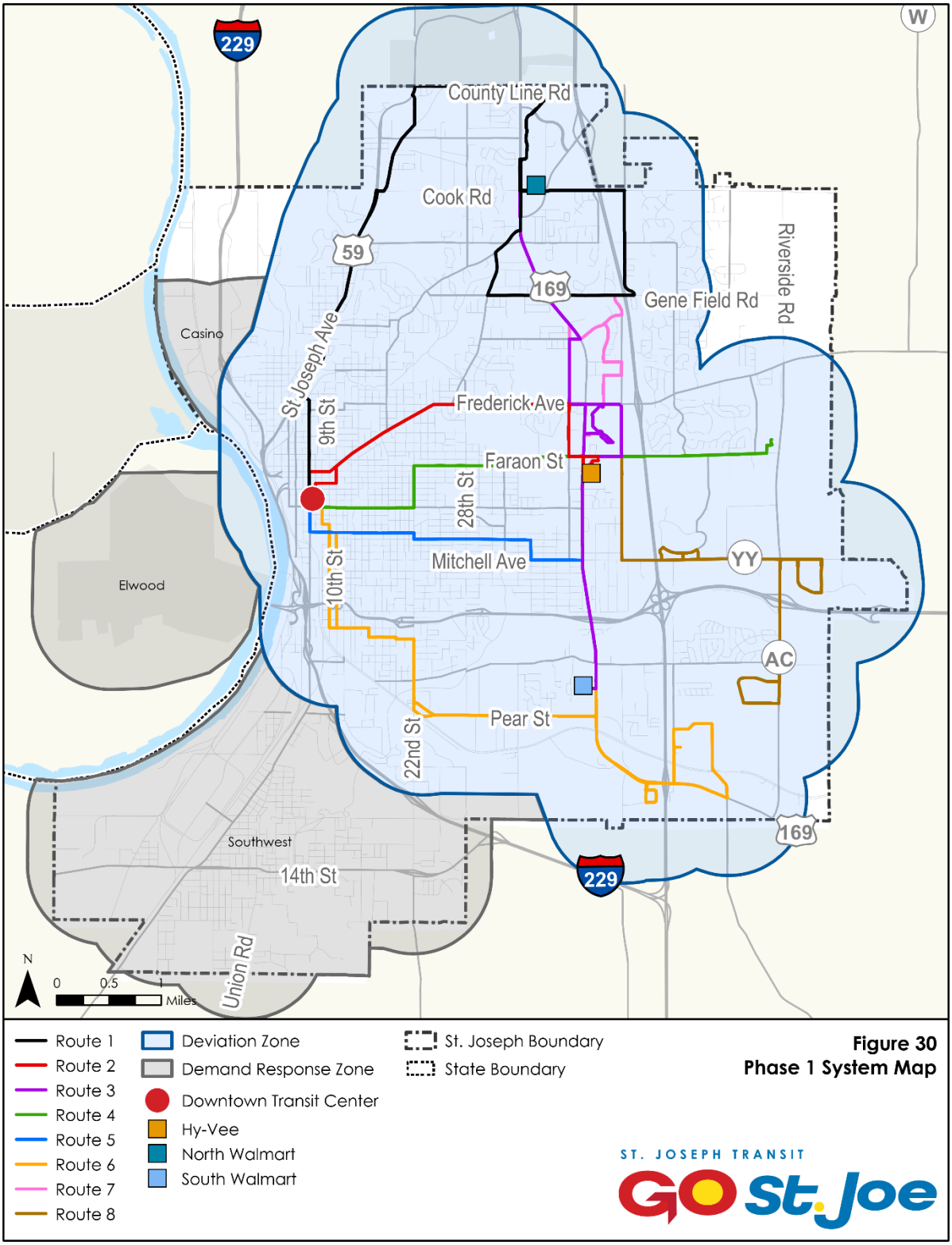
Development of Runcuts

Finally, to support the proposed service recommendations, the consulting team has developed a comprehensive runcut in a separate standalone document to assist with the implementation of the service changes. The runcut provides detailed operational information to the transit agency which is needed to implement the recommended changes. The runcut includes information for the operations of service such as route interlines, vehicle schedules, crew schedules, blocking sheets, turn-by-turn directions, and work rules. These are all components used for the scheduling of the bus service.

Overview of Proposed New Routes

The following outlines a detailed summary for each proposed route. It includes figures to indicate the initial route alignment. It should be noted, as with any system modification, and introduction of new service, it is important to monitor the new routes and if necessary, make service modifications to enhance operations. Monitoring the new service over a six-to-12-month timeframe is critical to the long-term success.

Figure 30: Proposed Routes and Demand Response Zones



Route 1: St. Joseph North

Proposed Route 1 (St. Joseph North) will operate on a similar alignment as the existing Route 11 (St. Joseph Avenue) and Route 20 (St. Joseph Avenue; Saturday only). As shown in **Figure 31**, this route will travel predominately along St. Joseph Avenue and connect the downtown core to The Shoppes at North Village retail area, including the North Walmart on Belt Highway.

Key components of the route alignment include:

- The route would no longer serve the St. Joe Frontier Casino (as Route 11 and Route 20 currently do)
- The route provides more direct service to the transfer center at 6th and Angelique
    - Travels north on 6th Street and west a few hundred feet on Middleton Street to connect directly to St. Joseph Avenue
- The eastern segments of the route now extend south of the North Walmart to provide service to neighborhoods just south of The Shoppes at North Village

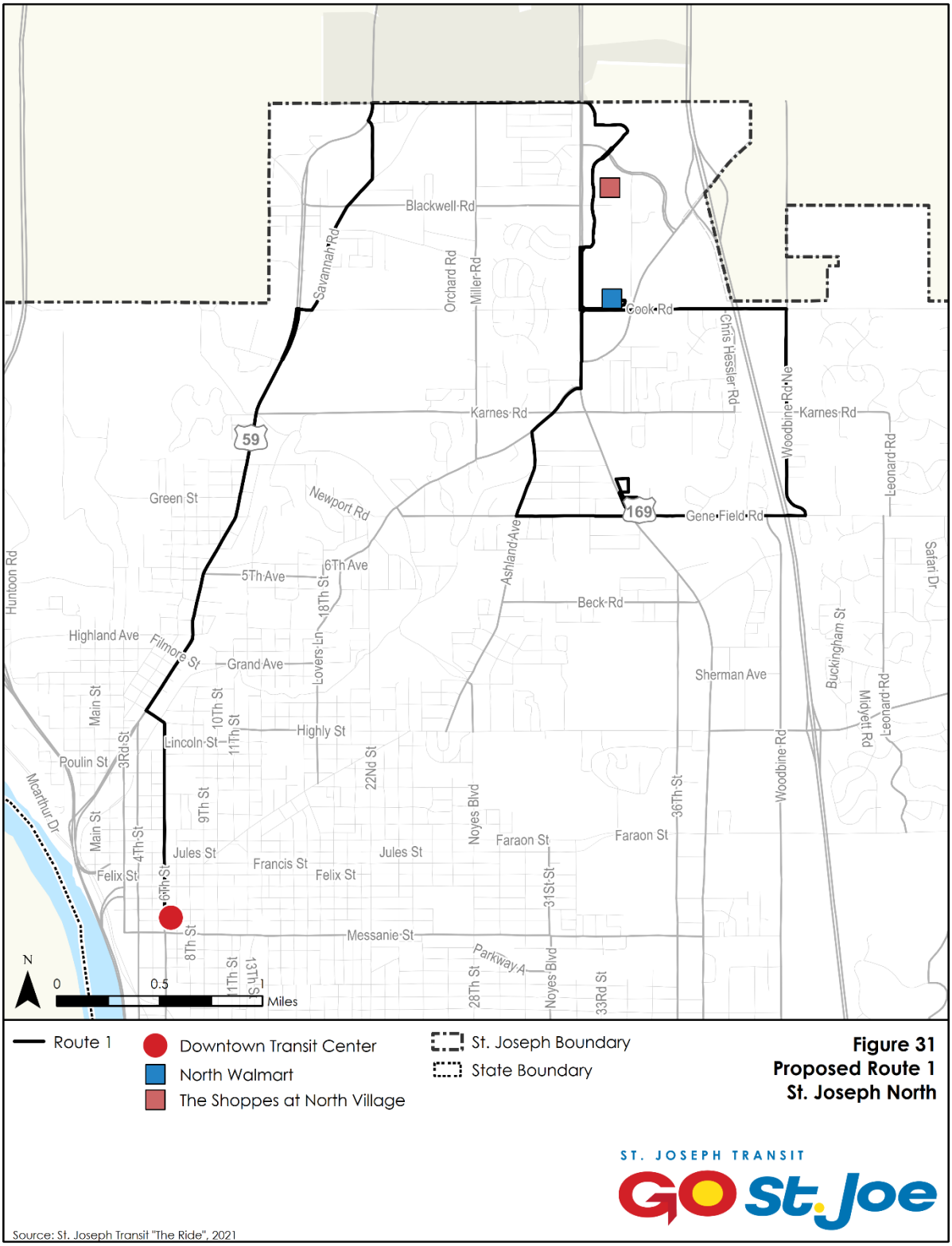
Table 7 illustrates the operating characteristics for proposed Route 1. The frequency and required vehicles would be the same for weekdays and Saturdays. Route 1 will travel 9.2 miles (one-way) and will operate at a 60-minute headway with 2 vehicles.

Table 7: Proposed Route 1 (St. Joseph North) Operating Characteristics

	Weekdays	Saturdays
One-Way Miles	9.8 miles	9.8 miles
End to End Time	48 minutes	48 minutes
Layover	12 minutes	12 minutes
One-Way Cycle Time	60 minutes	60 minutes
Round Trip Time	120 minutes	120 minutes
Vehicles	2	2
Frequency	60 minutes	60 minutes

Source: AECOM; 2022.

Figure 31: Proposed Route 1 (St. Joseph North)



Route 2: Frederick Avenue

Proposed Route 2 (Frederick Avenue) will operate on a similar alignment as existing Route 13 (Frederick Avenue). As shown in **Figure 32**, this route will predominately travel along Frederick Avenue to connect the downtown core to the Hy-Vee at the intersection of Faraon Street and Belt Highway.

Key components of the proposed route alignment include:

- More direct connections to the Hy-Vee from downtown St. Joseph
  - This proposed route would not travel east of the Hy-Vee on Belt Highway
- Connects riders to the following key destinations:
  - Transfer Center at 6th Street/Angelique Street
  - Retail and various commercial centers along Frederick Avenue
  - East Hills Mall (via Belt Highway)
  - Hy-Vee grocery store (intersection of Faraon Street and Belt Highway)
- Every other bus on Route 2 will interline with Route 7 which would allow for a one-seat ride from downtown to the retail area along Belt Highway.

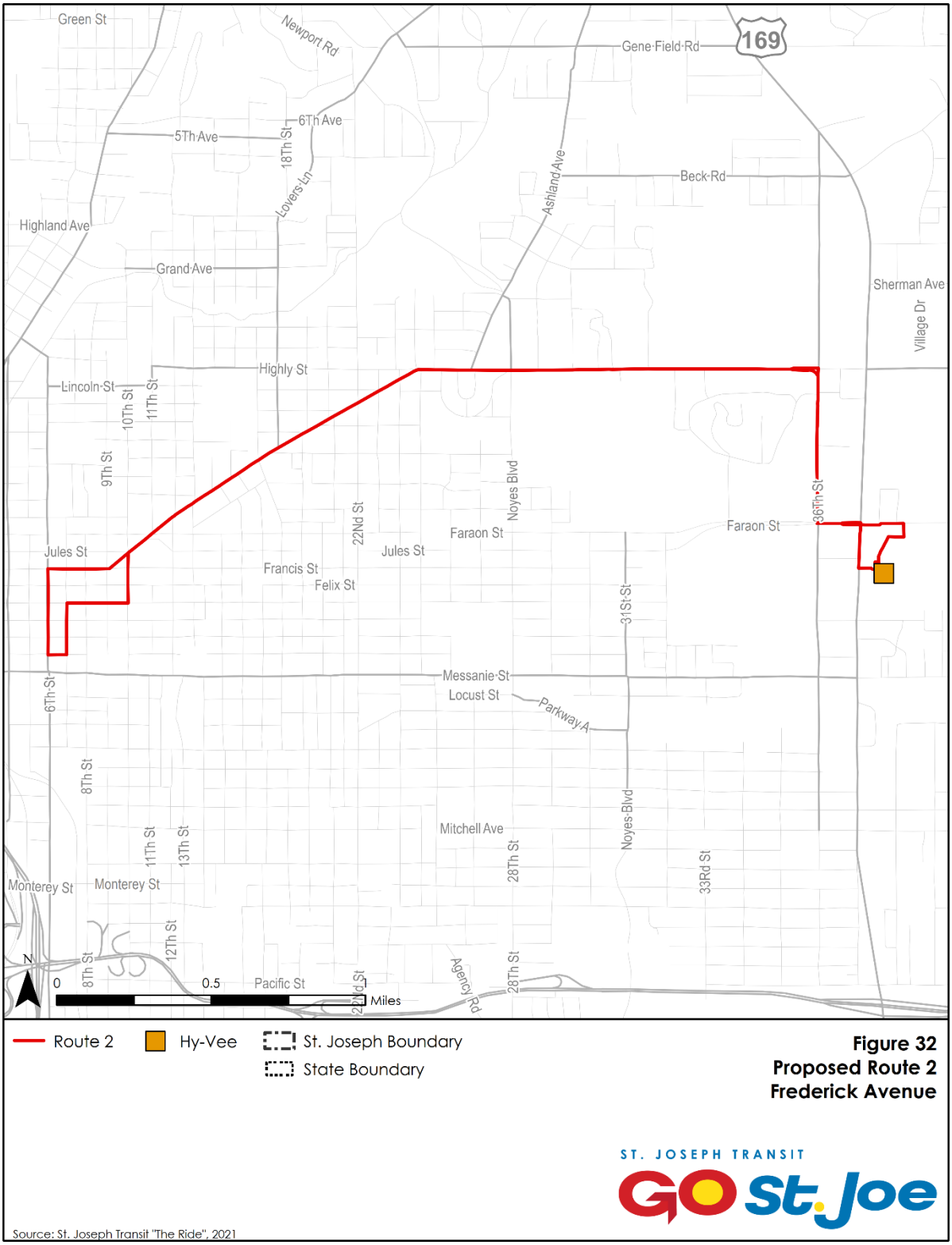
Table 8 illustrates the operating characteristics of the proposed Route 2. Proposed Route 2 Frederick Avenue is 3.9 miles (one-way). The route would have a 10-minute layover. The route would operate on weekdays with 30-minute frequencies using two vehicles. For Saturdays, the route would operate at 60-minute frequencies and one vehicle would be required.

Table 8: Proposed Route 2 (Frederick Avenue) Operating Characteristics

	Weekdays	Saturdays
One-Way Miles	3.9 miles	3.9 miles
End to End Time	20 minutes	20 minutes
Layover	10 minutes	10 minutes
One-Way Cycle Time	30 minutes	30 minutes
Round Trip Time	60 minutes	60 minutes
Vehicles	2	1
Frequency	30 minutes	60 minutes

Source: AECOM; 2022.

Figure 32: Proposed Route 2 (Frederick Avenue)



Route 3: Belt Highway

Proposed Route 3 is a new route to St. Joseph Transit system. This route was identified by staff and noted by stakeholders, as well as documented in related transportation planning studies. This route will provide an important north-south connection serving major retail centers for St. Joseph, notably the North Walmart, the Shoppes at North Village, and the South Walmart, as shown in **Figure 33**. This route will operate at a 45-minute headway.

This route will serve as a major spine for the transit network and will connect to multiple routes, notably at the Hy-Vee and the future East Hills Transit Center (located just east of Hy-Vee). Route 3 will allow riders in St. Joseph to quickly travel north/south to retail areas and to transfer to the following routes:

- North Walmart: connection to Route 1
- Hy-Vee: connections to Routes 2, 4, 5, 7, and 8
- South Walmart: connection to Route 6

Route 3 is also one of three proposed routes that would not connect to the transfer center in downtown (6th Street/Angelique Street). Routes 7 and 8 would also not connect to the Downtown Transit Center.

Route 3 is approximately 7.6 miles in length (one-way). The route includes a 7 - 9-minute layover on both ends and requires 2 vehicles, as summarized in **Table 9**. This route has the same frequency and number of vehicles for both weekdays and Saturdays.

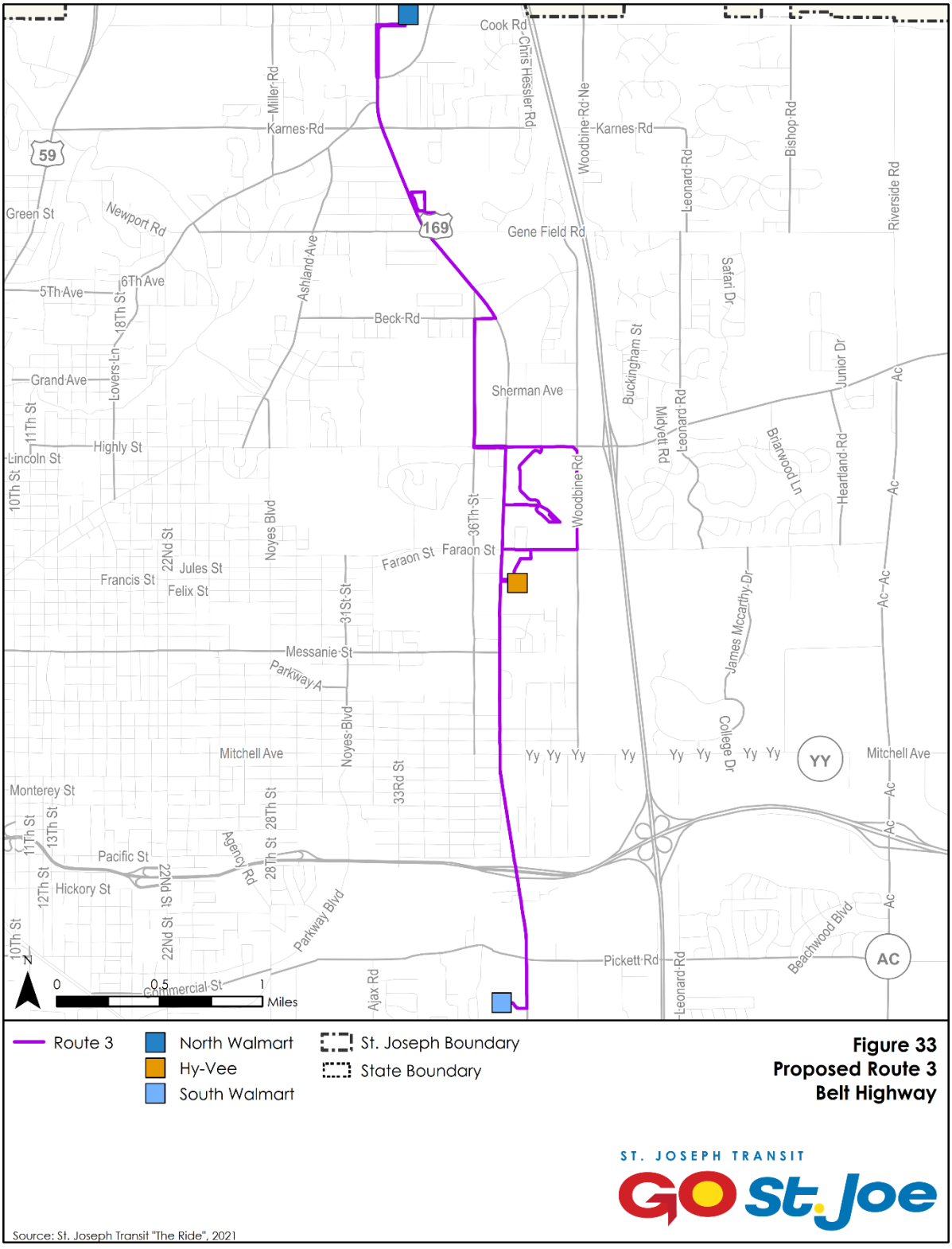
Route 3 is the only proposed fixed-route that does not deviate. As previously mentioned, all other fixed-routes deviate to provide service to riders within ¾-miles from the fixed-route. The Belt Highway route would not deviate in order to consistently meet timepoints which is critical to the overall system reliability due to the high level of transfers that this route facilitates. Trips occurring within ¾-mile of the Belt Highway corridor would be accommodated by other fixed-routes and/or demand response services.

Table 9: Route 3 (Belt Highway) Operating Characteristics

	Weekdays	Saturdays
One-Way Miles	7.6 miles	7.6 miles
End to End Time	37 minutes	37 minutes
Layover	8 minutes	8 minutes
Avg One-Way Cycle Time	45 minutes	45 minutes
Round Trip Time	90 minutes	90 minutes
Vehicles	2	2
Frequency	45 minutes	45 minutes

Source: AECOM; 2022.

Figure 33: Proposed Route 3 (Belt Highway)



Route 4: Faraon/Jules

Proposed Route 4 provides east/west connections between downtown St. Joseph and the Mosaic Medical Center on Riverside Road. This new route combines existing Route 13 (Frederick) and Route 14 (Faraon/Jules). The new alignment is shown in **Figure 34**.

Key components of the route alignment would include:

- More streamlined operations through the core of St. Joseph. The portion of the route between downtown St. Joseph and the Hy-Vee (Belt Highway/Faraon Street) generally serves the existing Route 14.
- The eastern portion of Route 4 would serve Faraon Street, which is currently served by Route 13
    - The eastern portion of Route 4 would turn around at the Mosaic Medical Center on the far east side of St. Joseph.
- The route would layover at Angelique & 6th as well as Hy-Vee in both directions

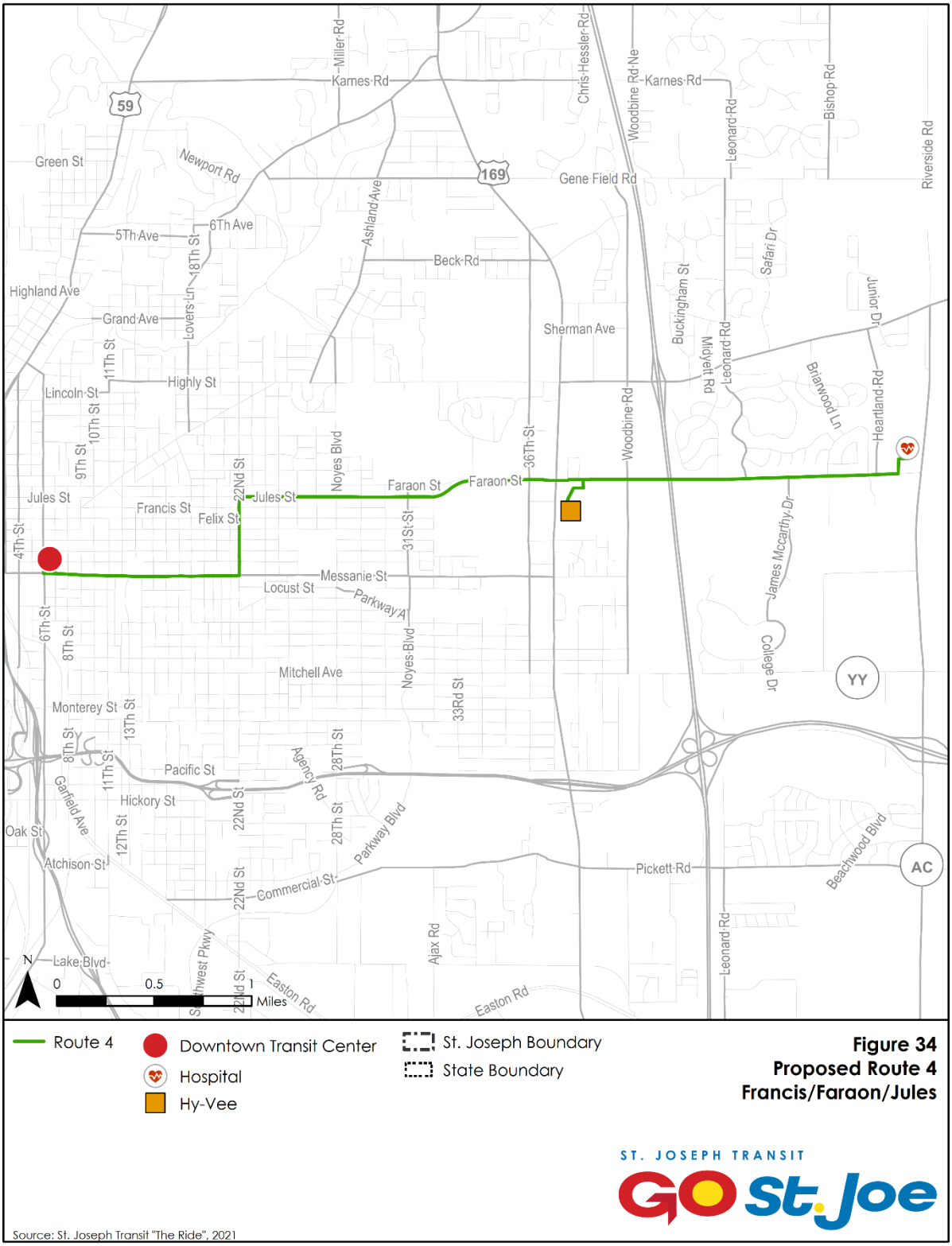
Route 4 Faraon/Jules is 5.5 miles in length (one-way). Route 4 is the only route that will require 3 vehicles for weekday service. Route 4 will operate with 30-minute frequencies on weekdays, as shown in **Table 10**. For Saturdays, the route will operate with 60-minute frequencies using 2 vehicles.

Table 10: Route 4 (Faraon/Jules) Operating Characteristics

	Weekdays	Saturdays
One-Way Miles	5.5 miles	5.5 miles
End to End Time	36 minutes	36 minutes
Layover	9 minutes	9 minutes
One-Way Cycle Time	45 minutes	45 minutes
Round Trip Time	90 minutes	90 minutes
Vehicles	3	2
Frequency	30 minutes	60 minutes

Source: AECOM; 2022.

Figure 34: Proposed Route 4 (Faraon/Jules)



Route 5: Lafayette

Proposed Route 5 (Lafayette) will operate on a similar alignment as the existing Route 15 (Missouri Western); however, the proposed route does not extend east of the Hy-Vee (Faraon Street/Belt Highway). As shown in **Figure 35**, this route will operate east-west between downtown St. Joseph and Hy-Vee and is a parallel route to proposed Route 4 (Faraon/Jules). Route 5 travels predominately down Olive Street, then Lafayette Street, Mitchell Street, and Belt Highway to connect to Hy-Vee. Deviations for this route would also serve established and historic neighborhoods in the central portions of St. Joseph, between downtown and the Belt Highway.

Key components of the route alignment include:

- Unlike the existing Route 15, this route would not travel east of the Belt Highway.
  - Route 8 would serve many areas currently served by Route 15
- This route would operate on a 30-minute headway, which would allow riders quick connections from east to west St. Joseph
- Connections to the downtown transit center (6th Street/Angelique Street), the Patee Town Historic District, the Belt Shopping Center (i.e., Westlake Ace Hardware, Dollar General), and the Hy-Vee grocery store
- The route connects to all seven other fixed routes
  - Downtown Transfer Center: connections to Route 1, 2, 4, and 6
  - Hy-Vee: connections to Route 2, 3, 4, 7, and 8
- Every other bus on Route 5 will interline with Route 8

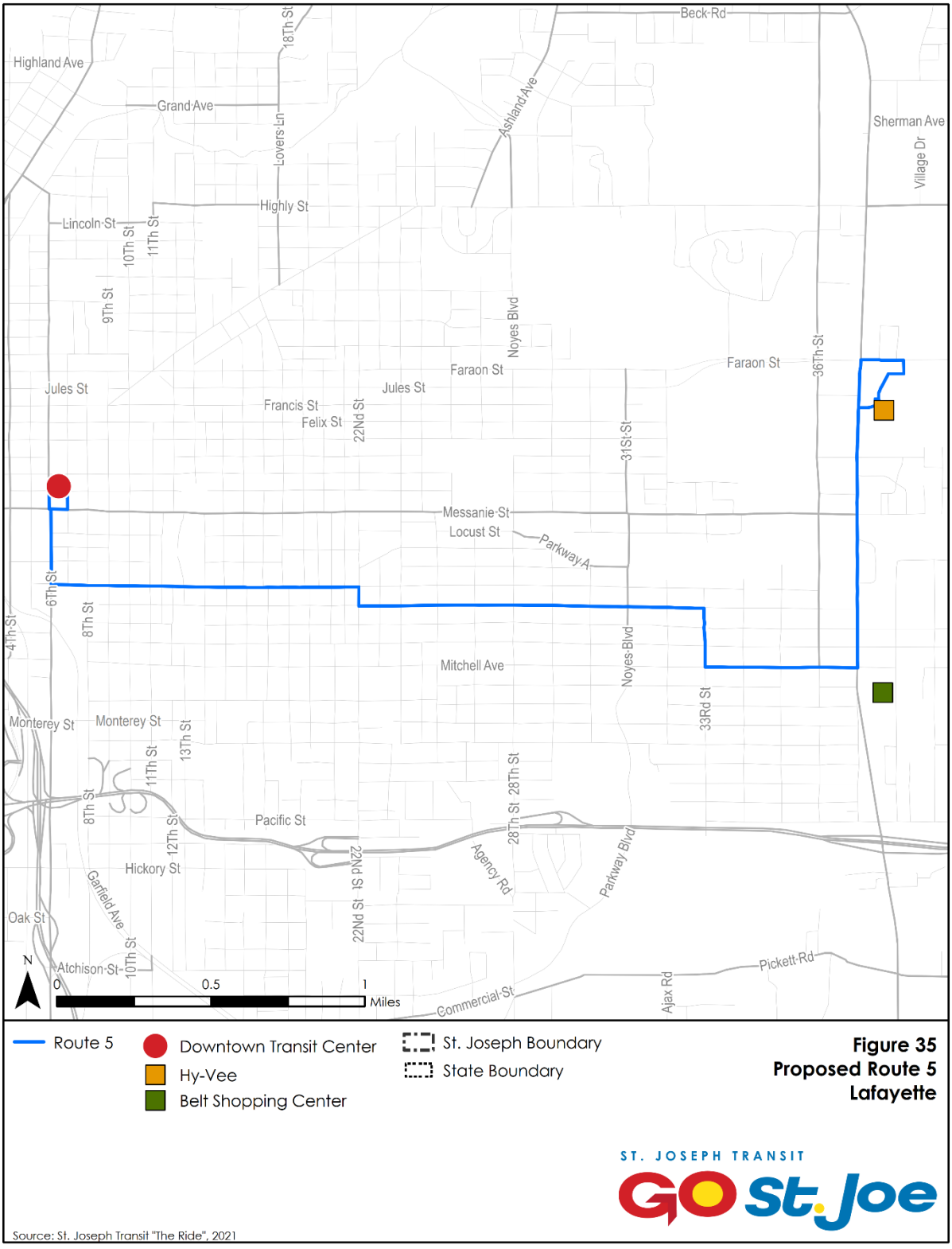
Route 5 Lafayette is 4.4 miles in length (one-way). This route has an end-to-end travel time of approximately 26 minutes and a proposed layover of 6 minutes. For weekdays, this route will operate on 30-minute frequencies requiring 2 vehicles. For Saturdays, the route will operate on 60-minute frequencies but require only 1 vehicle. **Table 11** summarizes the route operating characteristics.

Table 11: Route 5 (Lafayette) Operating Characteristics

	Weekdays	Saturdays
One-Way Miles	4.4 miles	4.4 miles
End to End Time	24 minutes	24 minutes
Layover	6 minutes	6 minutes
One-Way Cycle Time	30 minutes	30 minutes
Round Trip Time	60 minutes	60 minutes
Vehicles	2	1
Frequency	30 minutes	60 minutes

Source: AECOM; 2022.

Figure 35: Proposed Route 5 (Lafayette)



Route 6: Industrial

Proposed Route 6 (Industrial Park) will operate on a similar alignment to the existing Route 16 (Industrial Park). This route primarily serves the southern and eastern areas of St. Joseph. This route connects to the downtown transfer center (6th Street/Angelique Street) to industrial areas in southeast St. Joseph, as shown in **Figure 36**.

Key components of the route alignment include:

- Connections to the South Walmart
- Unlike the existing Route 16, this route travels predominantly south of US 36.
    - A significant portion of the route would travel down Pear Street, as opposed to Duncan and Pacific Streets.
- The eastern end of the route serves a larger portion of the industrial facilities near the intersection of Easton Road and Leonard Road.
- The connection to Menards on Commonwealth Drive would be maintained.

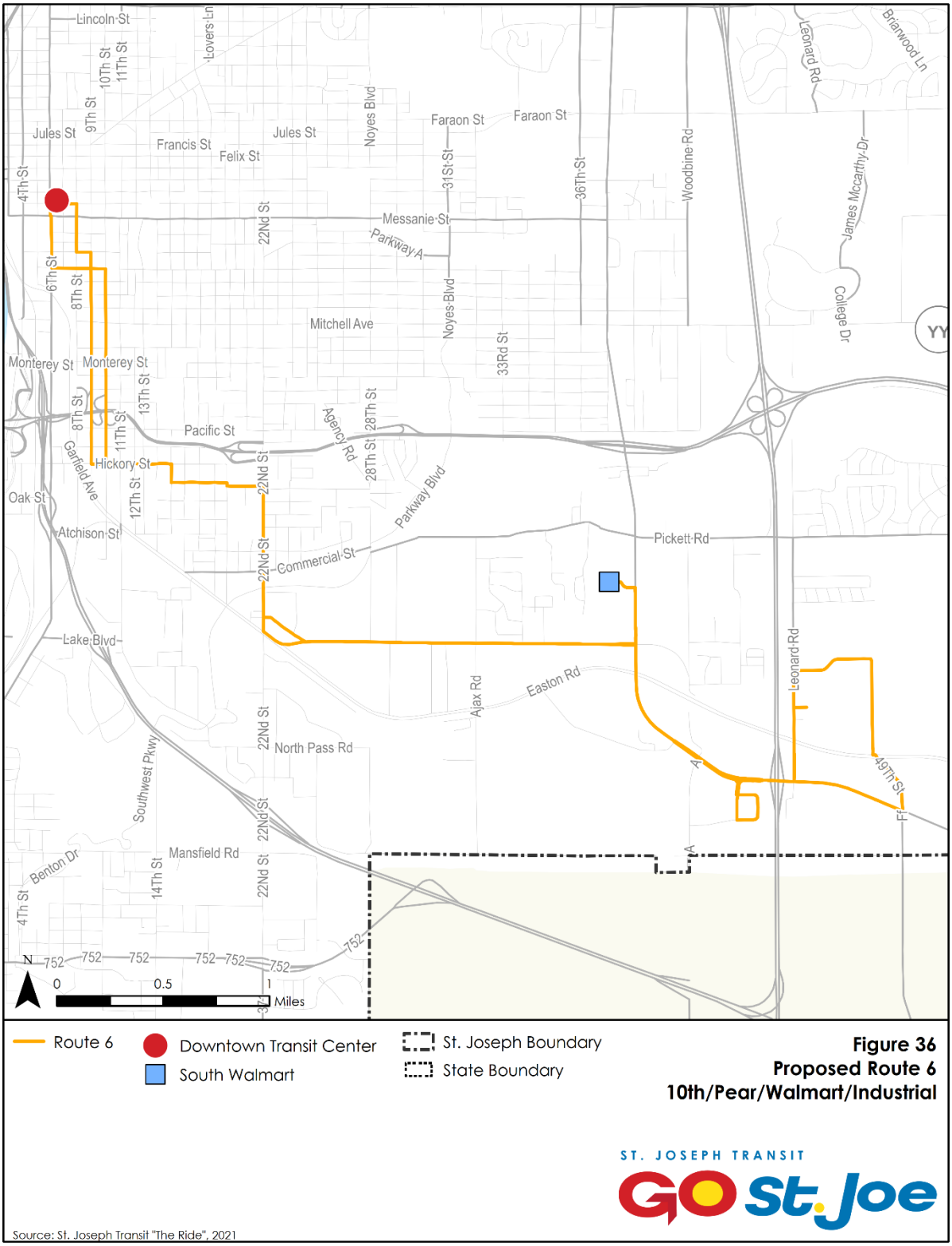
Route 6 is 8.7 miles in length (one-way). For weekdays, this route will operate with 60-minute frequencies requiring 2 vehicles. For Saturdays, the frequency increases to 120 minutes, the longest Saturday frequency for any of the proposed new routes. One vehicle is required for Saturday service. **Table 12** summarized the operating characteristics of this route.

Table 12: Route 6 (Industrial Park) Operating Characteristics

	Weekdays	Saturdays
One-Way Miles	8.7 miles	8.7 miles
End to End Time	52 minutes	52 minutes
Layover	8 minutes	8 minutes
One-Way Cycle Time	60 minutes	60 minutes
Round Trip Time	120 minutes	120 minutes
Vehicles	2	1
Frequency	60 minutes	120 minutes

Source: AECOM; 2022.

Figure 36: Proposed Route 6 (Industrial Park)



Route 7: Village Drive

Proposed Route 7 (Village Drive) will operate in an area currently served by portions of existing Route 14 (Faraon/Jules). Feedback from dispatchers and supervisors noted that Route 14 currently experiences long delays due to a combination of frequent flag stops and route deviation requests. Route 7 will continue to provide deviations within ¾-mile of the designated route, but the shorter route length should reduce potential delays related to scheduled route deviations. The proposed new route will also provide service to areas east of the Belt Highway, including East Hills Mall, Hy-Vee Grocery (Faraon Street/Belt Highway), and the apartments along Gene Field Road, as shown in **Figure 37**. The land uses along this route include a mix of commercial, office, medical, and multi-family residential.

Key components of the route alignment would include:

- A similar service as the existing Route 14, except Route 7 would travel to the Hy-Vee and connect to apartments in the north along Gene Field Road
- Every bus on Route 7 would interline with Route 2.

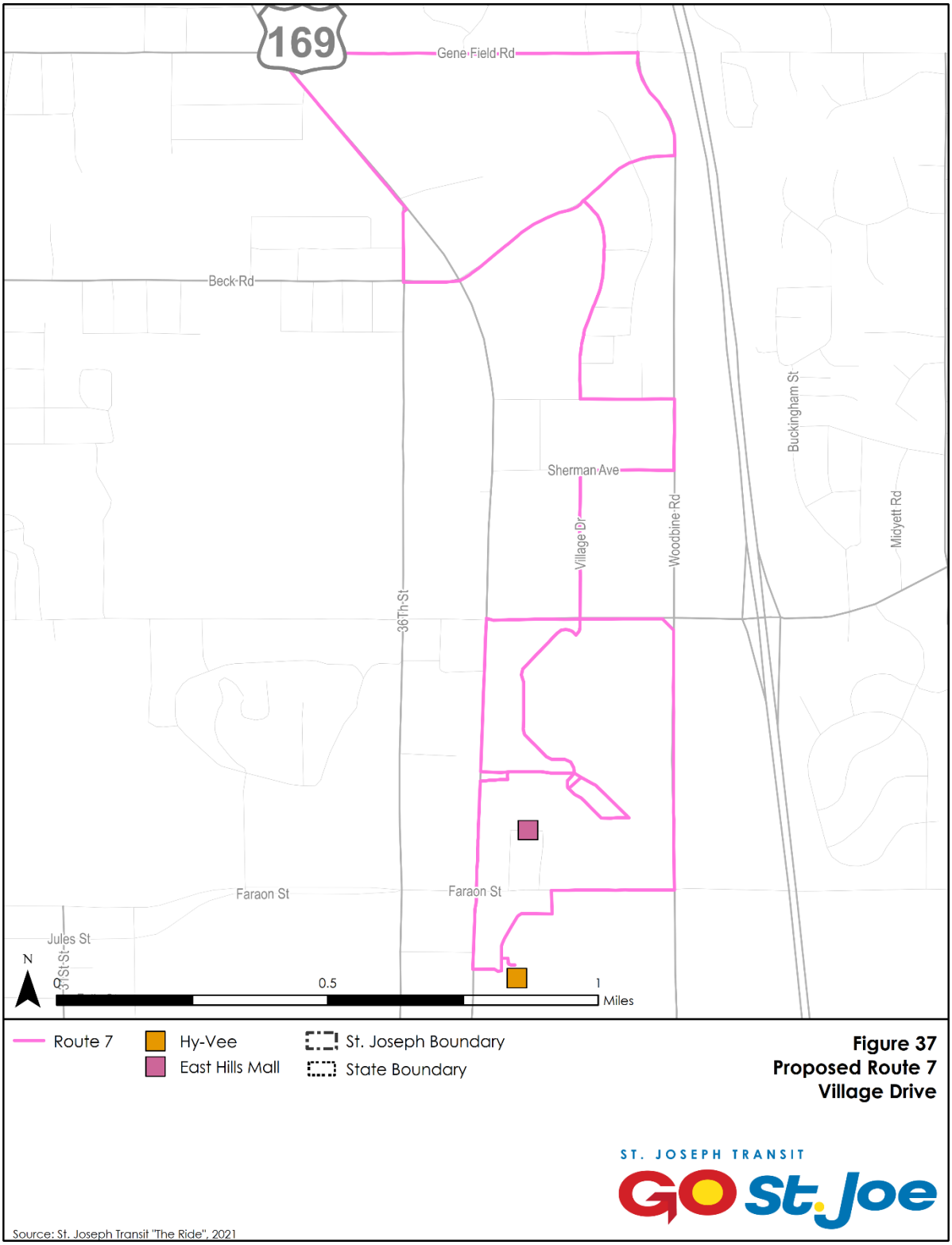
Table 13 summarizes the operating characteristics for proposed Route 7. Route 7 would travel 4.1 miles (one-way) and will operate at 60-minute headways requiring 1 vehicle. The frequency and number of vehicles required will be the same for weekdays and Saturdays.

Table 13: Route 7 Operating Characteristics

	Weekdays	Saturdays
One-Way Miles	4.1 miles	4.1 miles
End to End Time	23 minutes	23 minutes
Layover	7 minutes	7 minutes
One-Way Cycle Time	30 minutes	30 minutes
Round Trip Time	60 minutes	60 minutes
Vehicles	1	1
Frequency	60 minutes	60 minutes

Source: AECOM; 2022.

Figure 37: Proposed Route 7 (Village Drive)



Route 8: MWSU/Mitchell Woods

Proposed Route 8 (MWSU/Mitchell Woods) focuses on serving three core destinations: Hy-Vee (and transfers to other fixed-routes), Missouri Western State University, and light industrial uses along Riverside Drive and east to the Mitchell Woods industrial park. The proposed route is as shown in **Figure 38**. One of the advantages of the proposed Route 8 is that every bus will interline with Route 5 to provide a one-seat ride to southeast St. Joseph from downtown.

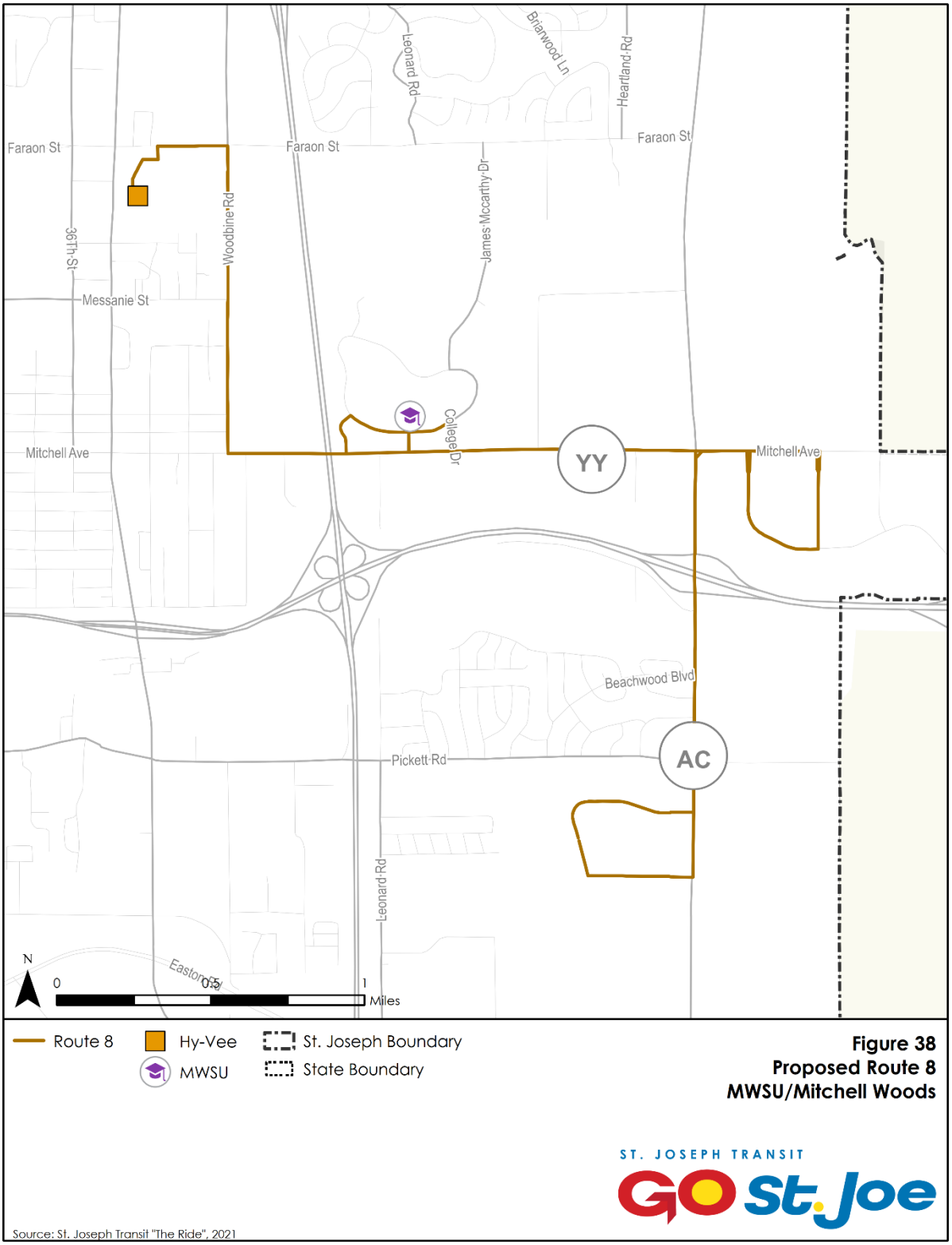
Route 8 is approximately 6.3 miles in length (one-way). The frequency and number of vehicles required will be the same for weekdays and on Saturdays. The route will operate at 60-minute frequencies using one vehicle, as shown in **Table 14**.

Table 14: Route 8 (MWSU/Mitchell Woods) Operating Characteristics

	WEEKDAYS	SATURDAY
ONE-WAY MILES	6.3 miles	6.3 miles
END TO END TIME	25 minutes	25 minutes
LAYOVER	5 minutes	5 minutes
ONE-WAY CYCLE TIME	30 minutes	30 minutes
ROUND TRIP TIME	60 minutes	60 minutes
VEHICLES	1	1
FREQUENCY	60 minutes	60 minutes

Source: AECOM; 2022.

Figure 38: Proposed Route 8 MWSU/Mitchell Woods



Service Recommendations Summary

As summarized in **Table 15**, the recommendations will require 17 vehicles for weekday operations and 12 vehicles for Saturday operations. The project team was working under the assumption of a cost-neutral scenario, meaning that the proposed service changes would not increase service costs. Initially, it was believed that the cost-neutral scenario would require no more than 16-weekday buses; however, as the planning process unfolded it was determined that one additional bus could be included and covered by additional resources of St. Joseph Transit.

Most of the proposed routes will operate at a 30-minute or 60-minute peak frequency on weekdays. The one exception is the proposed new Belt Highway route, which will operate on a 45-minute frequency. In addition, Saturday service will be improved to a 60-minute frequency on all routes except for Route 3 (Belt Highway) and Route 6 (Industrial Park). This change to Saturday frequencies reflects a significant improvement for riders as most routes will operate 60-minutes as opposed to every 120-minutes.

Route 3 (Belt Highway) will maintain a 45-minute frequency on Saturdays. This route will serve many of St. Joseph's largest retail areas (i.e, North Walmart/South Walmart, East Hills Mall, Hy-Vee) so it is important to maintain the same level of service for Saturdays.

Table 15: 1 Service Recommendations

	Weekdays		Saturday	
Route	**Vehicles**	**Frequency**	**Vehicles**	**Frequency (minutes)**
Route 1 St Joseph North	2	60	2	60
Route 2 Frederick Ave	2	30	1	60
Route 3 Belt Highway	2	45	2	45
Route 4 Francis/Faraon/Jules	3	30	2	60
Route 5 Lafayette	2	30	1	60
Route 6 10th/Pear/Walmart/Industrial	2	60	1	120
Route 7 Village Drive	1	60	1	60
Route 8 MWSU/Mitchell Woods	1	60	1	60
Demand Response	2	N/A	1	N/A
TOTAL	**17**		**12**	

Source: AECOM; 2022.

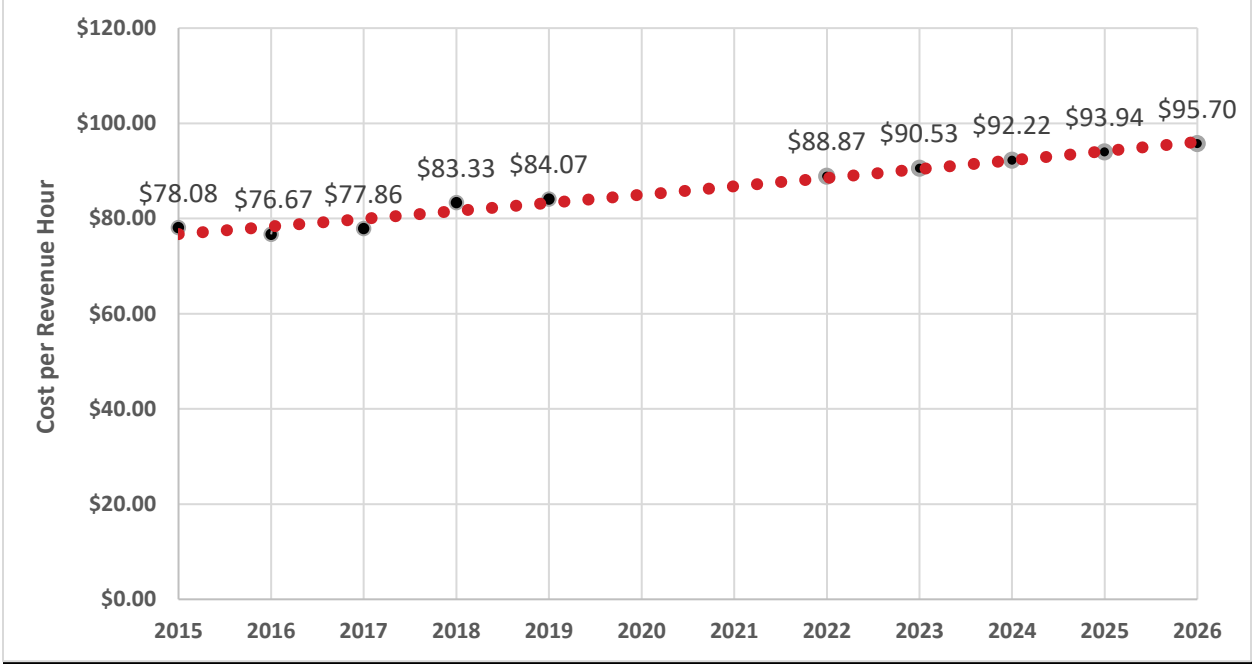
8. FINANCIAL PLAN

This section provides an overview of the operating cost, capital cost, and revenue assumptions used in the development of TDP. The financial plan analyzes the proposed service changes as described in Chapter 7. As previously mentioned, one of the primary goals in preparing the TDP was to keep any proposed new, or modified, service cost-neutral. Simply stated, a cost-neutral scenario means that any service recommendations could not result in an increase over the current service operating and capital costs.

Costs and Revenue Assumptions

The financial plan costs are presented as year of expenditure (YOE) dollar-based on an assumed annual escalation of 2.7% for capital amenities and 1.9% for operating and maintenance (O&M) costs. Escalation of O&M unit costs per revenue hour of service is based on an exponential projection of 5-year historical cost growth (2015 to 2019), as shown in **Figure 39**.

Figure 39: O&M Costs per Revenue Hour Assumptions



Source: National Transit Database, 2015-2019; AECOM, 2022

Given the similarity between St. Joseph Transit's current O&M unit costs and observed national trends for 3rd party demand response service costs, the previous estimates, in **Figure 39**, were applied across all planned system revenue hours regardless of mode. Daily and annual revenue hour estimates for the proposed service recommendations, across both fixed-route and demand-response vehicles, are displayed in **Table 16**. As shown, the proposed service

recommendations result in approximately 69,700 revenue hours per year, compared to the 2019 service levels of approximately 64,300 revenue hours. This represents an increase of approximately 8%.

Table 16: Estimated Annual Revenue Hours

Plan Service Levels	Days/Year	Daily Revenue Hours (Plan)	Annual Revenue Hours (Plan)
Weekday	253	250.6	63,393
Saturdays and In-service Holidays	58	108.6	6,301
Total	**311**		**69,694**

Source: AECOM, 2022

For each year of the plan, the projected fixed-route O&M costs (equal to the planned revenue hours times unit cost) were compared to the baseline service level costs to understand the incremental impacts. Estimated baseline costs are calculated as a continuation of constant 2019 revenue hour assumptions multiplied by the escalated unit cost rate (see **Table 17)**.

Table 17: O&M Cost Estimates 2022-2025

NTD cost data	2022	2023	2024	2025	2026
Unit Cost per Hour	$88.87	$90.53	$92.22	$93.94	$95.70
Estimated Baseline Costs	$5,717,305	$5,824,033	$5,932,754	$6,043,505	$6,156,323
Estimated Plan Costs	$6,193,844	$6,309,469	$6,427,252	$6,547,234	$6,669,455
Incremental Costs	$476,540	$485,436	$494,498	$503,729	$513,132

Source: AECOM, 2022

The incremental costs, between 2022 and 2026, are projected to range between approximately $476,000 and $514,000. Thirty-five percent would be covered by outside sources. St. Joseph Transit's portion would be about $300,000 to $350,000.

Capital Costs

The operation of the proposed service plan is expected to require the use of 17 revenue vehicles as compared to 16 revenue vehicles used for current service operations. However, St. Joseph Transit has enough spare vehicles to accommodate this service change without an additional vehicle purchase. While vehicle capital is not needed, other up-front costs to support this proposed service recommendations include:

- Signage and other amenities at new proposed bus stops;
- Dedicated bus pull-out;

- Marketing and public outreach materials; and,
- Software upgrades.

Capital Cost estimates are summarized in

Table 18**.** This includes amenities at new stop locations including Belle Street and 22nd Street, Easton Road and 22nd Street, Eastowne Drive, and South Drive and Jules/Faraon Street.

Table 18: Capital Cost Estimates, 2022

Cost Item	Year	Unit	Unit Cost	Quantity	Total
Shelter Stop	2022	per stop	$ 12,400	0	$ -
Bench Stop	2022	per stop	$ 6,824	0	$ -
Pole & Sign Stop	2022	per stop	$ 108	7	$ 758
Key Walks	2022	per stop	$ 2,166	2	$ 4,333
Removal of Existing Stops	2022	per stop	$ -	153	$ -
Dedicated Bus Pull-outs	2022	per stop	$ 200,000	1	$ 200,000
Marketing/Public Outreach	2022	each	$ 35,000	1	$ 35,000
Routematch software upgrades	2022	each	$ 25,000	1	$ 25,000
Total	***2022***				***$ 265,091***

Source: AECOM, 2022; St. Joseph Transit

For costing purposes, the seven new stop locations were reviewed for density and proximity to community facilities to assess the likelihood of requiring additional amenities. Based on this review, all seven stops are assumed to need pole and sign installation only. To estimate the potentially required sidewalk improvements, it was assumed that at least 20% of stop locations could require some level of ADA rehabilitation. It is important to note that these are high-level planning costs and that these are not location specific. The removal, or updating, of signage at current stop locations will not require additional capital investment and therefore is not included in the financial plan. Labor associated with undertaking this work is assumed to be incorporated in a recent bid for services.

Costs assumptions for the dedicated bus pull-out, additional marketing, and public outreach ahead of service changes, and software upgrades were guided by conversations with St. Joseph Transit staff. Routematch software upgrades were needed to support potential future technology improvements.

Table 19 presents the financial plan for the proposed service recommendations, including capital costs, O&M costs, and revenue potential revenue sources. Operating revenue estimates were derived by analyzing 2015-2019 revenue trends, assuming federal funding trends. State funding reflects the recent allocation for the FY2022 Statewide Operating Assistance Grant, assuming no escalation or increase in future years. Fare revenues conservatively assume the minimum 5% fare recovery experienced during the 2020 pandemic, with remaining operating resources coming from local funding sources. Capital revenue assumes an 80% federal share.

Table 19: Financial Plan 2022-2026

Operating Budget	2022 (Estimated)	2023 (Estimated)	2024 (Estimated)	2025 (Estimated)	2026 (Estimated)
Revenue					
Federal Operating Grants	$ 1,858,153	$ 1,892,841	$ 1,928,176	$ 1,964,170	$ 2,000,837
Federal Grant % of Operating Expense	30%	30%	30%	30%	30%
State Operating Grants	$ 23,339	$ 23,339	$ 23,339	$ 23,339	$ 23,339
State Grant % of Operating Expense	1%	1%	1%	1%	1%
Local Contribution	$ 3,692,968	$ 3,762,342	$ 3,833,012	$ 3,905,001	$ 3,978,334
Local % of Operating Expense	59%	59%	59%	59%	59%
Fare Revenue	$ 309,692	$ 315,473	$ 321,363	$ 327,362	$ 333,473
Fare % of Operating Revenue	5%	5%	5%	5%	5%
Other Income	$ 309,692	$ 315,473	$ 321,363	$ 327,362	$ 333,473
Total Operating Revenue	**$ 6,193,844**	**$ 6,309,469**	**$ 6,427,252**	**$ 6,547,234**	**$ 6,669,455**
Expenses					
Base Service Operating Expense	$ 5,717,305	$ 5,824,033	$ 5,932,754	$ 6,043,505	$ 6,156,323
Incremental Operating Cost (Fixed Route)	$ 476,540	$ 485,436	$ 494,498	$ 503,729	$ 513,132
Total Operating Expense	**$ 6,193,844**	**$ 6,309,469**	**$ 6,427,252**	**$ 6,547,234**	**$ 6,669,455**
Capital Budget					
Revenue					
Federal Share (FY20 FP)	$ 212,073				
State Share	$ -				
Local Share	$ 53,018				
Other	$ -				
Total Capital Revenue	**$ 265,091**				
Expenses					
Total Capital Expenses	**$ 265,091**				

IMPLEMENTATION PLAN

The following section outlines the recommended implementation plan.

Year 1 – FY 2022

- Hold public meetings for input on service changes
- Present recommendations to Board for approval
- Develop performance measures and service standards for fixed routes and demand response
- Develop a system to monitor and track data for NTD and the performance measures for both fixed-route and demand response
- Have drivers test drive new routes
- Meet with RouteMatch/Uber to refine demand response plan, run simulations and refine zone boundaries
- Select between software-only or turnkey demand response service
- Work with Marketing to develop a new brand for demand response
- Work with Marketing to develop a strategy to promote and advertise the new route network
- Add and remove bus stops based on the recommendations
- Initiate marketing campaign to promote new service
- Update marketing materials to reflect changes to the system
- Start new service

Year 2 – FY 2023

- Continue to monitor the performance of fixed-route and demand services to track the system after the implementation
- Update performance measures based on data collected after implementation
- Update demand response boundaries and service as needed
- Continue marketing service