CONNECT BERRIEN

Transit Service Integration Plan
Final Report

SEPTEMBER 2018

TABLE OF CONTENTS

TABLE OF FIGURES

1. EXECUTIVE SUMMARY

OVERVIEW

The existing public transportation services in Berrien County are not adequately meeting the needs of residents and businesses. Previous studies, outreach conducted for this project, and analysis of data and peer regions all indicate that the services currently provided by the four transit agencies in the county are too complicated, unaffordable for many, and don't sufficiently connect important destinations or operate during the hours needed.

Much of Berrien County is effectively not served at all by public transportation. The two largest urban areas – St. Joseph/Benton Harbor and Niles - are not directly connected to each other by transit. There is currently no transit service provided on Sunday by any agency in Berrien County. Furthermore, the county-managed Berrien Bus is spending down its financial reserves, and will no longer be able to operate within a few years unless there is some intervention.

This document provides a feasible service plan for improved transit in Berrien County, based on technical analysis and input from stakeholders and the general public. Implementing the service plan described here will enable Berrien County to provide options for those who cannot or choose not to drive, and will facilitate economic growth by connecting people with jobs and other important activities.

Evaluation Process

The proposed GoBerrien system is based on the following inputs received during the early stages of this project:

- Analysis of existing services
- Market analysis of travel demand within and outside of the county
- Review of peer regions and peer transit agencies, focused on small urban and rural areas
- Public outreach within the county, including surveys, meetings, and stakeholder workshops
- Feedback from the project steering committee and technical committee

These inputs identified critical needs related to transportation, and helped inform the setting of priorities. The plan incorporates best practices from elsewhere, and constrains projected costs to a level that was deemed feasible for Berrien County. The following are goals for the GoBerrien system, which are derived from the inputs described above:

- **Enhance** – Make transit more convenient than it is today
- **Connect** – Connect people to more places than they can reach today
- **Simplify** – Make transit easier to use than it is today
- **Sustain** – Ensure the financial and long-term sustainability of all transit systems

From these goals, the study created objectives and evaluation criteria, in order to ensure that the GoBerrien system was designed to achieve the project goals. An iterative process with the project committees helped refine the final product, and the proposed GoBerrien system will significantly achieve the project goals, as detailed in Chapter 6.

PREFERRED TRANSIT SCENARIO IN BERRIEN COUNTY

This Connect Berrien Transit Service Integration Plan proposes a true countywide public transportation system that would not only use resources more efficiently, but would also offer a simpler and more useful network to county residents and employers. The proposed system, hereafter called "GoBerrien", would use scheduled fixed-route service for longer trips between urban areas within and bordering Berrien County. A demand-response system would handle shorter trips, either point-to-point or as feeder service to the fixed-route network. There would be service operated seven days a week, although some services would operate only on alternating days in order to keep costs down. The number of transportation providers would be reduced, ideally to a single entity.

The GoBerrien system will have a single one-way fare of $2.00 for any trip, no matter which particular service or services are used. Weekly and/or monthly passes will also be offered. The system will take advantage of emerging technology and mobility options so that travel is as convenient, seamless, efficient, and coordinated as possible.

FIXED-ROUTE SERVICE

There will be six scheduled fixed routes, designed for longer trips between urban areas in the county and to South Bend and Michigan City. These longer distance trips were identified as common travel patterns in the market analysis. The fixed-route network essentially provides a backbone for the transit system, so that demand-response service can focus on filling the gaps with shorter trips and/or feeder service. The six routes with scheduled service will be as follows:

- **Benton Harbor – Niles** operating seven days a week (six round trips on weekdays, four round trips on weekends)

- **Niles – South Bend** operating seven days a week (six round trips on weekdays, four round trips on weekends)
- **St. Joseph – Watervliet** operating four days a week (six round trips on Mon/Wed/Fri, and four round trips on Sunday)
- **Benton Harbor – New Buffalo** operating three days a week (six round trips on Tue/Thurs and four round trips on Saturday)
- **New Buffalo – Michigan City** operating three days a week (six round trips on Tue/Thurs and four round trips on Saturday)
- **New Buffalo – Niles** operating three days a week (six round trips on Tue/Thurs and four round trips on Saturday)

The overall span of service is designed to be:

- Weekdays 5:00 a.m. to 8:00 p.m.
- Saturday 6:00 a.m. to 8:00 p.m.
- Sundays 7:00 a.m. to 7:00 p.m.

The scheduled trips for each particular route can be spread evenly throughout the service day (approximately every three hours on a weekday), or clustered in the morning and late afternoon/evening, with a midday break. This latter option may reduce costs (for example, if a round trip takes two hours instead of three hours) and better match travel demand in some cases. Additionally, trips can be scheduled for timed transfers if there is a peak direction of travel (for example, a trip from Benton Harbor might be scheduled to arrive in Niles at 7:50 a.m., and a trip departing Niles for South Bend at 8:00 a.m., if sufficient transfer demand exists).

The fixed-route service will have limited stops at major destinations, which are detailed in Chapter 6. Although the fixed-route system is primarily designed for longer, inter-city trips, it is also worth noting that many shorter trips will be possible on the scheduled service, which will further relieve the burden on the demand-response system. Following are examples of shorter trips that can be made using the proposed fixed-route service:

- Between St. Joseph and Benton Harbor
- Between St. Joseph/Benton Harbor and Fair Plain shopping area
- Between Andrews University and Berrien Springs
- Between downtown Niles and Martin's Supermarket or Niles Plaza
- Between Niles, Buchanan, Lakeland Hospital, and Lakeland Family Medicine
- Between Coloma and Watervliet
- Between St. Joseph and Shoreham

- Between New Buffalo and Four Winds Casino

DEMAND-RESPONSE SERVICE

The demand-response service complements the fixed-route network described above, and therefore operates in different areas of the county on alternating days. The span of service is the same as fixed-route services.

Demand-response trips should feed the fixed-route network wherever possible, and not compete with scheduled trips. The program parameters should ensure that riders are connected to the fixed-route service wherever it is feasible to do so. For example, program rules could state that passengers will be delivered to or picked up from the nearest fixed-route bus stop, or driven point-to-point if both origin and destination are further than a half mile from a fixed-route service. It also may be necessary to establish a maximum trip length (for example, 15 miles) in order to provide service efficiently.

Generally, response time for requests should be minimized, and less than one hour at all times if possible. For trips that connect to the fixed-route network, waiting time at the transfer points should be minimized. Emerging technology and software will help to optimize the system for both the GoBerrien provider and the customer.

Demand-response service will operate each day in the following areas:

- **Mon/Wed/Fri/Sun** – all parts of Berrien County north and east of M-139, as well as all of the St. Joseph/Benton Harbor urbanized area south to Bridgman, all of Berrien Springs, all of Buchanan township, city of Niles, and all of Niles township
- **Tue/Thurs/Sat** – all parts of Berrien County south and west of M-139, as well as all of the St. Joseph/Benton Harbor urbanized area, all of Berrien Springs, city of Niles, and all of Niles township
- In addition to providing increased service, the GoBerrien system will include the following improvements:
- One-way fare of $2.00 for any GoBerrien trip, no matter what service or services are used (free transfers)
- Centralized “one call/one click” call center for reservations, scheduling, and dispatch across the county, regardless of transit provider
- Branding/marketing campaign to raise awareness about new services offered on each day of the week
- Investment in transfer points, including sidewalks, crosswalks, shelters, benches, lighting, and signs
- New software/technology which will optimize agency operations and provide better customer information

- Brokerage model by which any trip can be operated by any provider, whether transportation agency, contractor, social services agency, taxi, or other

These improvements are designed to leverage the increased service by also making the system more efficient, and easier to understand and use.

Preferred Transit Scenario Cost

The new system will require approximately $1.8 million in annual local operating funds, as compared with $300,000 today. While this is a significant increase, the funding sources can include municipalities, the county itself, and private entities. In addition, this funding would leverage additional monies from the state of Michigan due to the increased level of transit service. Implementing the GoBerrien system is projected to bring the county close to its peers with regard to per capita spending on transit and transit ridership, as shown in Figures 1-1 and 1-2 below (see Appendix D for statistics from peers). Fortunately, no large capital investments are required in order to implement the GoBerrien system. The total projected annual operating cost for GoBerrien is $6.3 million per year, which includes funding from fares, as well as federal, state, and local sources.

FIGURE 1-1 TRANSIT SPENDING PER CAPITA ON OPERATING EXPENSES FROM ALL SOURCES (PER YEAR)

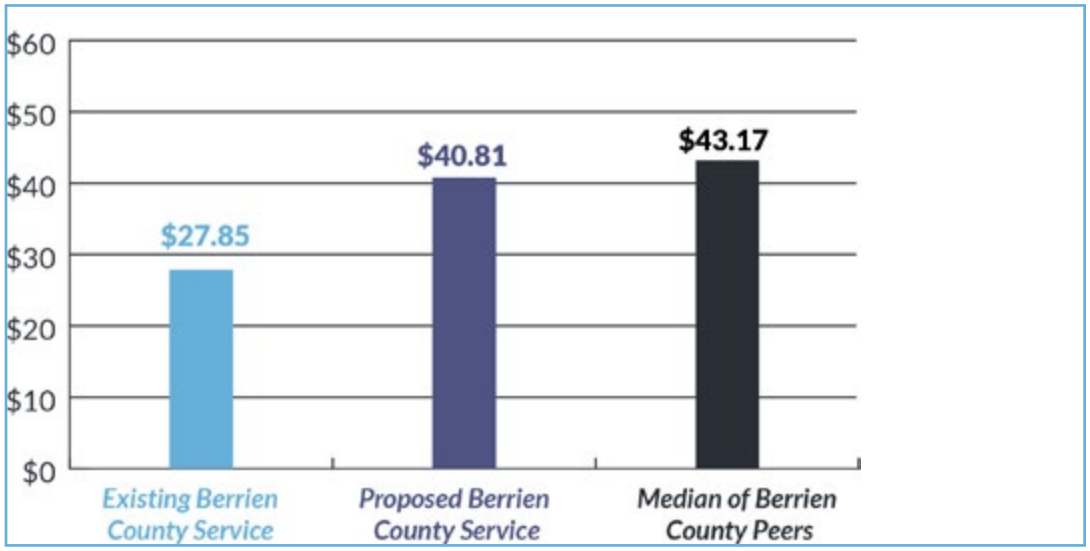
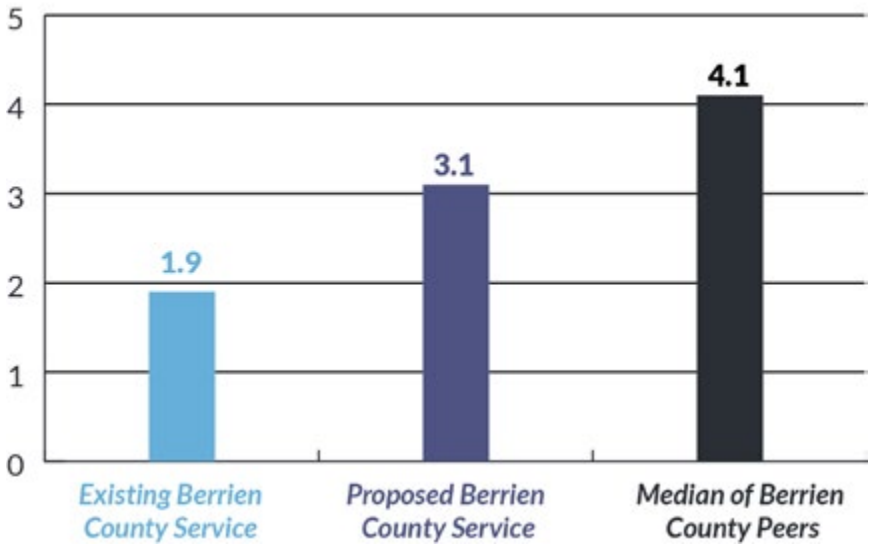
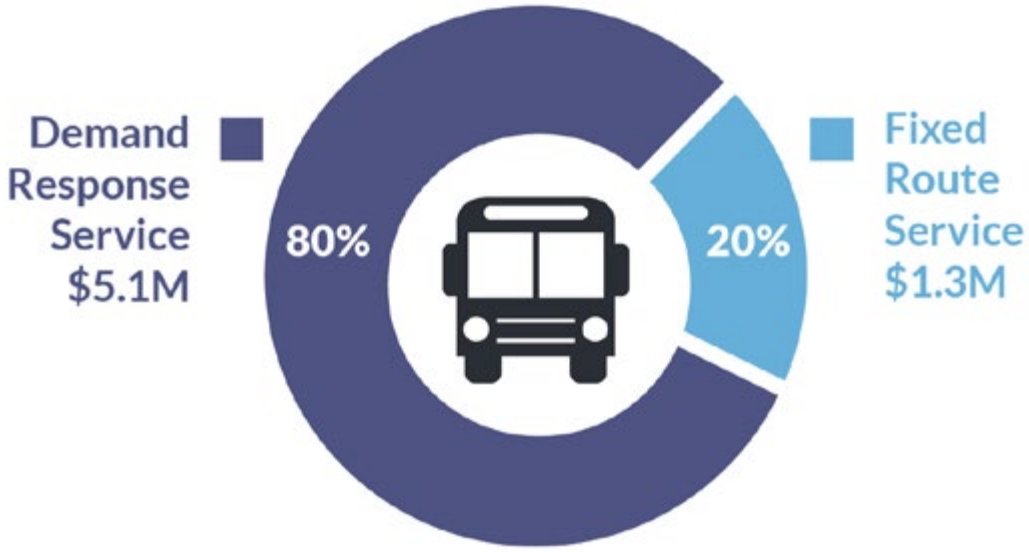


FIGURE 1-2 TRANSIT RIDERSHIP PER CAPITA (PER YEAR)



The fixed routes will consume about 20% of operating resources (~$1.3 million per year). The demand-response system will consume about 80% of annual operating resources (~$5.1 million per year).

FIGURE 1-3 ALLOCATION OF RESOURCES IN PREFERRED TRANSIT SCENARIO (PER YEAR)



More details about the GoBerrien system are included in the following pages. GoBerrien will offer public transportation to all of Berrien County for the first time. For many individuals who want or need to travel without a car, this will reduce the burden on their family, friends, coworkers, and social services agencies who currently need to assist with transportation. This frees up valuable time and money to be spent on other priorities. Employers will have an easier time recruiting and retaining workers because of reduced transportation challenges, thus enhancing economic growth. Most importantly, the GoBerrien system will allow Berrien County residents to live more independently and with far greater flexibility in their transportation options, enabling the county to attract and retain residents who are more able to fully use their talents.

CAPITAL AND OPERATING NEEDS

The capital investments required for GoBerrien are fairly minimal. The existing fleet and facilities will be sufficient for vehicle operations and maintenance, which means that the traditional federal and state sources for capital funding can sustain the proposed transit system by replacing vehicles and other assets as needed. It is possible that some staging/storage areas for vehicles might be beneficial in order to reduce deadheading, but since maintenance would not be performed at these sites, this should not be difficult to arrange. Some capital investment will be required for the new centralized call center, for software and technology, and for bus stops. With federal and state grants available, the local match required is expected to be less than $500,000.

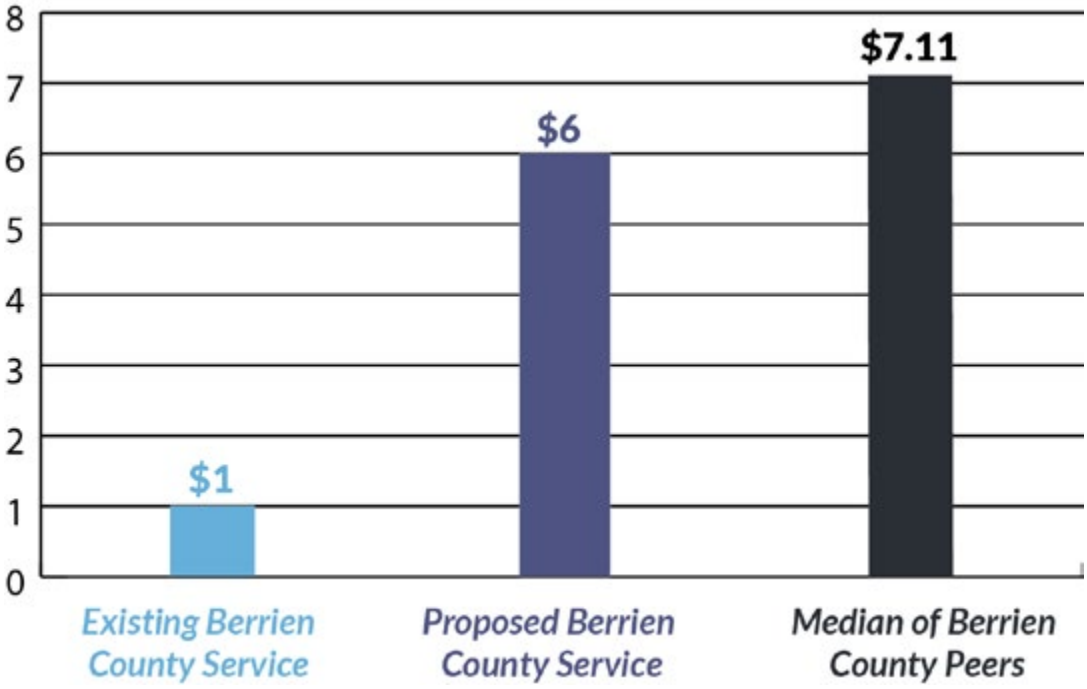
FIGURE 1-4 REQUIRED FUNDING SOURCES FOR GOBERRIEN OPERATING COSTS

Funding Source	Existing Berrien County Amount	Proposed Amount	Notes
Federal	$1.4M	$1.4M	Rural 5311 + Urban 5307
State	$1.7M	$2.5M	39% of cost per formula
Local Funding Needed	$300K	$1.8M	
Fares	$550K	$550K	More riders but lower avg fare
Berrien Bus Contracts	$350K	$0	No guaranteed revenue
TOTAL:	**$4.3M**	**$6.3M**	

Federal funding would remain about the same as for existing service, since the funding formula is mostly population-based and the county is not projected to grow significantly in population. State funding would increase by about $800,000 per year, since the funding amount is related to the amount of transit service supplied. Fare revenue would remain about the same as today, with a lower average fare being offset by additional new riders. As mentioned above, local funding will need to increase from the current $300,000 per year to $1.8 million per year. The current revenue from Berrien Bus contracts with schools and other facilities is not assumed, since the proposed service focuses on serving all county residents and may not allow these contract services. The federal funding amount and the state formula amount of 39% would remain the same, even if the transit service were increased or decreased from that proposed in this document.

As shown in Figure 1-5 below, even the significant increase in local funding as proposed would still not exceed the local transit funding per capita for Berrien County's peer regions noted in Appendix D.

FIGURE 1-5 LOCAL FUNDING PER CAPITA (PER YEAR)



COMPARISON WITH EXISTING TRANSIT SERVICE

The new GoBerrien system will effectively serve the entire county for the first time. Almost everyone will have access to at least as much service as they do today, with the exception of a small number of existing Berrien Bus customers outside of Berrien Springs, whose service will be reduced from five days a week to three or four days, depending on exactly where they live. For example, Eau Claire will receive demand response service only on Mon/Wed/Fri/Sun. Overall, the GoBerrien service will also offer a more comprehensive network to more places, expanded operating hours, a lower fare for most trips, and a far simpler interface for requesting or learning about service. Specifically, the new service compares to existing service as follows:

- Will serve 100% of Berrien County residents (~157,000 people) as compared to 58% today (91,000)
- Will serve 100% of Berrien County jobs (61,000) as compared to 66% today (40,000)
- Sixty-three percent of residents and 69% of jobs will have service seven days a week, which is more people and jobs than get ANY service today.
    - This will lead to a projected 50% increase in ridership

- Direct scheduled connection between the Twin Cities, Niles, and South Bend seven days a week, which does not currently exist
- New service to Michigan City three days a week

IMPLEMENTATION PLAN

Once the county is ready to move forward with implementing GoBerrien, the following are the main steps to get from today's services to the integrated countywide GoBerrien system:

- **Communications Plan** – With the help of partners, raise awareness of GoBerrien and the benefits it will bring; garner support from county residents, businesses, institutions, social services agencies, advocacy groups, and community organizations. Include employees of existing transportation providers in these conversations.
- **Funding** – Ensure that adequate operating funding will be reliably available. If this requires a ballot question to raise taxes, allow time for that process.
- **Federal and State Partners** – Both FTA and the state generally support a more integrated and consolidated system, as well as better transit service. However, make sure that both the state and FTA are kept abreast of progress on GoBerrien implementation.
- **New Organization** – Create the new GoBerrien transit provider (unless this will be an existing organization). Transfer assets as needed. Implement the software/technology strategy, particularly with regard to centralizing the call center.

It is recommended to implement the new service all at once if possible, since GoBerrien is designed to operate as a full network. If phasing is absolutely necessary, then a first phase could include the seven-day-per-week spine of scheduled service from the Twin Cities through Niles and South Bend, and somewhat reduced demand-response service. The remainder of GoBerrien service would be implemented in Phase 2.

Once GoBerrien service begins, the provider should shift to ongoing evaluation so that service can be refined and improved over time (see Chapter 7 for Service Standards). The GoBerrien system is designed for maximum flexibility, so this should allow for utilization of new technologies and transportation providers. For example, it may be desirable to keep all existing employees and vehicles at the outset of GoBerrien service, while integrating more outside transportation providers over time.

It should be noted that the service plan incorporates all of Berrien County and could be managed by one or more agencies. Specific trips could be operated by public or private entities. The focus at this time is on describing the total resources needed, in order to offer particular levels of transit service.

For the longer term, depending on population and job growth, as well as available resources, consider building on the success of GoBerrien in the following ways:

- **Expanded Hours** – increase the span of service later into the evening
- **Frequency/Response Time** – deploy more vehicles for additional scheduled service and/or shorter demand-response times
- **Additional Destinations** – increase service to places within Berrien County that are experiencing growth, and/or connect to additional places nearby such as Cass County
- **All Service on All Days** – instead of alternating days for service in many parts of the county, have all service operate seven days per week

The new GoBerrien system will effectively serve the entire county for the first time.

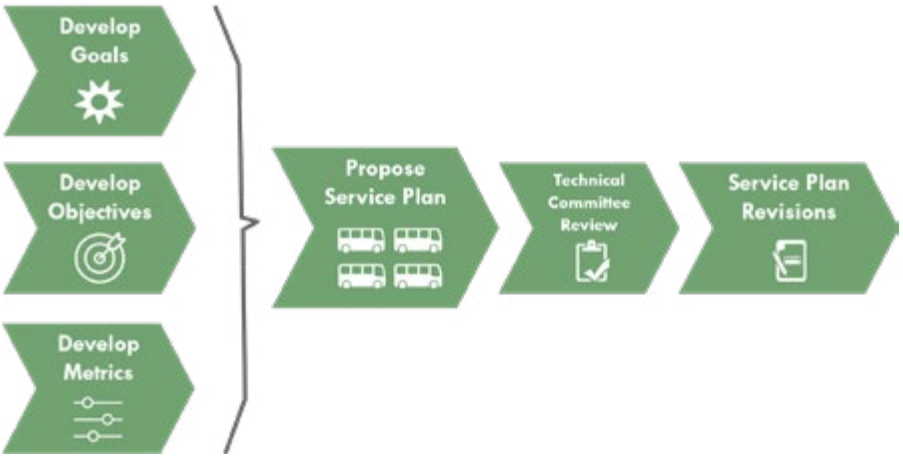
2. OVERVIEW AND STUDY APPROACH

Efforts to coordinate Berrien County's disconnected transit environment have been discussed and studied for years. The service plan presented here has been informed by these previous planning initiatives. The Connect Berrien Transit Service Integration Plan builds off the work completed in 2014 for the Moving Forward: A Plan for Public Transit in Berrien County report. Over the course of more than a year, the Connect Berrien Transit Service Integration Plan gathered information on existing transit services, transportation markets, and major concerns to both understand what type and level of transit service is needed in the county and to propose a system that improves the delivery of transit service in the county. By collecting and synthesizing existing transit, travel, and demographic data, the study team could identify needs and gaps in Berrien County's transportation system.

During an extensive outreach effort, desired public transit goals and objectives were identified by the public, stakeholders, and members of the project steering committee. Although various mechanisms for providing transit service in the future were discussed, this report focuses on the service plan itself, without delineating exactly the nature of the future service provider(s).

With this input, the project team studied different options for broad-based transit enhancements for Berrien County. The strategies proposed are tailored to respond to the multi-faceted concerns of the business community, residents, and human services agencies in Berrien County to support both current needs and future development.

FIGURE 2-1 CONNECT BERRIEN STUDY PROCESS



It should come as no surprise to anyone that addressing all of these goals and objectives will require significantly more financial resources than the approximately $4 million per year currently being utilized for public transportation in the county. Although there could be some efficiencies from

greater system collaboration and/or reducing the number of transit providers, the expected cost savings from those activities alone will not be enough to significantly improve transit service.

The service recommendations are based on "planning level assumptions". This level of detail is sufficient for creating cost estimates, operating and capital plans, and equity analysis, and can support future discussions about potential agency consolidation. More detailed planning would be needed prior to implementation regarding things such as exact bus stop locations, specific departure times for scheduled service, and some operational and customer service procedures.

This report is organized as follows:

- **Chapter 3** briefly summarizes the prior transit studies, a review of peer rural transit agencies, and performance of existing transit services in Berrien County
- **Chapter 4** describes a market analysis of travel demand in Berrien County to help justify where transit service is needed and can generate ridership
- **Chapter 5** discusses the results of the extensive public engagement process and the goals and objectives for transit service in Berrien County
- **Chapter 6** presents the service recommendations for the preferred alternative, including the evaluation process and a comparison with existing service
- **Chapter 7** outlines the implementation steps to achieve this transit vision and supporting policies
- **Chapter 8** identifies the capital and operating needs of the preferred transit alternative

3. EVALUATION OF EXISTING SERVICES

Berrien County covers 1,581 square miles with an overall population density of 285 people per square mile. Approximately 67% of the people reside in the urbanized areas of the county while the remaining 33% are in designated rural areas. The Benton Harbor/St. Joseph area is the urban activity center for the county and has the highest population density per square mile. A large percentage of the county's population looks towards the Benton Harbor/St. Joseph area for employment, shopping, and medical services. Communities including Niles, Buchanan, and New Buffalo in the southern portion of the county are oriented toward urban activity centers in South Bend or Michigan City, Indiana for shopping and employment.

A thorough analysis of existing services as well as the potential markets for public transit must be incorporated into the new service plan. The assessment of existing conditions explored the existing transit services from the four providers currently in Berrien County – Berrien Bus, Buchanan Dial-A-Ride, Niles Dial-A-Ride, and Twin Cities Area Transportation Authority (TCATA).

The assessment of existing services illustrates that public transit in Berrien County is in need of improvement. While the current providers are doing what they can with limited resources, the existing fragmented transit service spread among multiple agencies is not serving county residents and businesses well. As it stands, the existing transit services are:

- Difficult to use
- Difficult to understand
- Inefficient since some functions are duplicated among multiple providers
- Ineffective at meeting demand – 42% of county residents have no transit service at all

BACKGROUND DOCUMENTS

Summary of Previous Planning Studies

To better understand how to address the transit needs of county residents, a variety of studies in recent years has examined the pitfalls of the existing transit network. These include countywide studies like the Overview of Transportation Services in Berrien, Cass, and Van Buren County and Moving Forward: A Plan for Public Transit in Berrien County. Further studies have examined the needs of specific local populations like the Pokagon Band of Potawatomi Indians Transit Feasibility Study and the Berrien County Coordinated Transit-Human Services Transportation Plan.

The following service issues have been repeatedly identified in recent Berrien County planning documents:

- Countywide Coordination:
  - Limited marketing and outreach make it difficult to learn about the various services.
  - Riders making cross-county trips must often use multiple service providers with uncoordinated schedules, fares, and service areas.
  - Inter-county transit connections are limited and cumbersome and many residents are forced to make inter-county trips regularly by modes other than transit.
- Limited Service Hours:
  - The lack of service on the weekends means transit-dependent residents are unable to leave home at all.
- Commuting by Transit:
  - The operating hours of existing transit service make using transit for regular work commuting difficult if not impossible. Reaching night shift or early morning employment is a major problem across the county.
  - There is a lack of fixed routes between areas with higher population densities. Funding and availability for out-of-county travel is confined to Medicaid-eligible clients and for long-distance medical trips.
- Medical Trips:
  - Limited operating hours and destinations mean trips for non-emergency medical purposes are commonly not met, particularly for those individuals not on Medicaid.
  - Patients may be able to reach one hospital or clinic in the county using public transit or specialized transportation, but they are unable to access other clinics or hospitals in the region they need to get to for additional procedures or tests. This is the case for patients traveling from one facility to another on the same day, and for those trying to get directly from home to a facility in the same day.
  - Non-emergency medical appointments may take place on a Saturday; if they do and they are outside an urban area, reaching them is usually a problem for patients without cars.

- People having to go to the hospital repeatedly over several weeks or months for treatments such as chemotherapy or dialysis struggle with having to schedule regular rides.
- Accessing highly specialized medical services outside of the county in a timely and economical manner is difficult or impossible.
- People traveling from rural to urban areas for services might be left waiting outside their destination before the service facility opens due to timing of rides.

The service plan recommended in this document will address these issues previously identified.

SUMMARY OF EXISTING TRANSIT SERVICES

Today, four independent transit providers serve the county: TCATA, Niles Dial-A-Ride, Buchanan Dial-A-Ride, and Berrien Bus. Having four independent service providers is a bit unusual in a county with a population of only 155,000 people. Still, much of the county is effectively not served at all by public transportation. Furthermore, the two largest urban areas—St. Joseph/Benton Harbor and Niles—are not directly connected to each other by transit. Nor is there currently transit service provided on Sunday by any agency in Berrien County.

The four systems offer primarily demand-response services, supplemented by several fixed and flex routes. The services currently provided by the four transit agencies are too complicated, unaffordable for many, do not sufficiently connect important destinations, and do not operate during needed hours. Figure 3-1 summarizes the service in the county and Figure 3-2 maps the existing transit service areas in Berrien County. An examination of each agency follows.

For many trips, existing services are difficult to use and difficult to understand.

FIGURE 3 1 EXISTING TRANSIT SERVICE PROVIDERS IN BERRIEN COUNTY – OVERVIEW

	TCATA	Niles Dial-A-Ride	Buchanan Dial-A-Ride	Berrien Bus
Service Overview	Immediate response dial-a-ride services and two fixed routes.	Same day curb-to-curb service. 24-hour advance scheduling is preferred, but rides can be scheduled up to one hour in advance. Also, provide one fixed route.	Same day curb-to-curb service. 24-hour advance scheduling is preferred, but rides can be scheduled up to one hour in advance.	Curb-to-curb, advance reservation general public transportation. Rides reserved on first called/ first served basis. Also, provide transportation services under contract for human services agencies.
Service Area	Dial-a-ride services in Benton Harbor, Benton Township, Royalton, and St. Joseph, serving ~24,000 people within the urbanized area; the remaining portion of the urbanized area receives service on a limited basis. Red Route serves Benton Harbor, St. Joseph, St. Joseph Township, and Stevensville. Blue Route serves Benton Harbor and Benton Township (Fair Plain) retail area.	Dial-a-ride service within the city limits of Niles, Niles Township, and Bertrand Township. Fixed route operates between Niles and South Bend, Indiana.	Dial-a-ride services in City of Buchanan and in Buchanan Township. Curb-to-curb same day shuttle service for Buchanan residents to Niles.	Census designated rural areas of Berrien County. Therefore, serves geographically the largest area in the county.
Service Days/ Hours	Dial-a-ride: M-F 6 a.m. – 6 p.m. Sat 8 a.m. – 4:30 p.m. Fixed Routes: M-F 6 a.m. – 10 p.m. Sat 8 a.m. – 10 p.m.	Dial-a-ride: M-F 7 a.m. – 5 p.m. Sat 10 a.m. – 3 p.m. Fixed route: M-F 10 a.m. – 5 p.m.	Dial-a-ride: M-F 7 a.m. – 5:30 p.m. Sat 9 a.m. – 3 p.m. Shuttle to Niles: M-F 4 round trips Sat 3 round trips	M-F 5 a.m. – 5 p.m.
Full Fares	$1.00 Fixed Route $2.00 Demand Response	$2.00 Fixed Route plus $0.50 for Flex pickup or drop off $3.00 Demand Response within City of Niles $4.00 Demand Response outside Niles	$1.50 within one mile of city limits $4.00 beyond one mile	$2.50 within five-mile radius of Berrien Springs $5.00 outside the radius
Eligibility	Open to the general public	Open to the general public	Open to the general public	Open to the general public once all agency contract obligations are met.

	TCATA	Niles Dial-A-Ride	Buchanan Dial-A-Ride	Berrien Bus
Annual Operating Expenses 2016	$2,484,031	$503,329	$197,334	$1,028,234
Annual Passenger Trips 2016	203,088	37,095	8,118	50,965
Fleet Size	25	6	3	21
Governance/ Administration	Governed by a board, currently appointed by the Emergency Manager for the City of Benton Harbor on Feb. 14, 2012. Management structure consists of a Director and an Operations Manager (Appointed by B. H. City Commission) who oversee drivers, dispatch, and maintenance. LAC provides board with public feedback on services.	Niles City Council provides oversight. Transportation Coordinator monitors services and completes appropriate reports. Operations Manager supervises drivers and dispatch. LAC meets quarterly and provides feedback on services.	Buchanan City Council provides oversight. LAC meets quarterly and provides feedback on services.	The Berrien County Board of Commissioners oversees and sponsors Berrien Bus. Transportation Coordinator provides daily oversight of contractor and completes appropriate reports. Local Advisory Committee (LAC) meets quarterly and provides feedback on services.
Operations	Services are provided directly. Full-time employees classified as operations who do not have supervisory responsibilities are members of labor union.	Beginning in 2011 services provided directly. Previously services were contracted out to a private transportation firm, but decision was made to bring operations in house.	As of Jan. 1, 2012 Buchanan Dial-A-Ride has consolidated an agreement with Berrien County to contract services through TMI (previously services were contracted from TMI through a separate agreement)	Berrien County contracts with Transportation Management Inc. (TMI) for operations. The TMI Operations Manager supervises services from the Berrien Bus facility in Berrien Springs. The facility also houses the maintenance shop and vehicles.
Primary Funding/ Revenue Sources	• Federal S. 5307 • State operating assistance • City of Benton Harbor millage • Passenger fares	• Federal S. 5307 and 5311 • State operating assistance • City of Niles millage • Passenger fares	• Federal S. 5311 • State operating assistance • City of Buchanan millage • Passenger fares	• Federal S. 5311 • State operating assistance • Contracts with human services agencies • Passenger fares

FIGURE 3-2 EXISTING TRANSIT SERVICE AREAS IN BERRIEN COUNTY

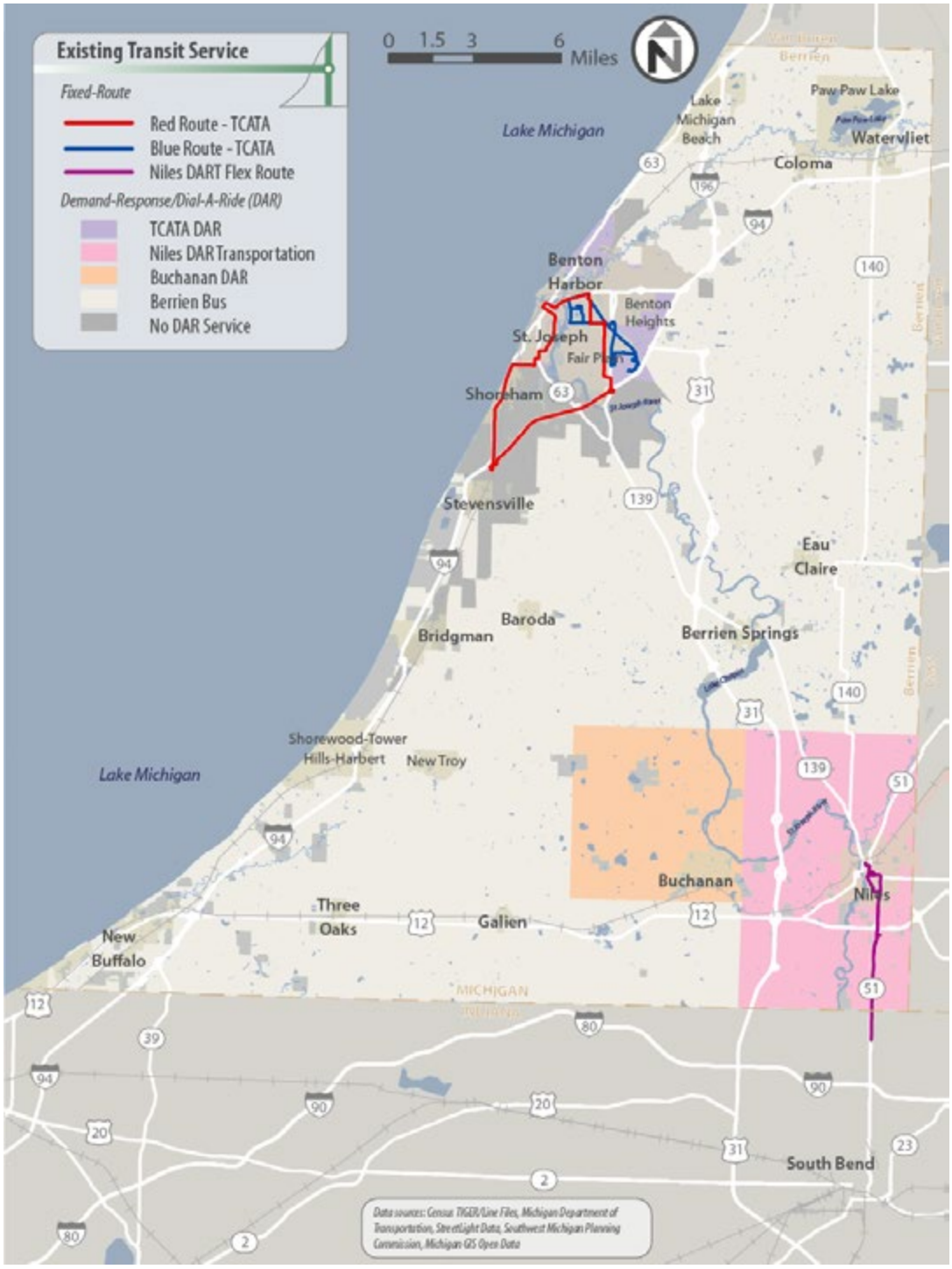
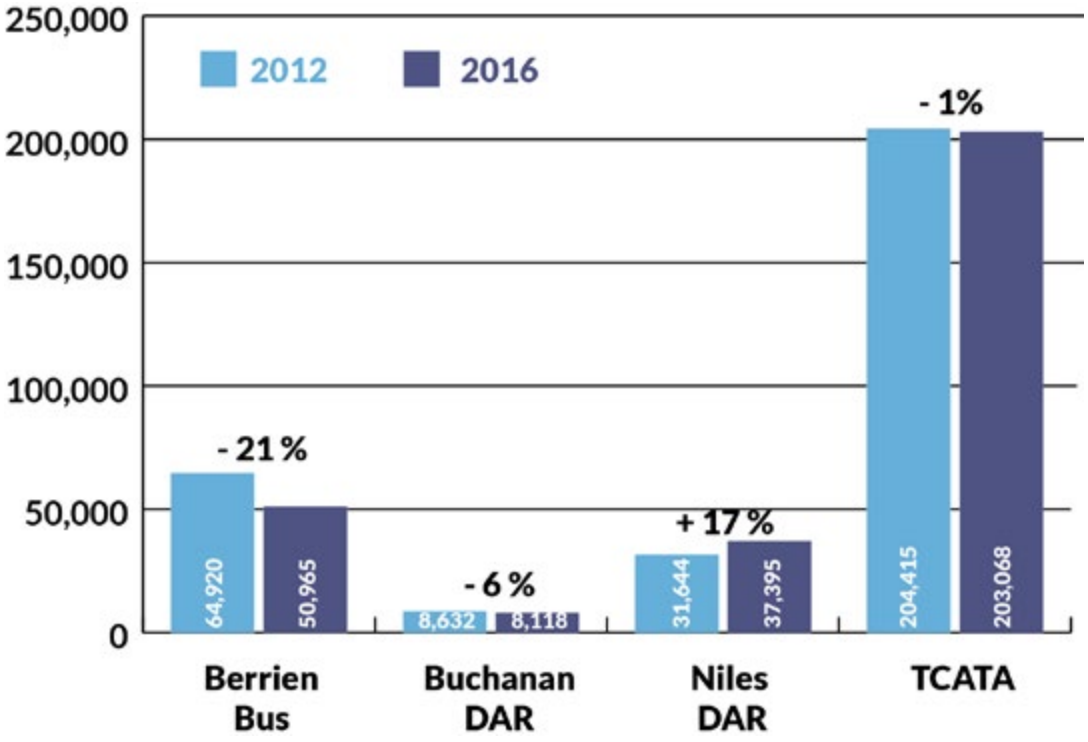


FIGURE 3-3 ANNUAL TRANSIT PASSENGERS RIDERSHIP TRENDS, BY AGENCY



To summarize the existing combined services in Berrien County, Figure 3-4 through Figure 3-8 illustrate sources of funding in 2016 (all from Audited Financial Reports for Michigan Dept. of Treasury):

FIGURE 3-4 FUNDING SOURCES FOR EXISTING SERVICES COMBINED

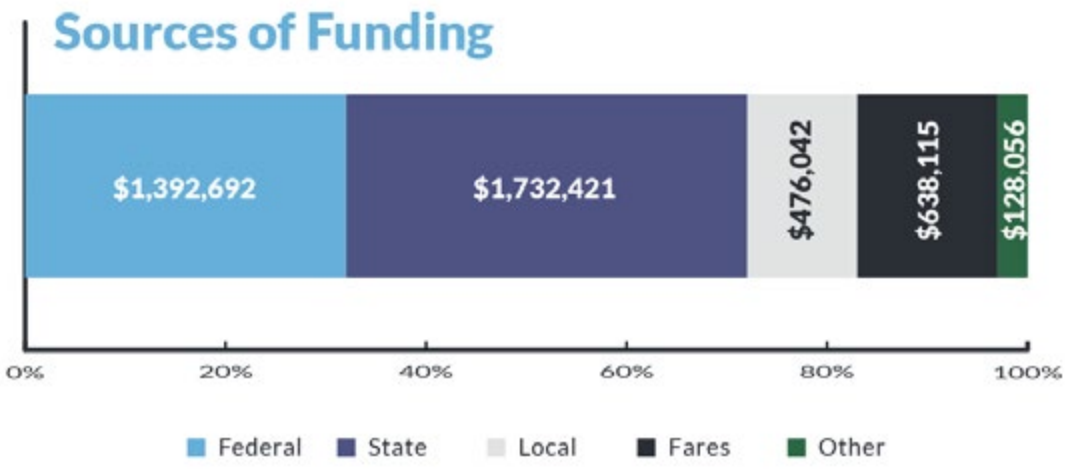


FIGURE 3-5 FUNDING SOURCES FOR TCATA SERVICE

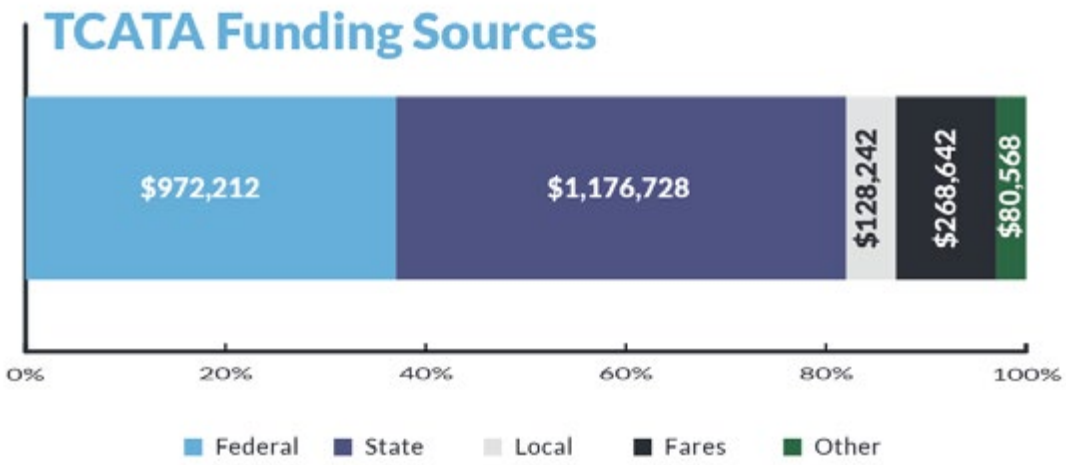


FIGURE 3-6 FUNDING SOURCES FOR NILES DIAL-A-RIDE SERVICE

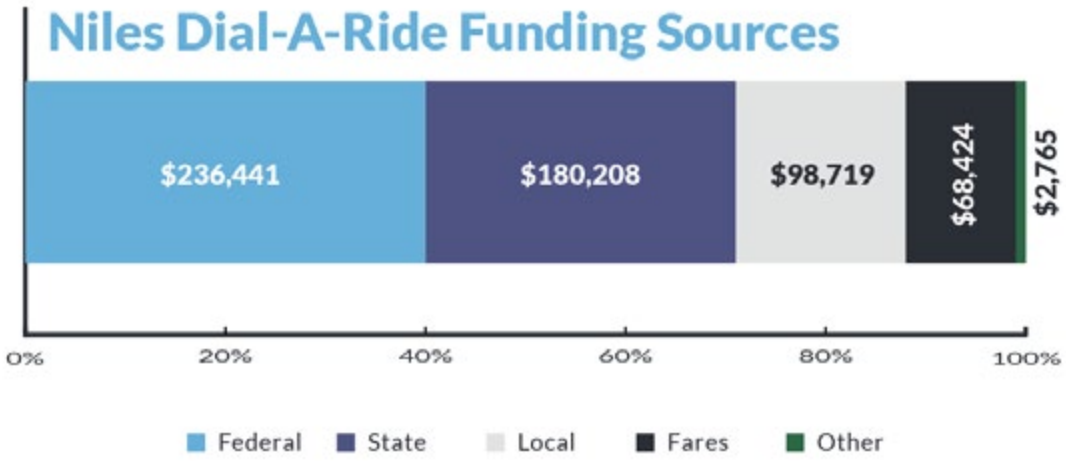


FIGURE 3-7 FUNDING SOURCES FOR BUCHANAN DIAL-A-RIDE SERVICE

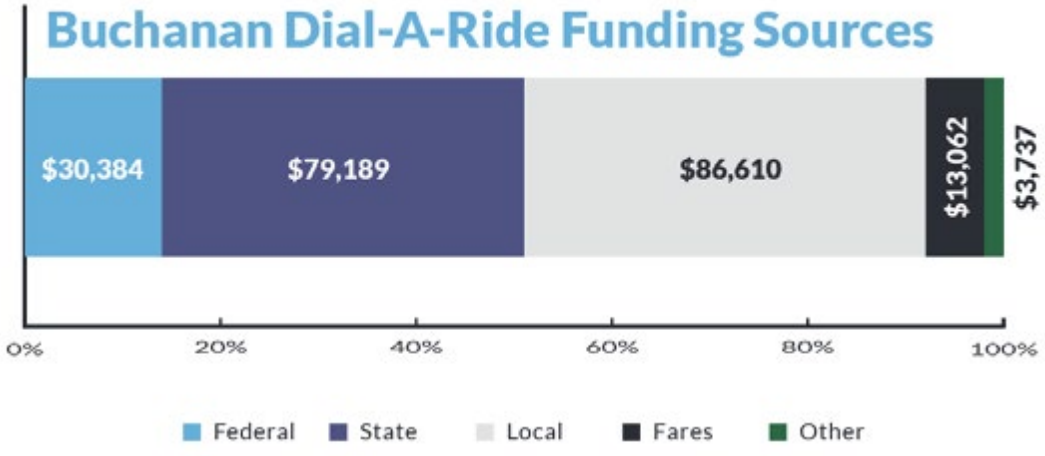
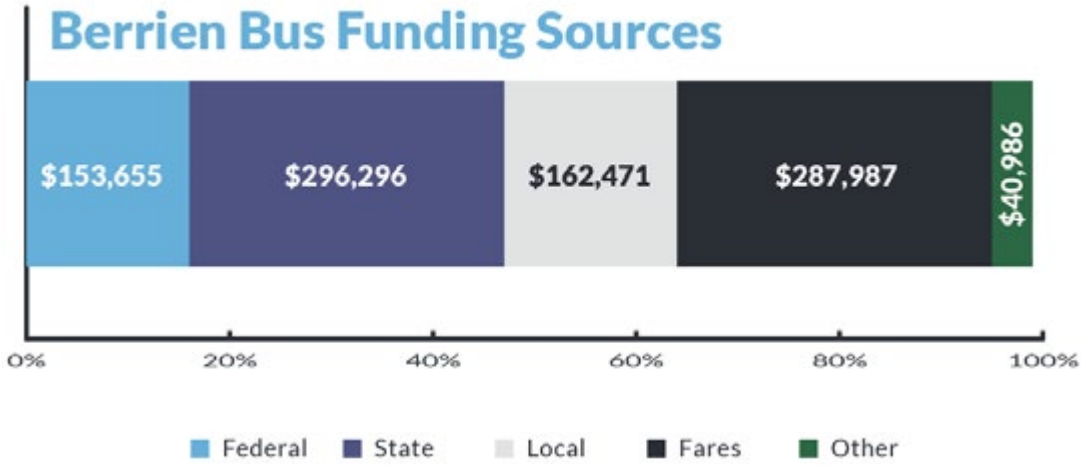


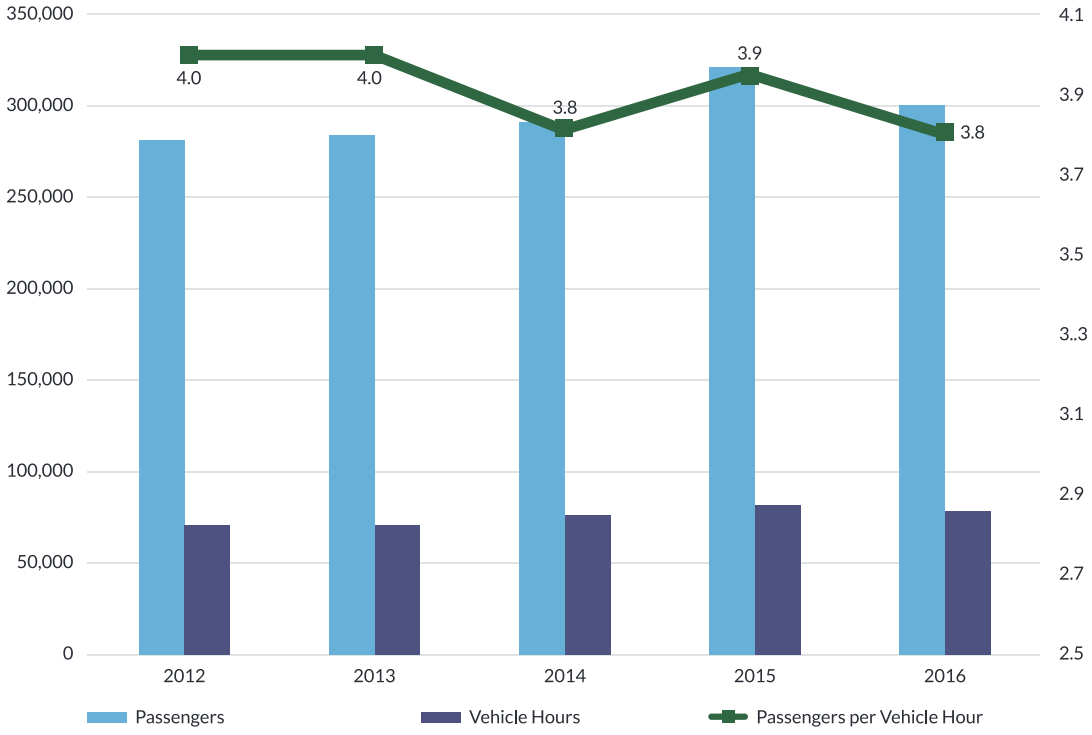
FIGURE 3-8 FUNDING SOURCES FOR BERRIEN BUS SERVICE



Note: Some Berrien Bus contract revenues are included in fares, and other contract revenues make up the entire Local revenue, since Berrien Bus does not receive any local tax revenue.

Existing service productivity over a five-year period for all services combined is shown below in Figure 3-9:

FIGURE 3-9 PRODUCTIVITY FOR ALL EXISTING SERVICES COMBINED



TCATA

The largest transit provider in the county, TCATA, operates weekday and Saturday demand-response service open to the general public as well as two local fixed routes Monday through Saturday. TCATA's two types of services overlap within the TCATA service areas, which can result in the two services "competing" with one another. Allowing this overlap is unusual, resulting in a less effective use of limited resources, and can create passenger confusion. TCATA serves only about half of the St. Joseph and Benton Harbor urbanized area with its demand response service, but receives all of the Federal Section 5307 funding for the urban area because no other provider exists.

The majority of origins and destinations for TCATA passengers are residential complexes and neighborhoods in Benton Harbor, St. Joseph, Benton Township, St. Joseph Township, as well as the Fairplain Plaza, Orchards Mall, and Pipestone Plaza area bounded by Scottdale Road, E. Napier Avenue, and I-94. This shopping area hosts a Walmart, Meijer, Lowes, Home Depot, Burlington, Big Lots, Dollar Tree, Kohl's, and the Celebration! Cinema. Nearly 20% of TCATA's demand-response trips are to and from medical providers including InterCare, Lakeland, and others.

NILES DIAL-A-RIDE

Niles Dial-A-Ride operates weekday demand-response service plus a weekday fixed route with three round trips per day that connect Niles with South Bend, Indiana. This fixed route offers transfers to the South Bend transit system and is popular during the school year. Ridership origin and destination patterns were not available for Niles Dial-A-Ride.

BUCHANAN DIAL-A-RIDE

Buchanan Dial-A-Ride operates curb-to-curb demand-response service to the residents of the City of Buchanan and Buchanan Township, as well as a fixed-schedule shuttle between Niles and Buchanan. The demand response service is operated by TMI out of the Berrien Bus offices in Berrien Springs. Most riders are senior citizens. The majority of trips are to doctors' offices, grocery stores, and the Walmart.

BERRIEN BUS

Berrien Bus operates both specialized/subscription service and general public demand response. Berrien Bus contracts out with several human services transportation agencies in the county to provide subscription trips, including outside of the county to Cass County. Annually, close to 1,700 trips serve Holy Maternity in Dowagiac. These and other regularly scheduled trips function as flex-service routes, wherein passengers that are not a client or member of the sponsoring agency may request to be picked up along the route. For many years, Berrien Bus was able to sustain itself with the contract revenues, and

even built up a small surplus of funds while receiving no local subsidy from the county or municipalities; however, in recent years Berrien Bus has been using up these financial reserves as operating deficits have grown. The following map (Figure 3-10) shows the primary ridership origin and destination pairs for Berrien Bus.

FIGURE 3-10 EXISTING BERRIEN BUS ANNUAL RIDERSHIP PATTERNS

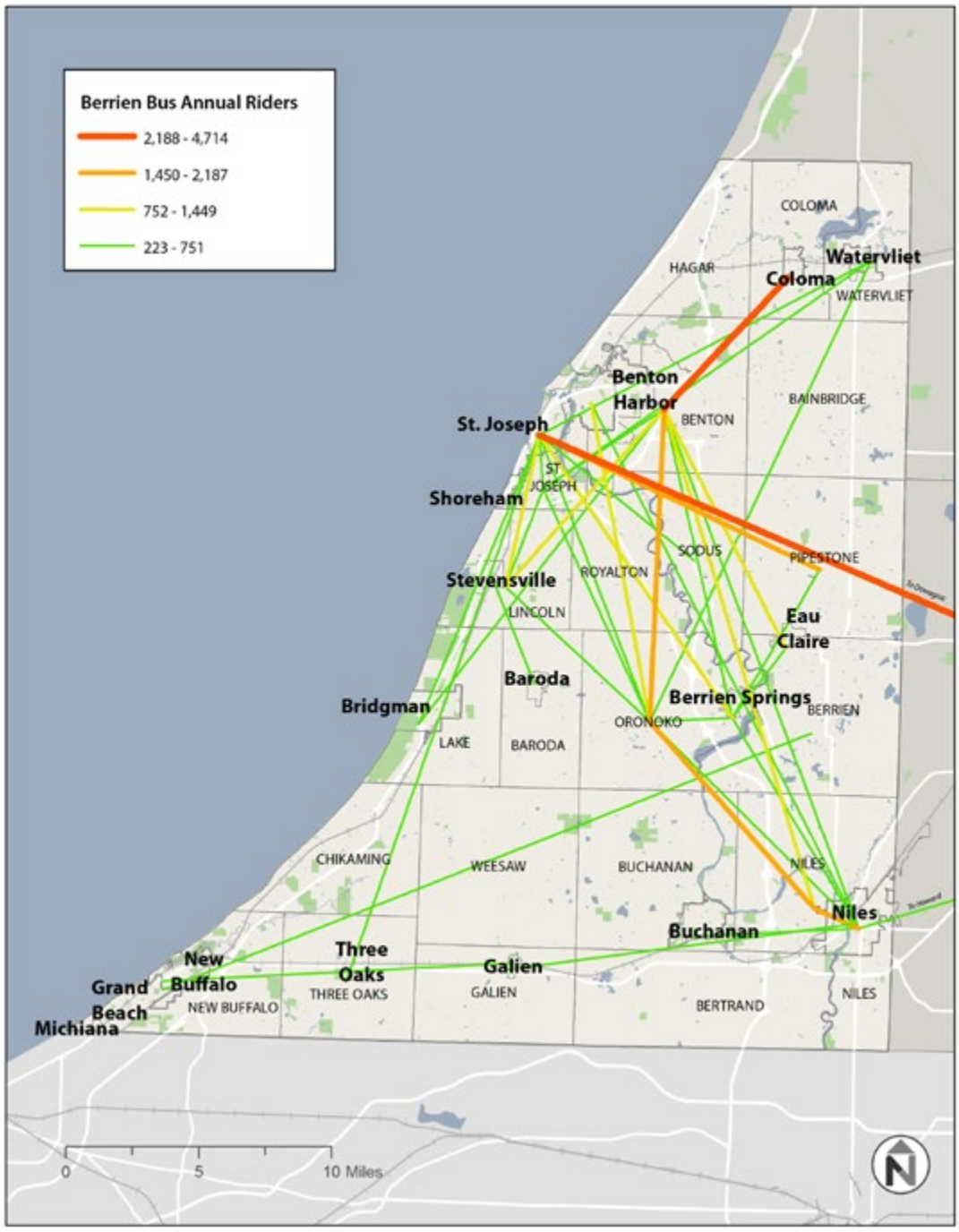
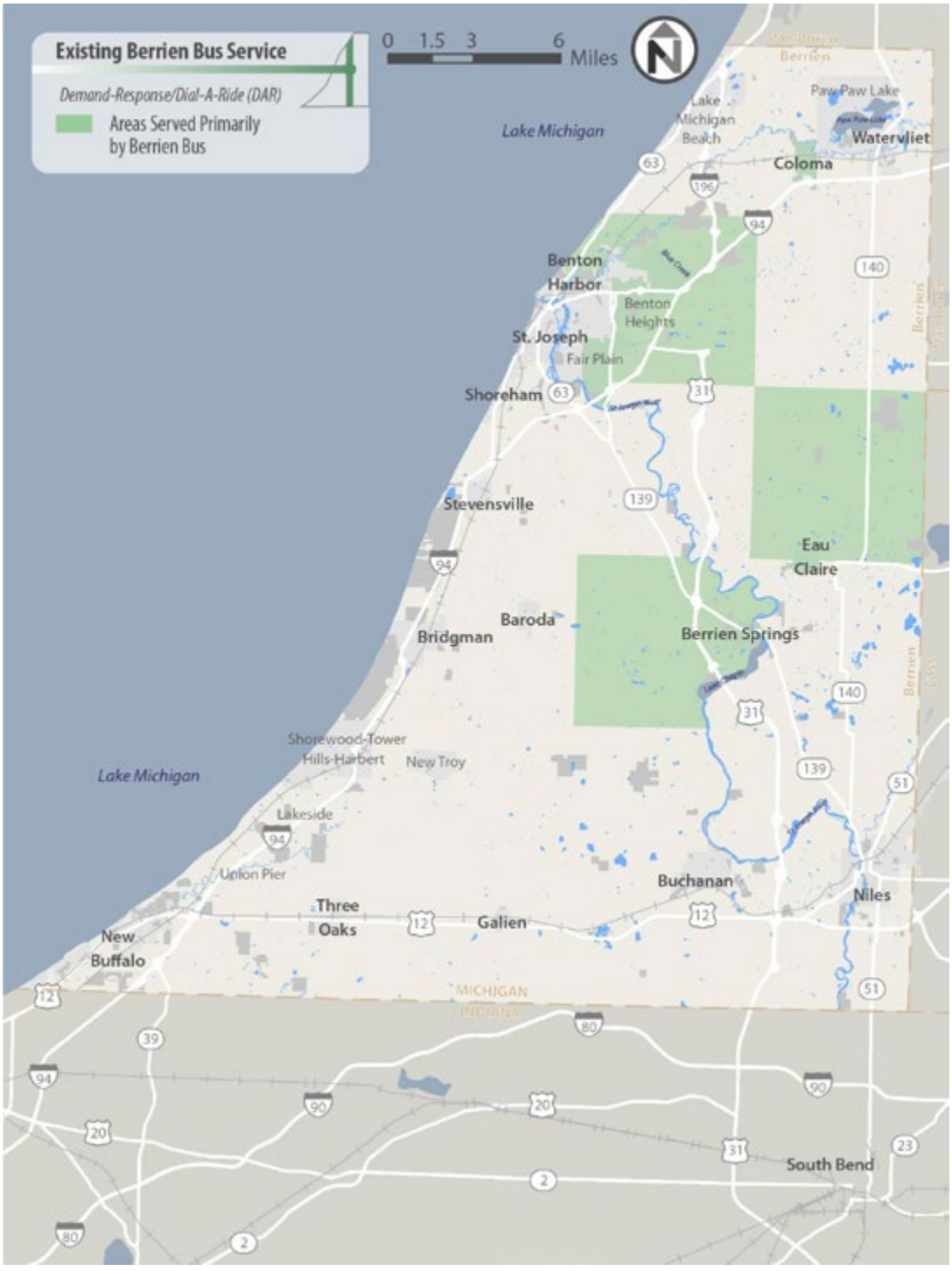


FIGURE 3-11 EFFECTIVE SERVICE AREA FOR BERRIEN BUS



SUMMARY OF PEER REVIEW

The Berrien County Transit Service Integration Plan looked at peer agencies for two primary reasons: 1) to understand best practices regarding consolidation of transit providers, if that is ultimately desired, and 2) to gather information that can help forecast service costs, ridership demand, and other key metrics for the service plan. Shown below is a brief summary of lessons learned regarding consolidation, and Appendix D contains service statistics from peer agencies, which have been used in developing the service plan for Berrien County.

Moving towards any type of provider consolidation is a complicated process with many issues to consider and objectives to be met. The peer review was used to explore other cities and counties to understand how they have tackled the integration of multiple transit providers. While the unique circumstances of Berrien County mean that no perfect peer exists, lessons can be pulled from a variety of peer experiences. In addition, broader best practices are outlined to highlight lessons to learn from all types of transit agencies that operate in low-density, mostly rural environments.

The technical advisory committee and the consulting team reviewed the following agencies' consolidation process and impacts:

- Minnesota River Valley Transit (MN)
- Butler County Regional Transit Authority (OH)
- Luzerne County Transportation Authority (PA)
- Green Mountain Transit (VT)

Key lessons can be summarized as follows:

Transfer of Physical Assets

Many of the benefits and complications of consolidation come from issues related to the garage, or the storage, maintenance, and use of the vehicles. Garage costs offer one of the economies of scale from consolidation, providing cost advantages through certain fixed costs being shared by more users (e.g. all vehicles in the county sharing a single storage facility instead of multiple storage facilities). Cost centers benefiting from consolidation include fueling, maintenance, and storage.

When consolidating agencies, garage location is critical. It should be carefully considered based on where it can operate for the least amount of money. Various characteristics can affect this decision:

- **Demand**
  The garage should ideally be located where demand starts earliest to minimize unnecessary driving time to transit starting points. In other words, if the transit vehicle has to travel far to get to the first transit stop, that represents budget spent for no service.

- **High-Cost Infrastructure**
  The decision of where to locate the garage should consider expensive infrastructure that is already present at a garage location. Three examples of high-cost garage infrastructure are a bus wash, a lift, and a fuel pump. The location of any one of these should be carefully considered when determining the placement of the new transit agency's garage.

- **Existing Sharing**
  Existing agencies in Berrien County in some cases already share a garage location. If a substantial number of vehicles/agencies share a location, it may be more efficient to expand that garage location to incorporate all agencies, rather than choosing a different garage location. Garage consolidation should occur wherever it can save money.

- **Multi-Purpose Garages**
  If agencies involved in the consolidation are using a multi-purpose garage (e.g., the garage stores police vehicles and transit vehicles), there may be complications when removing transit vehicles.

The existing vehicle garages in Berrien County are geographically well placed and appropriate for the capacity needed in the future, and therefore the service plan assumes that all existing facilities are maintained. However, no major expansion or new facilities are required under the proposed service plan.

Vehicles also represent a cost center that can benefit from consolidation. Over time, the newly consolidated agency should work toward a consistent vehicle type (versus the various types used by the original, separate agencies). A single vehicle type will help ensure that the agency's parts inventory and skills inventory is the same, resulting in lower costs. For example, if an agency has two different vehicle makes, that might require two different maintenance workers to fix the same problem.

Joint Procurement of Support, Needs, and Services

Transit agencies are able to receive deals on many operation-related necessities if purchased in large quantities. Joint procurement of support, needs, and services allows cooperation between transit agencies to purchase these necessities and receive the discount, benefiting all parties. Examples include volume deals on insurance, maintenance, fuel, and contracted specialty services (e.g. driver training). Besides the clear benefit of reducing cost, procuring these items jointly enables agencies with limited resources to efficiently support their operation; it creates opportunities through Federal Section 5310 for funding partnerships; and it can provide an additional source of revenue for those agencies that have better financial standing (who may not need the partnership of those agencies with fewer resources).

Staffing and Employee Consolidation

Perhaps the most fraught aspect of transit consolidation is the consolidation of labor into a single agency. While representing potentially significant cost savings, labor consolidation involves the elimination of duplicate positions while untying contractual knots that can vary wildly between circumstances. Many contractual obligations can be sorted out with a thorough legal review of contracts and policies. Outside of union contracts, however, there may be formal or informal seniority hierarchies imparting benefits that should be accounted for when merging staff from various agencies (e.g., if drivers get Sundays off after working there for five years, they will not want to lose that benefit when being absorbed into a new agency). Knowing these informal policies is more useful for negotiating labor transitions than understanding formal policies.

In addition to standard criteria, such as who has more years of experience and more transit-based experience, it is best to prioritize staffing with management personnel from the local organization that is primarily a transit agency. This is in contrast to choosing the head of an organization that schedules local transit but also manages snow plowing and maintenance. If all agencies are run by contracted organizations, it is a best practice to ensure a single central authority has the power of administration over all contractors.

Bulk Sale of Transit Passes

Transit agencies can create agreements with local universities and other large organizations to provide free transit service to students, faculty, and staff in exchange for funding. Sometimes this involves consolidating a university transit system into the local system and sometimes universities retain theirs as a separate system.

Transit Funding

Cost savings is generally a major motivation for transit consolidation. However, consolidation will not solve all financial problems experienced by a region. Diversifying funding for transit is an important step in ensuring effective transit. A central agency may have better access to funding than any one of the individual agencies had when separate, providing an added bonus to consolidation cost savings.

Public Transit Travel Training

Travel trainings coach people on how to use local transit systems. Travel training can be an effective way to introduce basic transit use in a safe, user-friendly manner, especially for youth and senior populations. Trainings can cover many different topics depending on the individual or group including how to read a schedule, pay a fare, book a trip, request a stop, transfer between services, and use the transit website. Travel trainings can increase ridership by reducing discomfort and making the process clear and understandable. In areas with higher transit-dependent populations, travel training can reduce costs by giving people more confidence with standard public transit thereby reducing their reliance on more expensive paratransit (or other supplementary transportation).

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4 MARKET ANALYSIS

The purpose of this market analysis is to examine the underlying conditions in Berrien County and assess the trends as they relate to the demand for transit service and the types of services that best match the demand. Specifically, the market analysis looked at:

- Population and employment densities, including recent community-level trends
- The location of major activity centers
- Travel patterns
- Socio-economic characteristics
- The current and projected need for transit service around the county

This information will be used to inform the design of transit service improvements in Berrien County.

Based on land use, demographics, socioeconomic characteristics, and travel flows, the areas in and around the cities of St. Joseph and Benton Harbor (including Fair Plain, Berrien Heights, Shoreham, Stevensville, and some rural areas) are both the most transit supportive and the most in need of transit service within the county. In many other communities around the county, the overall demand for transit service is fairly low due to a lack of density. There are pockets in the urban areas of Berrien County that have sufficient density to support traditional local fixed-route transit, but none of these areas are large enough to make a local route the obvious choice, as is discussed in greater detail below. Modernized, market specific and community based demand-response services, employer shuttles, and other alternate forms of transit may be most effective for Berrien County.

Looking beyond the community-based services, it is clear that some type of improved regional connectivity is important. Berrien Springs, Niles, and pockets of many other areas within Berrien County include major employers that have employee commute issues that need to be addressed. Furthermore, Berrien County has a much higher low-income population and older adult population than the state average, and both of these tend to be strong indicators of intercity transit need. Lastly, Berrien County has strong ties to locations in Michigan City and South Bend and even Chicago for those who live near New Buffalo. There are transit needs that should be addressed along the I-94, M-139, and US-31 corridors.

POPULATION DENSITY

There is a proven strong correlation between population density and the overall demand and effectiveness of public transit service. In general, experience has shown that there must be a density of at least eight to 16

residents per acre to produce sufficient demand for traditional fixed-route transit service operating once per hour. Hourly service is the lowest frequency of local scheduled service that is considered useful to the general population.

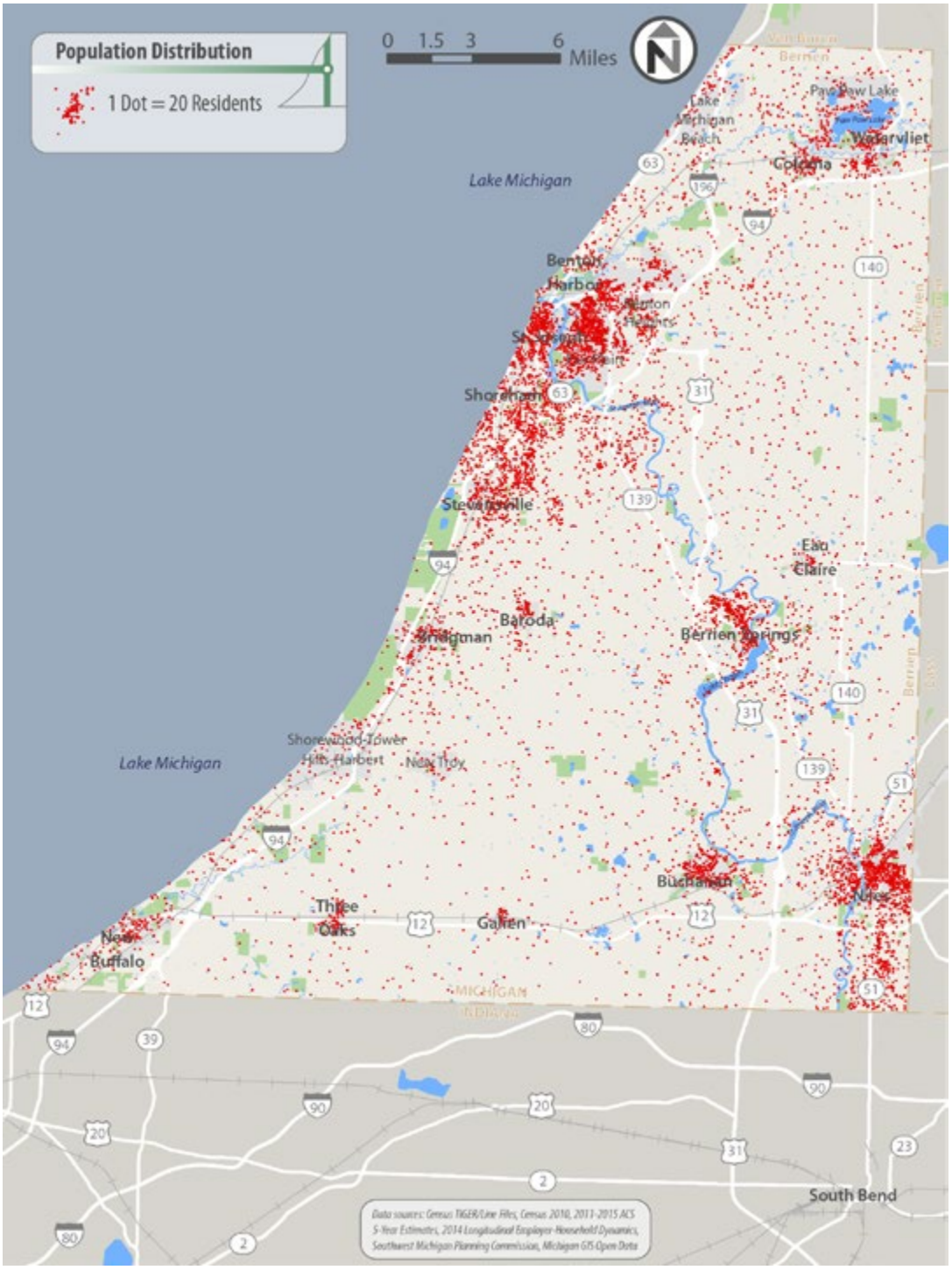
As of 2010, Berrien County's population (and population density) is most concentrated in Benton Harbor, St. Joseph, Shoreham, Stevensville, Berrien Springs, Buchanan, and Niles. Many other smaller communities with concentrated population also exist, including Bridgman, Baroda, Eau Claire, New Buffalo, Three Oaks, Galien, Coloma, and Watervliet (see Error! Reference source not found.). Of these communities, only Benton Harbor and parts of St. Joseph and Niles are currently served by hourly fixed-route transit. The large majority of the county is covered by demand-response services provided by four different agencies, though not all areas of the county have easy access to these services. In total, fixed-route transit services are available within a quarter-mile (approximately) of only about 15.7% of Berrien County's population.

The primary takeaway from the population density analysis is quite simply this – the vast majority of the land in the county (99%) is not currently developed in a manner that can effectively support local fixed-route or even a flex-bus public transit service. Although pockets of higher density exist, there are not suitable corridors dense enough for traditional fixed-route local service. Demand response service will be the best option for local travel.

Key findings from the population density analysis include (more on transit demand in the "Underlying Transit Potential" section below):

- Less than 20% of the total county population lives in an area with sufficient population to support fixed-route transit that runs at least every 60 minutes. These 29,000 people live in an area that represents less than 1% of Berrien County's total land area.
- Outside of the urbanized areas, no areas show enough density to support local fixed-route transit.
- Pockets of denser development exist in Coloma, Watervliet, Bridgman, Baroda, Three Oaks, Galien, and Eau Claire. A different type of transit, such as modernized demand-response and/or long-distance cross-county commuter bus services is most appropriate for these low-density areas to increase access for residents.
- The cities of Benton Harbor, Berrien Springs, Buchanan, Niles, and St. Joseph are the primary areas of higher population density (eight or more people per acre). Considerably lower density areas dominate in the east, south, and southwest areas of the county.

FIGURE 4-1 POPULATION DISTRIBUTION IN BERRIEN COUNTY



EMPLOYMENT DENSITY

The location and density level of jobs is frequently another strong indicator of potential transit demand. In most geographic areas, commute trips to and from work represent the single largest market for transit services. Commute trips are typically repetitive and predictable, often attracting riders who would otherwise not use transit.

As of 2014, jobs in Berrien County are most heavily clustered along the lakeshore and I-94 between Bridgman and Benton Harbor. Other significant employment clusters are in Niles, Buchanan, New Buffalo, Berrien Springs, Coloma, and Watervliet. Currently there is little or no transit service (fixed route or demand response) along the major corridors.

Outside of the urban areas, no areas show enough employment density to support traditional fixed-route transit, with the exception of a few sections in Bridgman and Three Oaks. Market specific employer shuttles or other demand-response type services may still be feasible outside of the urban areas. The "Underlying Transit Potential" section below has further discussion about transit demand.

Key findings from the employment density analysis include:

- The highest concentrations of employment in Berrien County are located in downtown Benton Harbor, Niles, and St. Joseph. However, a number of smaller retail and commercial centers with higher employment densities can be found along the highway and railroad alignments of I-94, M-139 and Red Arrow Highway.
- Several retail complexes are major employment centers, including the areas near and around the Walmart in Niles; the commercial and retail locations in St. Joseph along Niles Avenue and State Street; and the area in Fair Plain bounded by Napier Avenue, Pipestone Road, Scottdale Road, and I-94.
- Nearly 60% of all jobs in Berrien County, or some 36,000 jobs, are located in the denser urban areas near St. Joseph, Benton Harbor, and Niles.

The largest employers in Berrien County are shown in Figures 4-2 and 4-4. This group includes manufacturers, healthcare, education, and others. Whirlpool, which employs about 4,000 staff, and has its headquarters in Benton Harbor, is the largest employer in the county. The Lakeland Regional Health System employs over 3,800 people in Berrien County, followed by the 2,100 employees at Andrews University in Berrien Springs.

FIGURE 4-2 TOP EMPLOYERS IN BERRIEN COUNTY IN 2014 (500+ EMPLOYEES)

Employers	Employees	Location
Whirlpool Corporation	4,000	St. Joseph, Benton Harbor
Lakeland Regional Health System	3,826	Various (hospitals in St. Joseph, Niles, and Watervliet)
Andrews University	2,104	Berrien Springs
Four Winds Casino	1,800	New Buffalo
American Electric Power / Cook Nuclear Power Plant	1,200	Stevensville
Leco Corporation	650	St. Joseph
Berrien County Government	635	Various
Lake Michigan College	500	Benton Harbor, Niles

Source: Berrien County Community Development

FIGURE 4-3 EMPLOYMENT DISTRIBUTION IN BERRIEN COUNTY

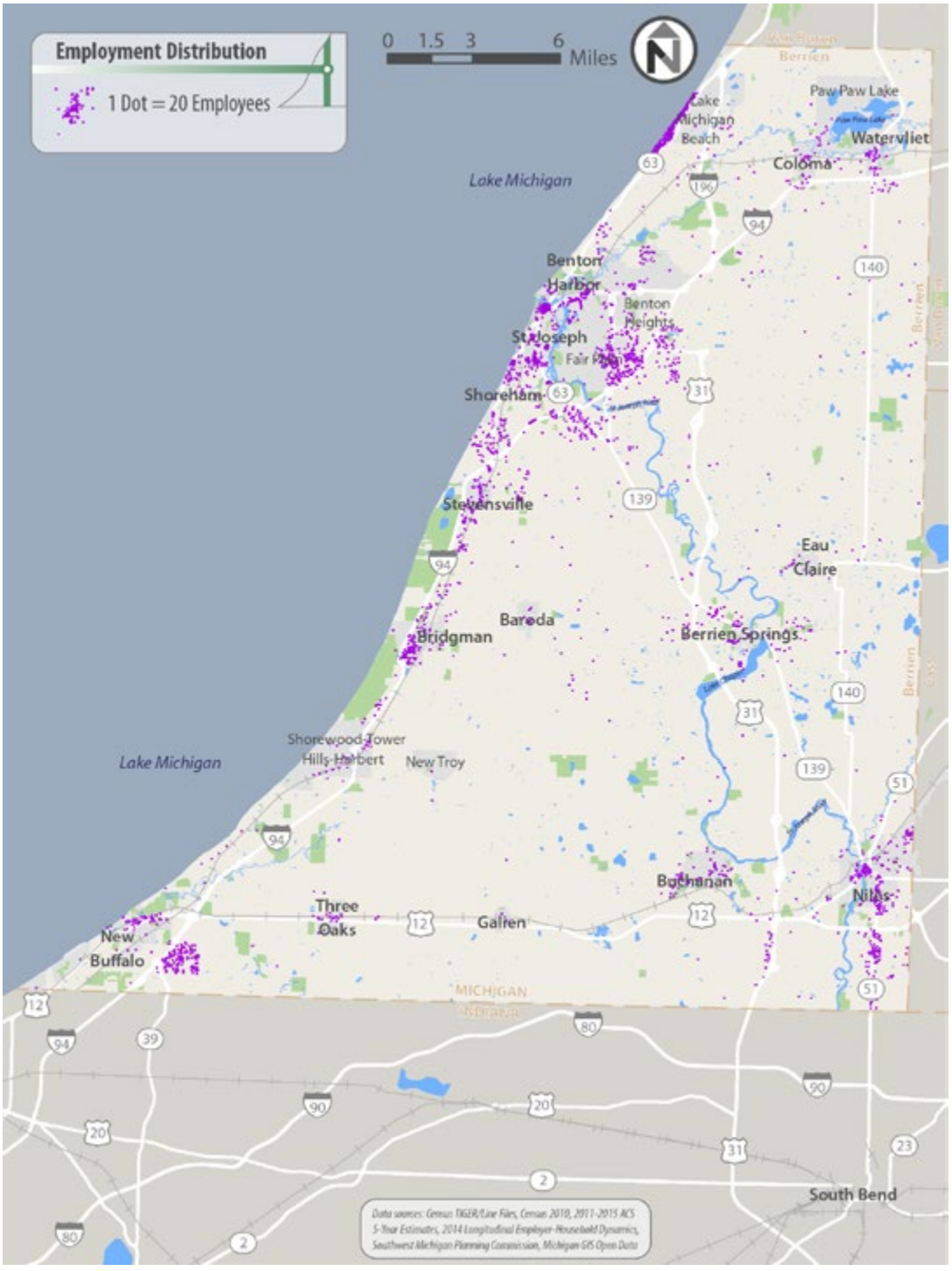
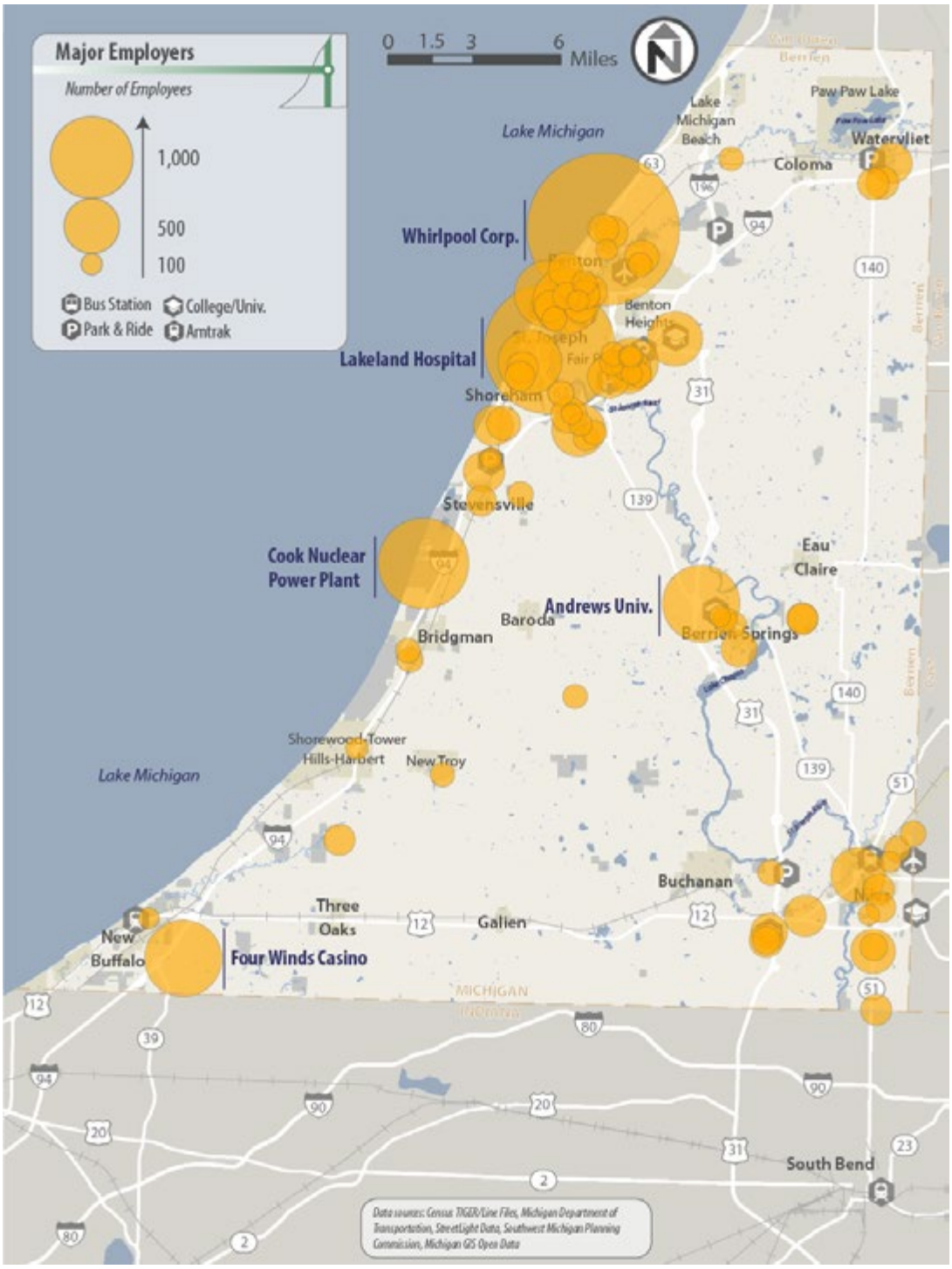


FIGURE 4-4 MAJOR EMPLOYERS IN BERRIEN COUNTY



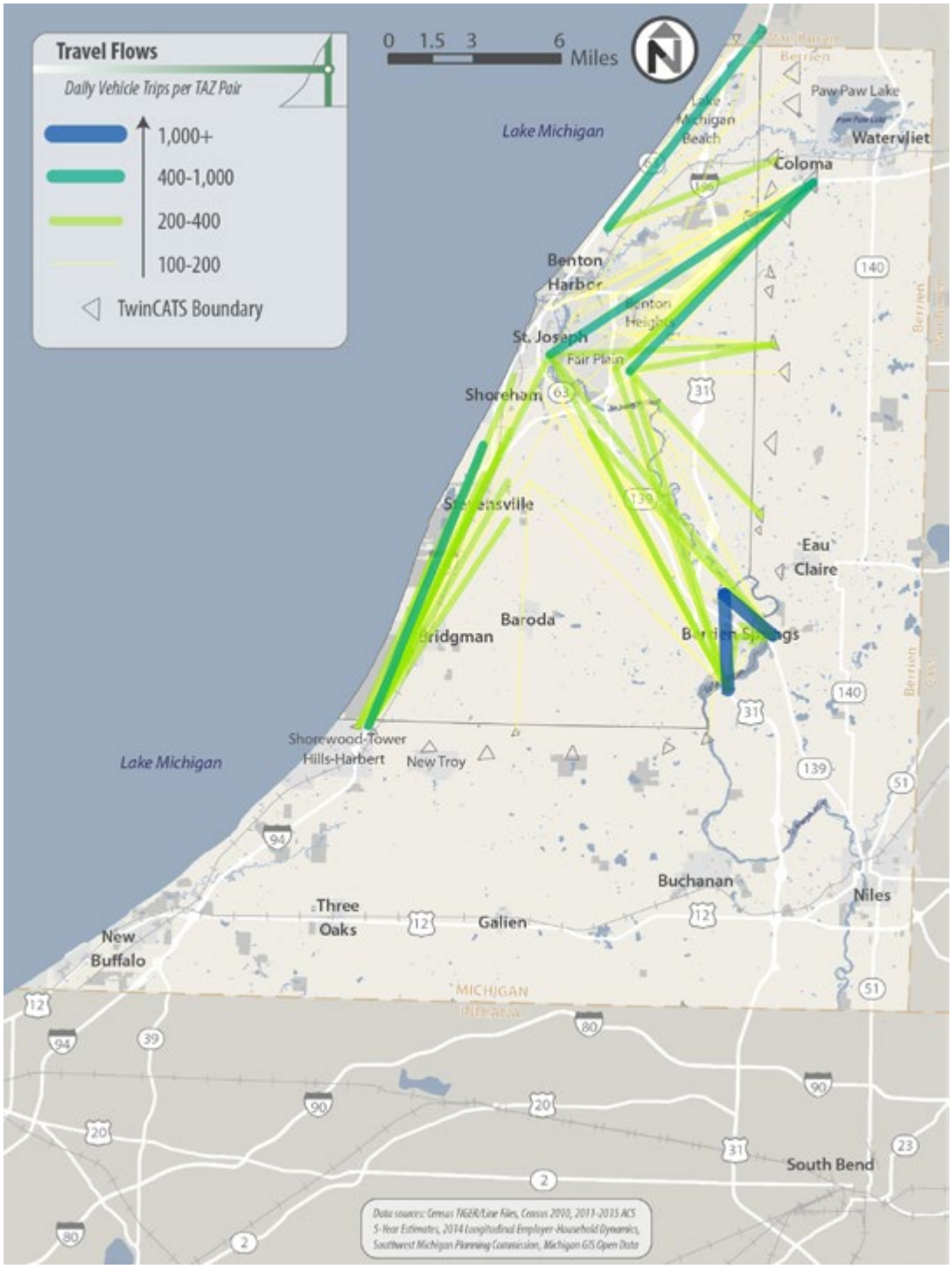
TRAVEL FLOW DEMAND

Travel flows, which show the places that people travel both within and outside of Berrien County, can help determine where direct or relatively easy transit connections should be made within an area. Typically, transit riders need to travel to the same areas as those who drive or use another means of transportation. This information and the magnitude of travel demand between areas helps improve the overall understanding of transit demand.

Two data sources were used to show the travel flows within and outside of Berrien County. The first is a traditional travel demand model within the Twin Cities Area Transportation Study (TwinCATS) boundary. TwinCATS is the designated Metropolitan Planning Organization (MPO) for the Benton Harbor-St. Joseph urbanized area. TwinCATS' boundary extends to Lake Michigan on the west, the county boundary at Van Road to the north, Browntown Road/Freehling Road to the south, and the St. Joseph River and Kirk Road/Fairview Road/Clymer Road to the east. Because the TwinCATS MPO model does not cover the entirety of Berrien County – nor would the addition of the Niles and Buchanan Area MPO (NATS) model – a second source was used to determine countywide travel flows and cross-county transit needs, as well as help identify the service span best able to match travel demand.

As one might expect, travel flows in Berrien County are heaviest around the Twin Cities and the immediate surrounding area, including Shoreham and Stevensville. Much of the Twin City travel activity tends to start and end within the area. This volume is greater than that coming to and from the smaller cities and towns in Berrien County. During 2010, trips that travel between a zone within the TwinCATS boundary and outside the boundary remain focused on one end in St. Joseph, Benton Harbor, and Berrien Springs. However, the other end of the trip varies, with trips dispersed among the major highways headed through Berrien County (see Figure 4-5). The heaviest trip volumes are to or from Berrien Springs along US-31 or M-139. A significant number of trips are concentrated around the I-94 corridor, both headed east towards Coloma/Watervliet and south towards New Buffalo, and along the shoreline north of Benton Harbor along M-63. While it is difficult to say the location of the external end of these trips, the strength of the external trip volumes suggests that strong demand exists for more regional travel within and outside of Berrien County.

FIGURE 4-5 TWINCATS TRAVEL FLOWS IN 2010 BETWEEN INTERNAL AND EXTERNAL ZONES



Note: TAZ = Traffic Analysis Zone, which is used as a unit of geography in transportation demand planning models

StreetLight Data collects travel pattern information from GPS-enabled devices (cell phones, connected cars, etc.) throughout the day, covering a 24-hour period on both weekdays and weekends. When users download the data, it is indexed so that monthly and seasonal variations are more accurately captured; therefore, the data represents relative trip activity but does not indicate the actual number of trips or vehicles. Streetlight Data helps to map travel flows within Berrien County and between Berrien County and neighboring counties. [1] For the travel flow analysis, Berrien County was divided into 42 travel zones based on land use, the existing road network, neighborhoods, and boundaries used in existing model data. Eight additional zones focused on urban areas outside of Berrien County to determine typical regional flows. Flows to and from these urban areas outside of the county were captured:

- Chicago, IL
- Dowagiac, MI (selected due to existing Berrien Bus ridership)
- Gary, IN
- Grand Rapids, MI
- Holland, MI
- Michigan City, IN
- Kalamazoo, MI
- South Bend, IN

The data from StreetLight provides information on travel throughout Berrien County and beyond, at all times of day, by all transportation modes. The location of Berrien County in the very southwest part of the state means that travel to and from Niles and Buchanan is focused on South Bend, and travel to and from New Buffalo is focused on Michigan City and Chicago rather than internal to Berrien County (see Figure 4-6). On weekdays, 11% of all trips originating in the county end in Michigan City, South Bend, or Chicago. Also for weekdays, 20% of trips from New Buffalo end in Michigan City; 24% of trips from Niles end in South Bend.

The average weekend travel flow within and around Berrien County include only 20% fewer trips than the travel activity on an average weekday; origin and destination pairs remain largely the same (see Figure 4-6 and Figure 4-9). Weekday middays have similar patterns for local travel with relatively less intercity travel (see Figure 4-7). Weekends have travel patterns similar to middays, except more trips are taken earlier in the morning and during the midday than on weekdays (see Figures 4-8 and 4-9).

[1] StreetLight Data captures travel activity from only a certain segment of the population, those with GPS-enabled devices, a bias that the company tries to reduce by processing and calibrating the raw data they receive.

FIGURE 4-6 REGIONAL WEEKDAY FLOWS IN 2016

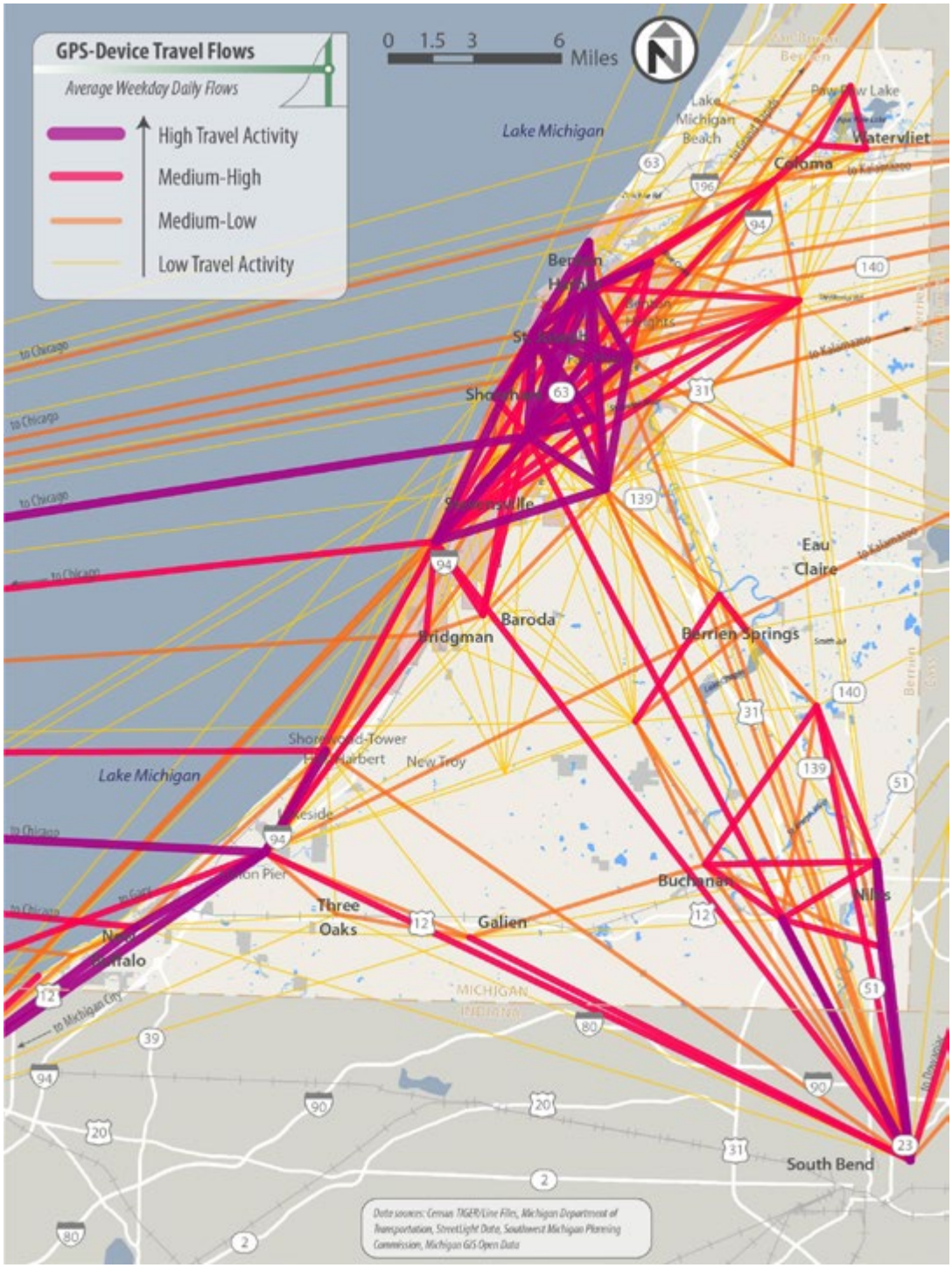


FIGURE 4-7 REGIONAL MIDDAY FLOWS IN 2016

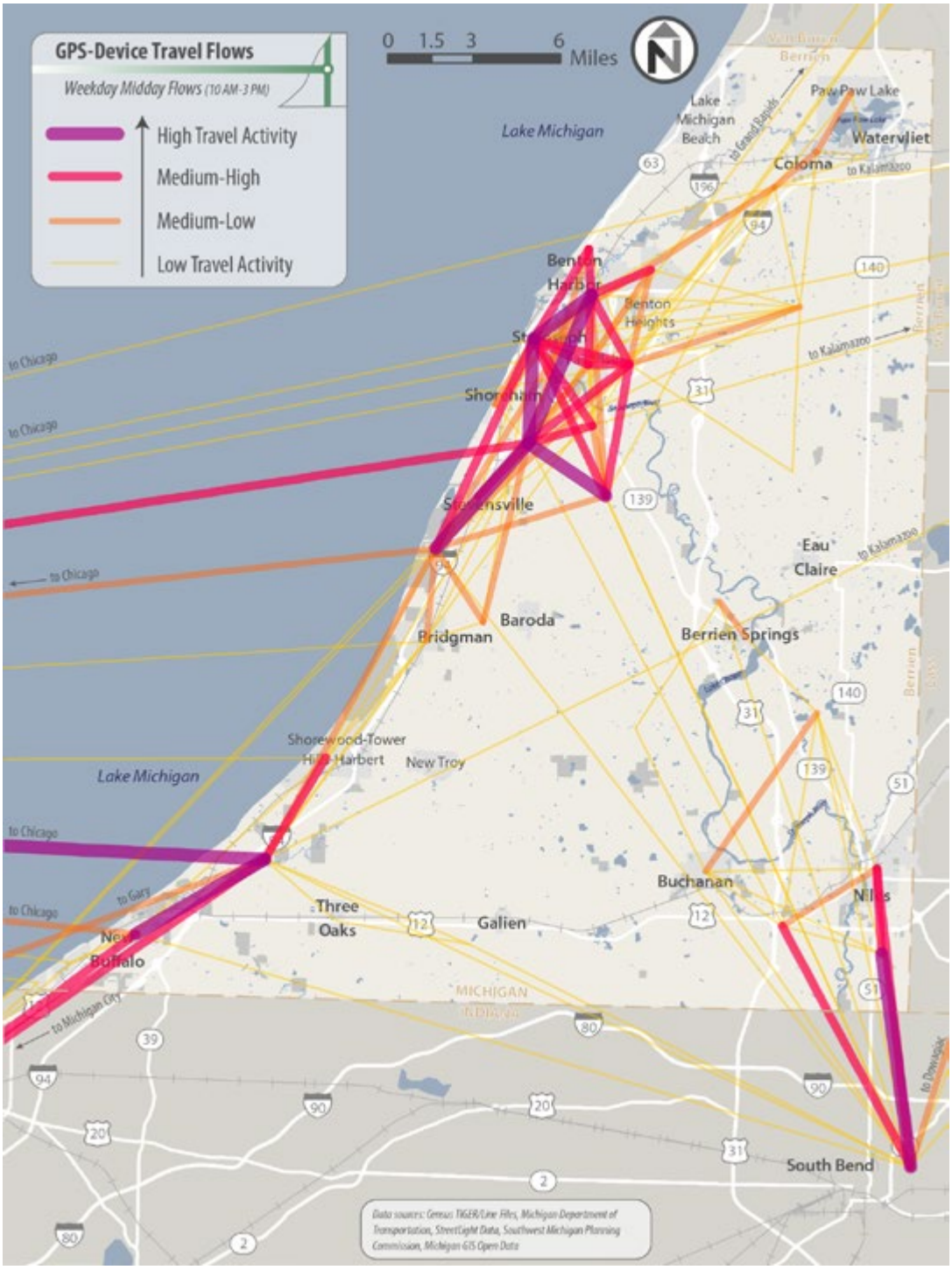
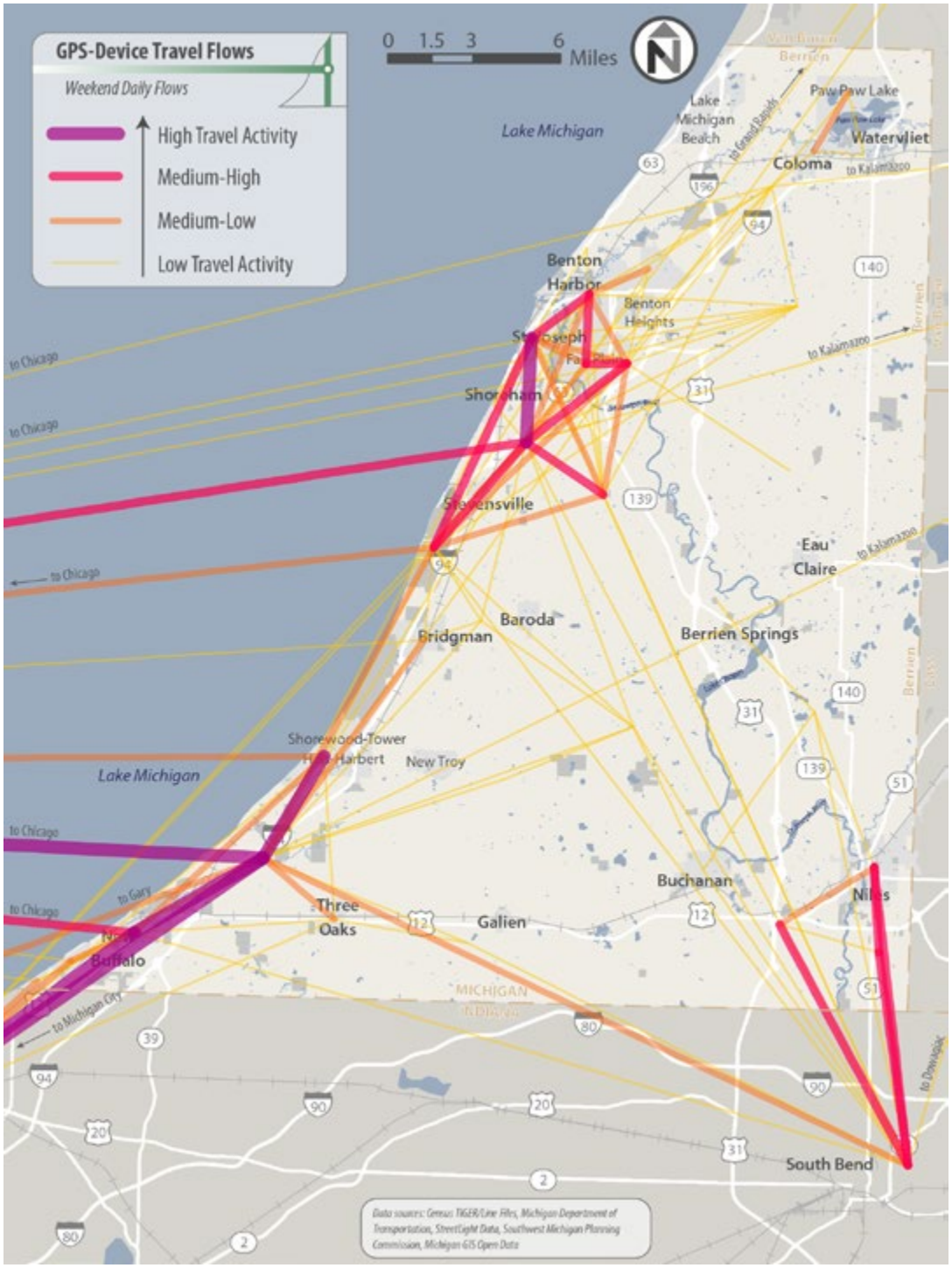


FIGURE 4-8 REGIONAL WEEKEND FLOWS IN 2016



With Streetlight Data, midday and evening travel patterns can be identified, as well as morning and peak period trips. Travel patterns are not as concentrated in the morning and evening peaks as in other urban areas across the state. In fact, 35% of weekday trips in the 42 Berrien County travel zones analyzed are between 10:00 a.m. and 3:00 p.m. in the midday between commuting peaks. Another 13% occurs after 7:00 p.m (See Figure 4 9). Much of the existing transit service ends at 5:00 p.m. on weekdays, with limited Saturday service and no service at all on Sundays in the county.

FIGURE 4-9 PERCENTAGE OF BERRIEN COUNTY TRIPS OCCURRING DURING TIME PERIODS THROUGHOUT THE DAY

	Average Day (M-Su)	Average Weekday (M-Th)	Average Weekend Day (Sa-Su)
Early AM (12am-6am)	3%	2%	3%
Peak AM (6am-10am)	17%	19%	11%
Mid-Day (10am-3pm)	37%	35%	41%
Peak PM (3pm-7pm)	30%	31%	29%
Late PM (7pm-12am)	14%	13%	15%
All Day (12am-12am)	100%	100%	100%

Due to rounding in the table, the Average Day and Average Weekend Day columns do not add to exactly 100%.

UNDERLYING TRANSIT POTENTIAL

Land Use Based Demand

When viewing the population and employment density measures together, the areas with the strongest potential for effective transit emerge:

- Fixed-route transit potential in Berrien County exists within the downtowns of St. Joseph, Benton Harbor, and Niles, as well as around the commercial areas in south St. Joseph and south Niles.
- Other areas with moderate transit potential in Berrien County include the retail and commercial areas in southeast Benton Harbor (Fair Plain area), downtown Berrien Springs, and the residential areas of Benton Harbor and Niles.
- Smaller urban areas that may be able to support some fixed-route transit at lower frequencies include Berrien Springs, Buchanan, and Watervliet.

Population Based Demand

Population and employment densities are two of the strongest indicators of where the demand for transit will be highest and where transit will work best. In addition to population and employment density, socioeconomic characteristics influence an individual's propensity toward transit use. National research shows that many population groups have a higher propensity for transit use than the overall population:

- Older Adults (persons aged 65 years and over)
- Young Adults (persons 18 to 34 years old)
- Low-Income Individuals
- Zero-Vehicle Households
- People with Disabilities
- Minorities (non-white, Hispanic or non-Hispanic)

When significant numbers of these individuals cluster together, they can influence the underlying demand for transit to an extent that is not captured when only considering total population or employment. These groups with higher transit propensity are found within Benton Harbor, St. Joseph, Berrien Springs, Buchanan, and Niles. Overall, dense concentrations of populations most likely to use transit in Berrien County are isolated, with relatively few areas of more than one person per acre in any given group, outside of larger cities in the county. Key trends and findings from the transit propensity analysis include:

- Higher densities of older adults are found scattered throughout the county, with the most notable concentrations of older adults found in St. Joseph, Benton Harbor, and Niles.
- Younger adults have notable concentrations near downtown Niles, in central Benton Harbor, near downtown St. Joseph, and particularly in Berrien Springs near Andrews University.
- In general, Berrien County has low concentrations of low-income individuals, zero-vehicle households, and people with disabilities. The more urban areas of the county, particularly the Benton Harbor area and Niles, show the greatest number and concentrations of these groups, but densities still rarely exceed five people per acre within any of these groups.
- No areas outside of Benton Harbor, Benton Heights, Berrien Springs, or Fair Plain demonstrate a percentage of non-white minorities higher than the county average. The largest number of non-white minorities is found in Benton Harbor and nearby areas to the north or east of the St. Joseph River. These same areas also show greater concentrations of low-income individuals and zero-vehicle

households, suggesting a high amount of overlap between these groups.

Trends in Community Characteristics

An analysis of demographic and socioeconomic characteristics in 2010 and 2015 reveals that Berrien County has a higher percentage of older adults and a lower percentage of young adults when compared to the entire state of Michigan. The median age in Michigan in 2015 was around 39.5 years while the median age in Berrien County was around 41.4 years. Berrien County also has a higher percentage of low-income individuals on average compared to the state, and the difference grew from being 2.5 percentage points higher in 2010 to 3.4 percentage points higher in 2015. Most other characteristics remain comparable between Berrien County and Michigan in 2010 and 2015. Within Berrien County in those same years, the employment rate fell from 56.2% to 55.0%, and the median age increased slightly from 41.0 to 41.4. Overall, individuals and households grew worse off with a higher percentage of people living with low incomes and no vehicles.

According to 2010 data on access to jobs, low-incomes, and zero-vehicle households, the highest demand for transit exists in Benton Harbor, Benton Heights, Niles, and Buchanan. Berrien Springs, though the village had a high employment rate, was a young community in 2010 and had a relatively high proportion of households without a vehicle. Many communities in Berrien County were also older than average when compared to the state and/or county, including Bridgman, New Buffalo, Shoreham, Stevensville, and the rural areas of the county. Though demographics and density suggest a lower need for transit in these communities in 2010, transit access may become increasingly important as residents age. St. Joseph had a higher proportion of both older adults and young adults compared to the county and state, which can be a common pattern in urban areas and suggests that St. Joseph could be a successful market for transit. Urban areas tend to offer greater access to activities, retail, etc., but can be more expensive and have more constraints on space for families with children.

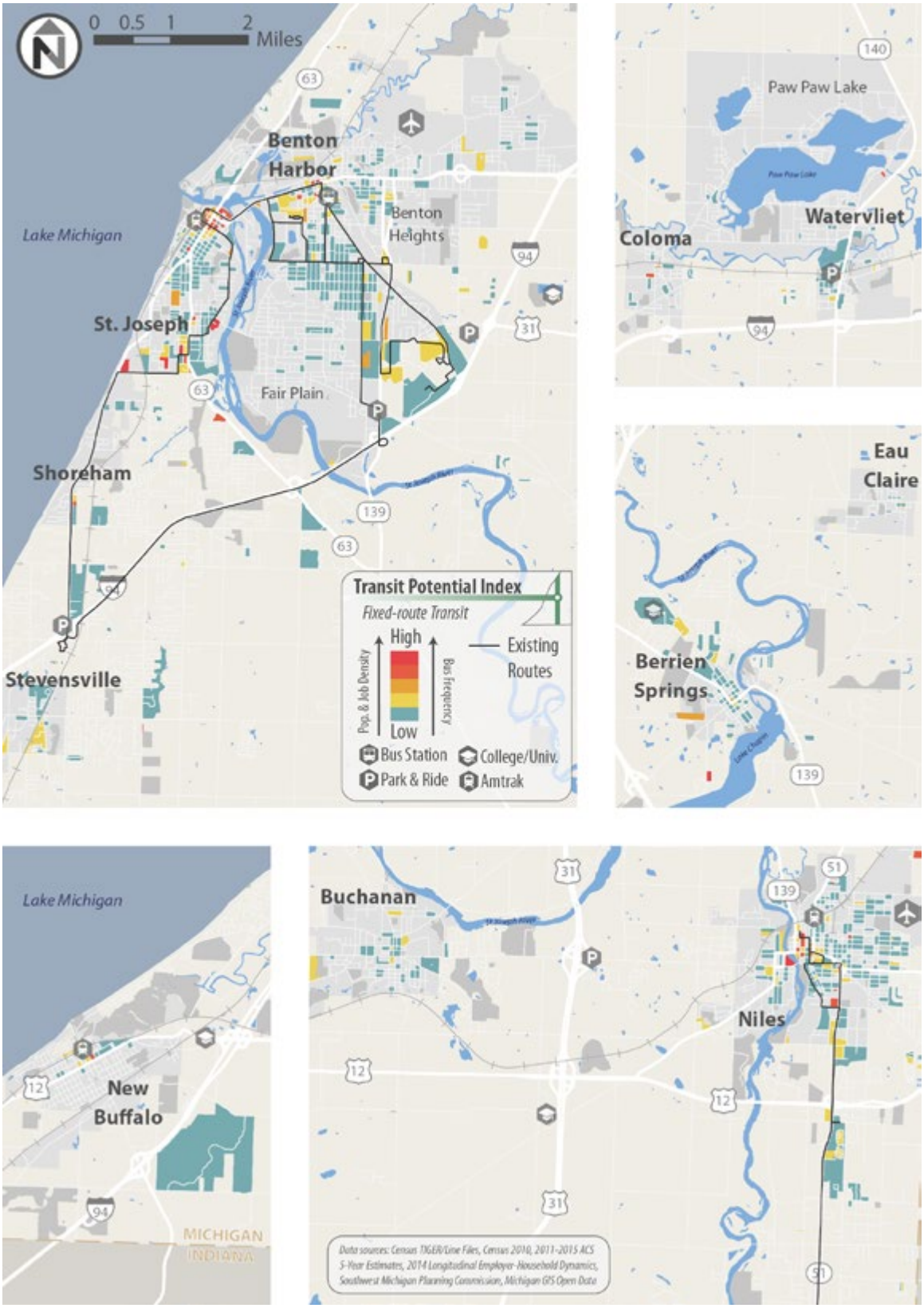
The patterns shown in 2010 remained largely the same five years later in 2015, though the overall need for transit based on demographic and socio-economic characteristics has grown in Berrien County. Despite a relatively small decline in the employment rate, the percentage of individuals considered low-income grew from 25.9% to 29.3% between 2010 and 2015. Smaller communities, such as Fair Plain, Three Oaks, New Buffalo, Berrien Springs, and Watervliet, were hardest hit. Berrien Springs perhaps changed the most between 2010 and 2015, with the community showing a higher percentage of older adults, a lower percentage of young adults, and fairly drastic changes to many of its socio-economic characteristics. Berrien Springs also lost the most population between 2010 and 2015 of any community in the county.

FIGURE 4-10 2015 DEMOGRAPHIC AND SOCIO-ECONOMIC CHARACTERISTICS IN BERRIEN COUNTY

Geography	Population	Employ-ment Rate	Older Adults	Young Adults	Low-Income Individuals	Zero-Vehicle Households	People with Disabilities	Minorities
	Total	Percentage (%)						
Michigan	9,900,571	55.2	15.0	22.1	25.9	8.0	14.1	21.0
Berrien County	155,565	55.0	17.3	19.9	29.3	8.7	14.0	21.9
Baroda (village)	871	61.8	13.7	22.8	27.3	2.6	11.6	4.6
Benton Harbor (city)	10,014	43.0	8.5	23.2	68.9	31.2	19.5	92.5
Benton Heights (CDP)	4,235	45.1	9.9	24.0	70.4	21.6	15.9	75.7
Berrien Springs (village)	1,318	52.0	17.8	23.7	35.5	10.2	15.8	27.1
Bridgman (city)	1,997	52.4	25.6	18.3	23.8	8.4	12.5	3.7
Buchanan (city)	4,401	59.2	16.6	19.5	25.3	17.1	13.8	16.3
Coloma (city)	1,600	57.0	14.1	22.8	26.3	5.9	14.1	6.4
Fair Plain (CDP)	7,706	54.5	15.2	20.3	42.7	9.7	15.0	45.4
New Buffalo (city)	1,893	56.5	19.5	15.8	30.4	5.8	14.1	12.2
Niles (city)	11,450	51.6	16.2	22.1	42.5	16.2	17.0	14.8
St. Joseph (city)	8,311	64.3	18.3	25.7	17.1	7.0	11.6	10.3
Shoreham (village)	888	60.6	20.7	13.6	14.3	1.1	10.5	18.4
Stevensville (village)	1,282	59.5	23.4	12.4	10.7	3.2	14.6	6.6
Three Oaks (village)	1,598	64.1	13.8	22.1	36.4	3.2	13.5	10.5
Watervliet (city)	1,773	52.0	14.3	20.1	38.1	5.6	20.2	10.2
Rural Areas	96,228	-	18.7	18.7	21.9	5.1	13.1	14.0

Source: ACS 2015 5-Year Estimates Note: Percentages greater than county average are highlighted.

FIGURE 4-11 POTENTIAL FOR FIXED-ROUTE TRANSIT IN BERRIEN COUNTY URBAN AREAS



MARKET ANALYSIS IMPLICATIONS FOR THE TRANSIT PLAN

Provide More Consistent Transit Service

The limited transit resources currently provided, along with the uncoordinated multi-provider system, means that the supply of transit service in the county is not well aligned with the demand. While the level of service throughout Berrien County should vary with local circumstances in each area, currently the differences between areas are driven by available resources for the respective transit provider and not by service planning.

For example, much of the territory in the southwest and northeast parts of the county have longer response times and very limited service due to being further from the bus facility in Berrien Springs and from contracted routes. This leads to disproportionately low usage of existing transit service in these areas and few trips completed by Berrien Bus.

Even the areas of Berrien County that can support fixed-route transit are on the relatively low end of viable transit demand (see Figure 4-11). This means that local fixed routes are one possibility for service, but modern, optimized demand-response service may be able to meet the demand, particularly if inter-city fixed-route service with some local stops is also planned.

In particular, the following markets should be considered for consistent service:

- **The unserved Twin Cities urbanized area in Shoreham, Stevensville, and Bridgman** – one of the densest regions in the county. The highest travel activity occurs in the Twin Cities and the immediate surrounding area, including Shoreham and Stevensville, but today these areas receive no transit service.
- **Connections between urban centers in Berrien County** – especially Niles and Benton Harbor/St. Joseph, which have high levels of weekday travel flows.
- **Stronger connections to transit in South Bend and Michigan City** – travel outside of the county is focused on South Bend, Michigan City, or Chicago. In particular, Niles and Buchanan area travel is focused around South Bend; New Buffalo is focused around Michigan City and Chicago rather than internal to Berrien County. Niles Dial-A-Ride operates a flex route to South Bend, but Berrien County residents seeking to travel to Michigan City have no transit option. While Greyhound operates intercity bus service, there are often no local connections to Greyhound.
- **Major employers and/or multiple clustered employers** – cross-county commuting to medical appointments, shopping centers, school/college campuses, and other large employers is not currently

well served. Currently, the Cook Nuclear Power Plant does not receive any transit service and Andrews University is served only through Berrien Bus on-demand service if contract service allows. The Four Winds Casino outside of New Buffalo is part of the southwestern corner of the county, which effectively gets little or no service from Berrien Bus.

- **Seasonal and/or special event service for resort areas** – towns and villages in Harbor Country along Lake Michigan swell in population during the summer as weekend vacationers come to take advantage of the recreation and entertainment opportunities and patronize the region's beaches, bed and breakfasts, and wineries. Transit service should be provided to connect these communities with the Amtrak station in New Buffalo and with the Twin Cities.

This uneven service is a result of multiple decisions regarding funding and participation in area transit agencies made over time by local jurisdictions. The new countywide system should aim to allocate resources based on defined goals, such as meeting transit demand and providing lifeline service for those without other transportation options. This will result in higher levels of service, including faster response times, for some parts of the county.

Increase Service to Transit-Dependent Individuals

As compared to the state as a whole, Berrien County has a larger proportion of older adults and low-income individuals. These groups are typically dependent on public transit to a greater degree than the general population. While the low densities in many parts of Berrien County make effective public transit challenging, the need for transit must be taken into account. The allocation of vehicles and services to corridors and markets with expected higher ridership must also be balanced with providing lifeline service to people without other feasible travel options. This includes providing travel for employment, education, shopping, and healthcare during additional hours of the week.

Increase Service Hours to Match Demand

One of the biggest barriers to using the existing transit services is the limited span of service. Much of the county has service that ends at 5:00 p.m. on weekdays, with limited Saturday service and no service at all on Sundays. Travel patterns in Berrien County are not centered only on morning and evening peaks for work commuting; the cellphone and vehicle GPS records indicate that trips occur consistently all day.

In fact, 35% of all Berrien County trips take place between 10:00 a.m. and 3:00 p.m. during the midday period. Much of this activity is within the Twin Cities area, between the Twin Cities and New Buffalo, between New Buffalo and Michigan City, and between Niles and South Bend.

Another 13% of trips happen after 7:00 p.m. Today, these evening trips can only take place in private vehicles.

Having evening and weekend service is becoming more important as activity increasingly occurs during these hours, including employment, shopping, and medical appointments. According to the Streetlight data, the average weekend day has only 20% less trip activity than an average weekday, with proportionately more trips taken before 6:00 a.m. and during midday. An increased span of service is especially applicable to Berrien County due to the existence of weekend resort activities and second homes.

Some of the densest parts of Berrien County have no current transit service.

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5. STAKEHOLDER AND PUBLIC INPUT

County residents and stakeholders were invited to give input into the service plan, and the feedback helped to guide the final recommendations. The public input was used to create transit service goals and objectives, and then to form the evaluation criteria for selecting the most appropriate type of service.

MEETINGS AND WORSKSHOPS

Outreach for the project included three workshops with invited stakeholders. Events were held in Niles, New Buffalo, and Benton Harbor during May 2017. Participants included community leaders, elected officials, and human services agency staff involved with transportation (see Figure 5-1). Fifty people gave specific feedback on the most important goals and objectives for improving transit service in Berrien County. Surveys and activities supplemented discussion of important tradeoffs and priorities.

FIGURE 5-1 WORKSHOP PARTICIPATION BY SECTOR

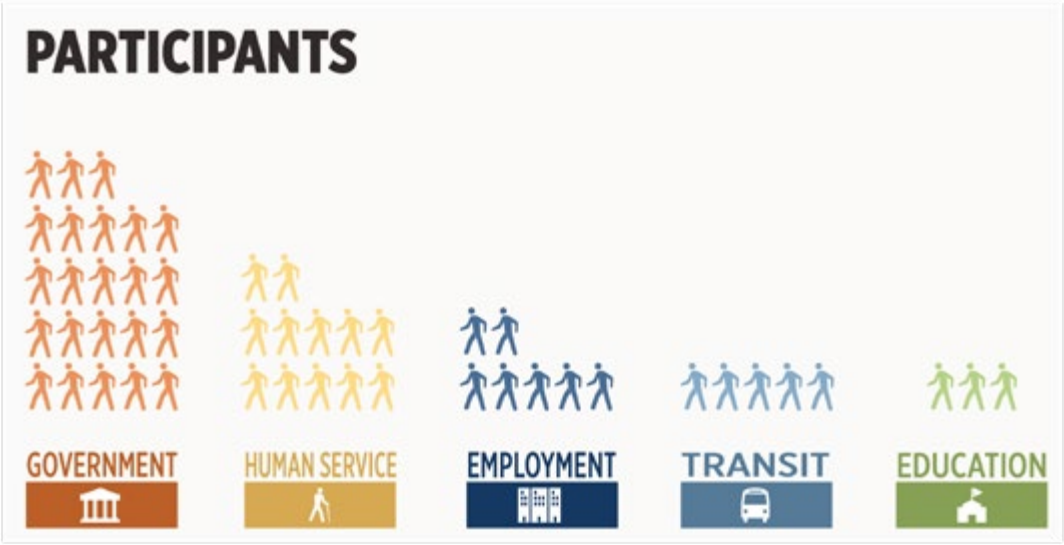
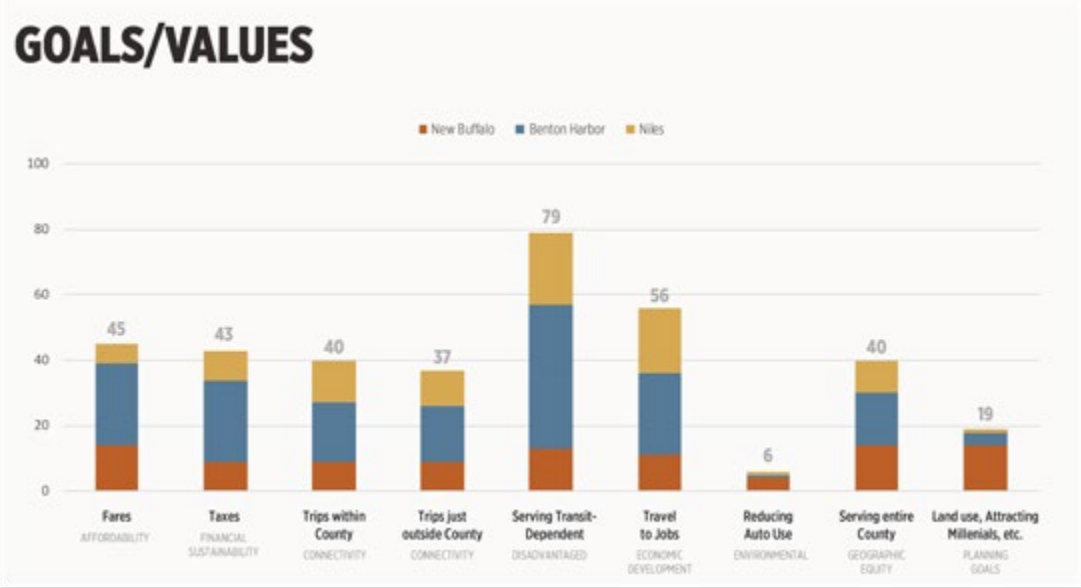


FIGURE 5-2 VOTING ON PRIORITIES AT WORKSHOPS



Meetings for the general public were also held in Niles, New Buffalo, and Benton Harbor. These meetings were advertised throughout the county, including:

- Flyers distributed by transit providers to riders
- Advertisement in direct mail publication to 37,800 households
- Press release covered by the Herald Palladium newspaper and ABC57 in South Bend
- Project website
- Email blasts

Feedback regarding travel needs was solicited, and many people had suggestions for improvements. A total of 93 people signed in for the public meetings. Some of the meetings were also streamed over Facebook for either live viewing or delayed viewing on the website.

FIGURE 5-3 MEETING IN BERRIEN COUNTY

FIGURE 5-4 FLYER ADVERTISING PUBLIC MEETINGS

SURVEYS

At both the workshops and public meetings, surveys were distributed to collect additional information from participants. The project team analyzed the dozens of responses to questions about transit use, travel destinations, reasons for riding, experiences while riding, and preferences for future service.

FIGURE 5-5 SURVEY USED AT PUBLIC MEETINGS AND WORKSHOPS

CONNECT BERRIEN

BERRIEN COUNTY TRANSIT SURVEY

Please help the Connect Berrien project team improve transit service in Berrien County by completing the survey below. See www.connectberrien.org for more info. Thank you!

1. **How often do you ride public transit in Berrien County?**
   - ☐ Almost every day
   - ☐ Several times per week
   - ☐ A few times per month
   - ☐ On rare occasions only
   - ☐ Never

2. **Which transit provider(s) do you use regularly (check all that apply)?**
   Berrien Bus: _____ TCATA: _____ Niles DART: _____
   Buchanan Dial-A-Ride: _____

3. **Where do you travel using public transit most often?**
   - ☐ Store or Shopping Center
   - ☐ Work
   - ☐ School
   - ☐ Hospital or Clinic
   - ☐ Other _____

4. **How do you usually pay for your fare?**
   - ☐ Cash
   - ☐ Cash - Reduced (students, older adults and those with disabilites)
   - ☐ Multi-Ride Punch Card
   - ☐ Multi-Ride Punch Card - Reduced Fare
   - ☐ Token or voucher
   - ☐ Other (describe): _____

5. **When you can't or don't use public transit, how do you usually travel?**
   - ☐ Walk
   - ☐ Drive alone
   - ☐ Get a ride/carpool
   - ☐ Taxi
   - ☐ Bike
   - ☐ Don't make the trip
   - ☐ Other _____

6. **What is your gender?**
   - ☐ Male
   - ☐ Female

7. **What is your age?**
   - ☐ 13 or under
   - ☐ 14-17
   - ☐ 18-25
   - ☐ 26-35
   - ☐ 36-64
   - ☐ 65 or over

8. **Which of the following best describes your employment status?**
   - ☐ Full-Time
   - ☐ Part-Time
   - ☐ Unemployed
   - ☐ Student
   - ☐ Retired
   - ☐ Other _____

9. **What is your approximate household income? (Optional)**
   - ☐ Less than $10,000
   - ☐ $10,000-$29,999
   - ☐ $30,000-$49,999
   - ☐ $50,000-$74,999
   - ☐ $75,000 or more

10. **Which of the following describe the reasons that you use public transit?** *(Select all that apply)*
    - ☐ I do not own a car
    - ☐ My car is temporarily out of service
    - ☐ I cannot drive for legal or health reasons
    - ☐ I prefer to spend time on activities other than driving
    - ☐ Parking is not available or is expensive at my destination
    - ☐ Taking the bus is more affordable than paying for gas and car maintenance
    - ☐ I am doing my part for the environment
    - ☐ Other _____

11. **Based on your experience riding Berrien County public transit, how strongly do you agree with the following statements?**

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Service is dependable	☐	☐	☐	☐	☐
Routes get me where I need to go	☐	☐	☐	☐	☐
Maps and schedules are easy to understand	☐	☐	☐	☐	☐
Website is easy to understand	☐	☐	☐	☐	☐
Schedules meet my travel needs	☐	☐	☐	☐	☐
Fares are reasonable	☐	☐	☐	☐	☐
Buses are comfortable and well-kept	☐	☐	☐	☐	☐
Staff is professional and courteous	☐	☐	☐	☐	☐

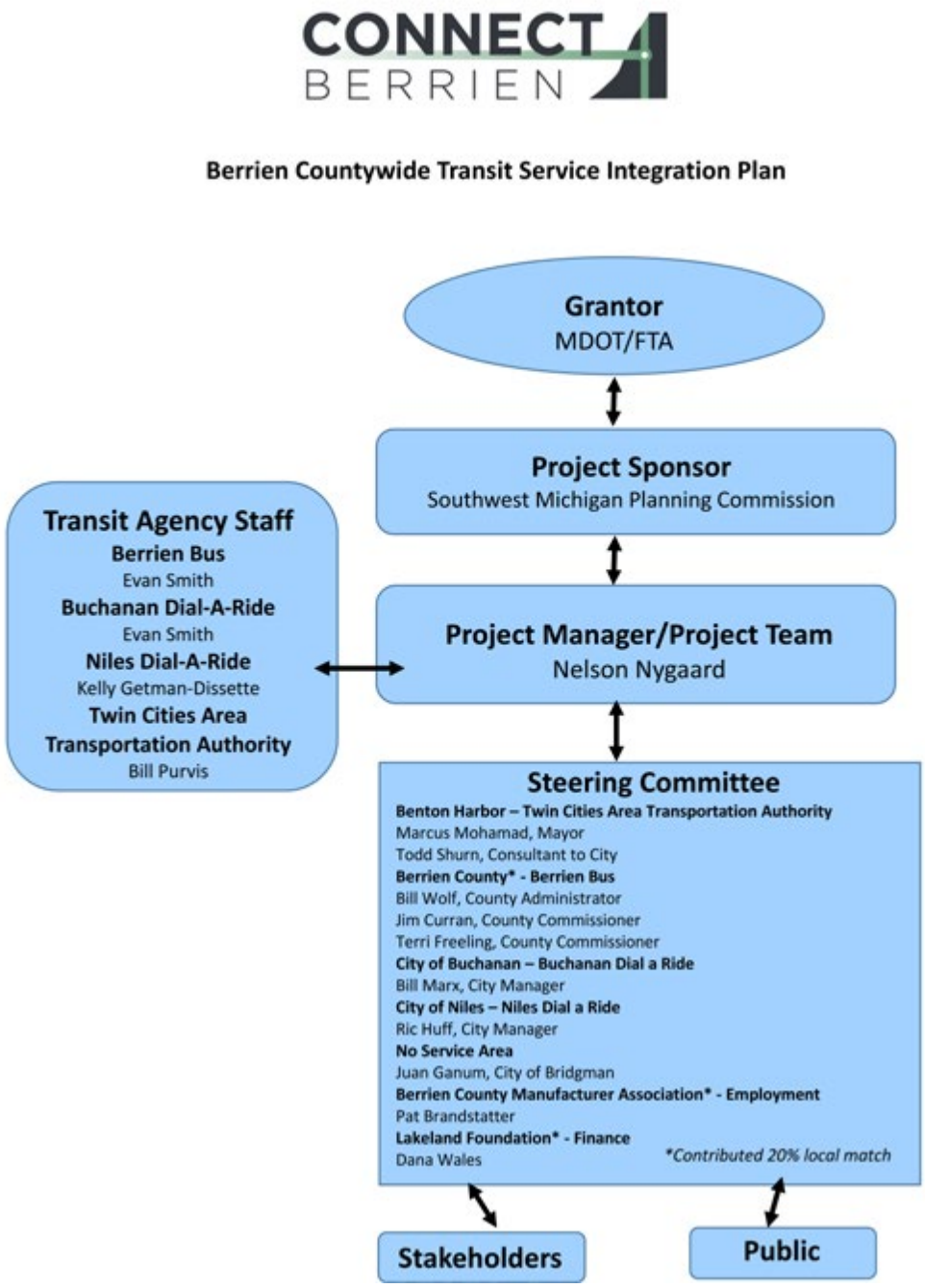
The following questions ask your preference. Please check ONE box per row only.

More frequent bus service	◀ ☐ OR ☐ ▶	Longer service hours
More weekday service	◀ ☐ OR ☐ ▶	More weekend service
More bus stops for shorter walk distance to/from bus stops	◀ ☐ OR ☐ ▶	Fewer bus stops for faster bus service
Buses running more frequently but on fewer streets	◀ ☐ OR ☐ ▶	Buses running on more streets but less frequently
Improve existing service	◀ ☐ OR ☐ ▶	Serve new areas

COMMITTEES

The project's steering committee, which included elected officials and business leaders, has provided input from themselves and their constituents. This input included strategic guidance for the study, improving the chances that the final service plan will be supported and implemented. A technical committee consisting of representatives from the existing Berrien County providers helped to refine the final service plan details.

FIGURE 5-6 CONNECT BERRIEN ORGANIZATIONAL CHART



SUMMARY OF INPUT

Some of the input from all of the outreach confirmed what was found in the technical analysis and prior studies. Examples of this type of input included:

- The current transit services are too complicated and confusing
- Longer hours are needed for transit service to better help riders reach their destinations

However, additional feedback, while not conflicting with other data sources, was much more prominent in the input from stakeholders and the public. Examples of these items include:

- Service to Michigan City is needed, especially for residents and employers in the southwest corner of the county
- Include a focus on medical trips, especially for treatments with regular appointments, such as dialysis treatment
- Improving the reliability of service is a major concern

Figure 5-8 below illustrates how feedback was incorporated into the project goals.

PROJECT GOALS AND OBJECTIVES

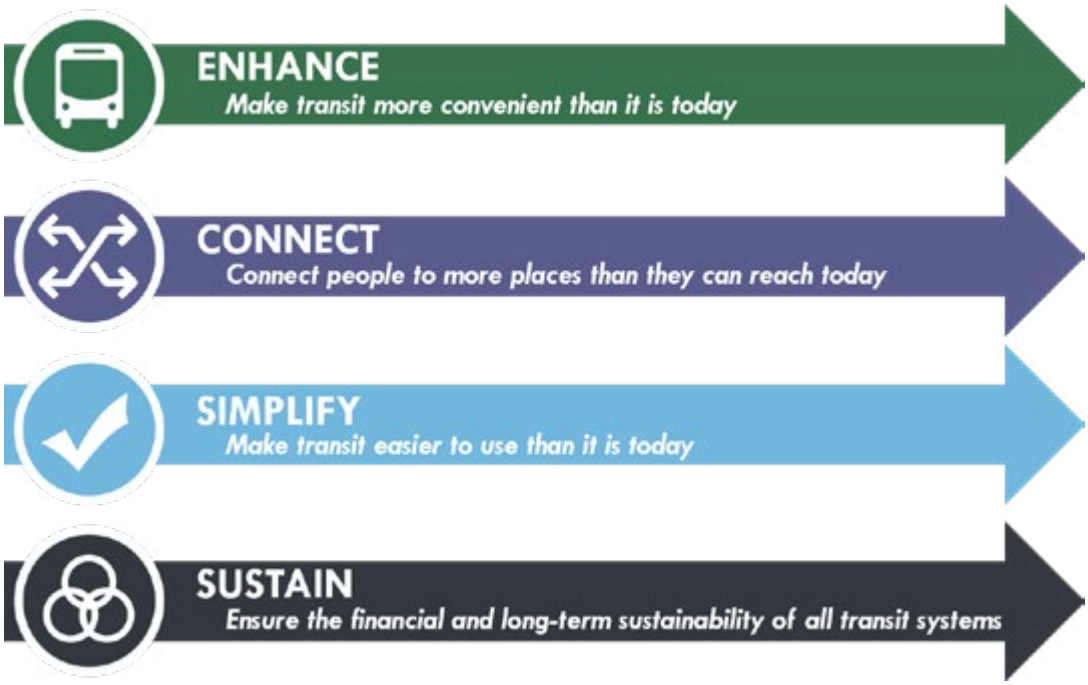
GOALS

This outreach campaign has resulted in the following goals and objectives to guide the creation of improved transit service. The feedback also informed the evaluation criteria shown below, which will ensure that the new transit system will meet the goals and objectives to the fullest extent possible within the available resources.

As mentioned above, stakeholder workshops and general public meetings were held throughout Berrien County to gather feedback on travel needs. Surveys were used to identify regional transit priorities and tradeoffs and to define goals. These goals were then refined during additional discussions with the existing transit agencies. Goals were further refined and clarified using additional data collected from best-case examples, and peer reviews.

Based on this process the following goals were used to guide future transit services within Berrien County (see Figure 5-7).

FIGURE 5-7 CONNECT BERRIEN PROJECT GOALS



Objectives

Each of the goals for Berrien County transit service will be addressed through a variety of measurable quantitative and qualitative objectives.

FIGURE 5-8 GOALS AND OBJECTIVES

Goals and Objectives		Sample Comments
Enhance	Make transit more convenient than it is today	
	Objectives: • Operate longer hours on weekdays and weekends than the systems do today • Have more frequent scheduled service and/or shorter response times for on-demand service than today • Make fares more affordable than they are today • Improve coordination so that trips are easier than they are today • Provide better real-time info and more fare payment options than are available today • Improve service reliability beyond what it is today	"Timely and affordable options for working people" "More weekend and evening service" "Longer hours, for things like dialysis treatment" "Affordable routes that are able to travel county wide" "Hours for employees and jobs"

Goals and Objectives		Sample Comments
Connect	Connect people to more places than they can reach today	
	• Increase or add service so that the majority of major activity centers are served • Focus on connecting more people to more jobs • Ensure that major medical, shopping, and educational facilities have good transit access • Comprehensive countywide service for transit-dependent people should be a high priority • Improve connections with nearby destinations in Michigan City, South Bend and Cass County	"Better service for seniors" "More transportation in Stevensville" "Easier to get from St. Joe to Niles" "Extending service to unserved areas" "Connecting riders to out of county needs" "The amount of residents with no vehicles"
Simplify	Make transit easier to use than it is today	
	• Provide clear, consistent information about routes, schedules, and fares • Standardize policies throughout the county • Make information easier to find than it is today • Simplify fare structures	"Make transit easier for people to use" "Simplicity in navigation (i.e. transfers and connecting)"
Sustain	Ensure the financial and long-term sustainability of all transit systems	
	• Coordinate transit with future development and infrastructure and encourage the creation of "transit first" development areas • Provide more cost-effective services than operate today • Utilize emerging mobility options and public-private partnerships • Address unsustainable lack of funding • Increase community support for transit above what it is today	"Pedestrian use, bicycle use mixed in with public transit" "Increased funding to increase coverage and hours" "Needs a broader appeal"

6. PREFERRED ALTERNATIVE

EVALUATION PROCESS

METRICS

Evaluation metrics assist in assessing the service alternative's potential to help address the goals. The framework for applying appropriate metrics is described in Error! Reference source not found.. The metrics in the table highlight the mix of quantitative and qualitative factors that were used to rate the draft service alternatives, and ultimately to refine the preferred alternative.

FIGURE 6-1 SERVICE ALTERNATIVE EVALUATION FRAMEWORK

Goal	Evaluation Metric
Enhance – Make transit more convenient than it is today	Total annual revenue hours of service, combined fixed route and demand response
	Total projected annual ridership
	New annual transit passenger trips
	Projected average fare
Connect – Connect people to more places than they can reach today	Ridership to and from vulnerable population neighborhoods
	Ridership to new geographic areas
	Ridership to jobs and employment centers
	Ridership to key out-of-county destinations
	Degree to which new transit service connects largest activity centers
Simplify – Make transit easier to use than it is today	Number of fare types
	Ease of trip planning
	Number of trips requiring transfers
	Consistency of policies and information
Sustain – Ensure the financial and long-term sustainability of all transit systems	Operating cost per passenger
	Annualized capital cost per passenger
	Coordination with other county infrastructure improvements
	Degree to which the transit system supports future growth

FRAMEWORK

Each metric was given an overall rating of Excellent, Very Good, Good, or Fair. Together, these goals, objectives, and evaluation metrics helped to ensure that the improved transit system is designed with the community's values in mind.

The methodology for scoring is explained below in more detail. Many metrics still allow for substantial discretion in determining a rating for the quality of service. This discretion is necessary, as the evaluation criteria and available data and projections do not allow for a completely quantitative assessment. Where quantitative thresholds are used, these are informed by information from peer regions and Berrien County's existing transit experience.

ENHANCE

Total annual revenue hours of service, combined fixed route and demand response

- Up to 80,000 – Fair (this is existing service level)
- Between 80,000 and 120,000 – Good
- Between 120,000 and 160,000 – Very Good
- Over 160,000 – Excellent

Total projected annual ridership

- Up to 300,000 – Fair (this is existing ridership)
- Between 300,000 to 500,000 – Good
- Between 500,000 to 700,000 – Very Good
- Over 700,000 – Excellent

New annual transit passenger trips

- Up to 100,000 – Fair
- Between 100,000 and 200,000 – Good
- Between 200,000 and 300,000 – Very Good
- Over 300,000 – Excellent

Projected average fare

- More than $3.00 – Fair
- Between $2.50-$3.00 – Good
- Between $2.00-$2.50 – Very Good
- Under $2.00 – Excellent (this is existing average fare)

CONNECT

Ridership to and from vulnerable population neighborhoods

Communities with percentage of minority, low-income, and/or seniors that is higher than county average are considered vulnerable (highlighted in Figure 4-10).

- Vulnerable block groups served less than other block groups – Fair
- Vulnerable block groups served equally with other block groups – Good
- Vulnerable block groups served better than other block groups – Very Good
- Vulnerable block groups served substantially better than other block groups – Excellent (this is existing condition)

Ridership to new geographic areas

- No Berrien County areas without existing transit service gain service – Fair
- Some areas without transit service gain service – Good
- Most areas without transit service gain service – Very Good
- All areas without transit service gain service – Excellent

Ridership to jobs and employment centers (shown in Figure 4-4)

- Few county job centers served – Fair
- Some job centers served – Good (this is existing condition)
- Most job centers served – Very Good
- All significant job centers served – Excellent

Ridership to key out-of-county destinations (Michigan City and South Bend)

- Few key destinations served – Fair (existing limited service to South Bend only)
- Some key destinations served – Good
- Most key destinations served – Very Good
- All key destinations served – Excellent

Degree to which new transit service connects largest activity centers (8 cities in Berrien County)

- Few large activity centers connected – Fair (this is existing condition)
- Some large activity centers connected – Good
- Most large activity centers connected – Very Good
- All large activity centers connected – Excellent

SIMPLIFY

Number of fare types

- 10 or more fare types – Fair (this is existing condition)
- 8-9 fare types – Good
- 6-7 fare types – Very Good
- 5 or fewer fare types – Excellent

Ease of trip planning

For trips anywhere within Berrien County, or for service to and from Berrien County.

- Average person has difficulty with planning trips – Fair (this is existing condition)
- Average person can plan trips with limited difficulty – Good
- Average person can easily plan trips – Very Good
- Planning trips is very easy for almost everyone – Excellent

Number of trips requiring transfers

- Most trips require transfer – Fair
- Some trips require transfer – Good (this is existing condition)
- Few trips require transfer – Very Good
- Almost no trips require transfer – Excellent

Consistency of policies and information

- Policy/information not consistent throughout county – Fair (this is existing condition)
- Policy/information mostly consistent throughout county – Good
- Policy/information completely consistent throughout county – Very Good
- Policy/information unified under a single organization – Excellent

SUSTAIN

Operating cost per passenger

- More than $15.00 – Fair
- Between $12.00 and $15.00 – Good (this is existing condition)
- Between $10.00 and $12.00 – Very Good
- Less than $10.00 – Excellent

Annualized capital cost per passenger

- More than $5.00 – Fair
- Between $4.00 and $5.00 – Good
- Between $3.00 and $4.00 – Very Good
- Less than $3.00 – Excellent (this is existing condition)

Coordination with other county infrastructure improvements (sidewalk/roadway)

- Not well coordinated with county infrastructure improvements – Fair (this is existing condition)
- Somewhat coordinated with county infrastructure improvements – Good
- Well coordinated with county infrastructure improvements – Very Good
- Very well coordinated with county infrastructure improvements – Excellent

Degree to which the transit system supports future population growth

- Transit system does not support future growth – Fair (this is existing condition)
- Transit system supports limited future growth – Good

- Transit system supports expected average future growth – Very Good
- Transit system supports robust future growth – Excellent

DETAILED SERVICE RECOMMENDATIONS

SPAN OF SERVICE

The overall span of service is designed to be:

- Weekdays - 5:00 a.m. to 8:00 p.m.
- Saturday - 6:00 a.m. to 8:00 p.m.
- Sundays - 7:00 a.m. to 7:00 p.m.

The scheduled trips for each particular route can be spread evenly throughout the service day (approximately every three hours on a weekday), or clustered in the morning and late afternoon/evening, with a midday break. This latter option may reduce costs (for example, if a round trip takes two hours instead of three hours) and better match travel demand in some cases. Additionally, trips can be scheduled for timed transfers if there is a peak direction of travel (for example, a trip from Benton Harbor might be scheduled to arrive in Niles at 7:50 a.m., and a trip departing Niles for South Bend at 8:00 a.m., if sufficient transfer demand exists).

For the initial rollout, it is assumed that all fixed-route departure times would be between 5-11AM, and 2-8PM, which maximizes time for people to spend at their destination before boarding service for the return trip. With the number of trips provided, it is unlikely that many people will transfer between fixed routes. However, departure times can be adjusted as noted above, either before the service is implemented, or based on customer requests and travel patterns once service begins, with little effect on costs.

FIXED-ROUTE SERVICE

The fixed routes will consume about 20% of operating resources (~$1.3 million per year). The fixed-route network essentially provides a backbone for the transit system, so that demand-response service can focus on filling the gaps with shorter trips and/or feeder service.

There will be six scheduled fixed routes as part of GoBerrien, designed for longer trips between urban areas in the county and to South Bend and Michigan City. The longer distance GoBerrien trips were identified as common travel patterns in the market analysis.

Although the fixed-route system is primarily designed for longer, inter-city trips, it is also worth noting that many shorter trips will be possible on the scheduled service, which will further relieve the burden on the

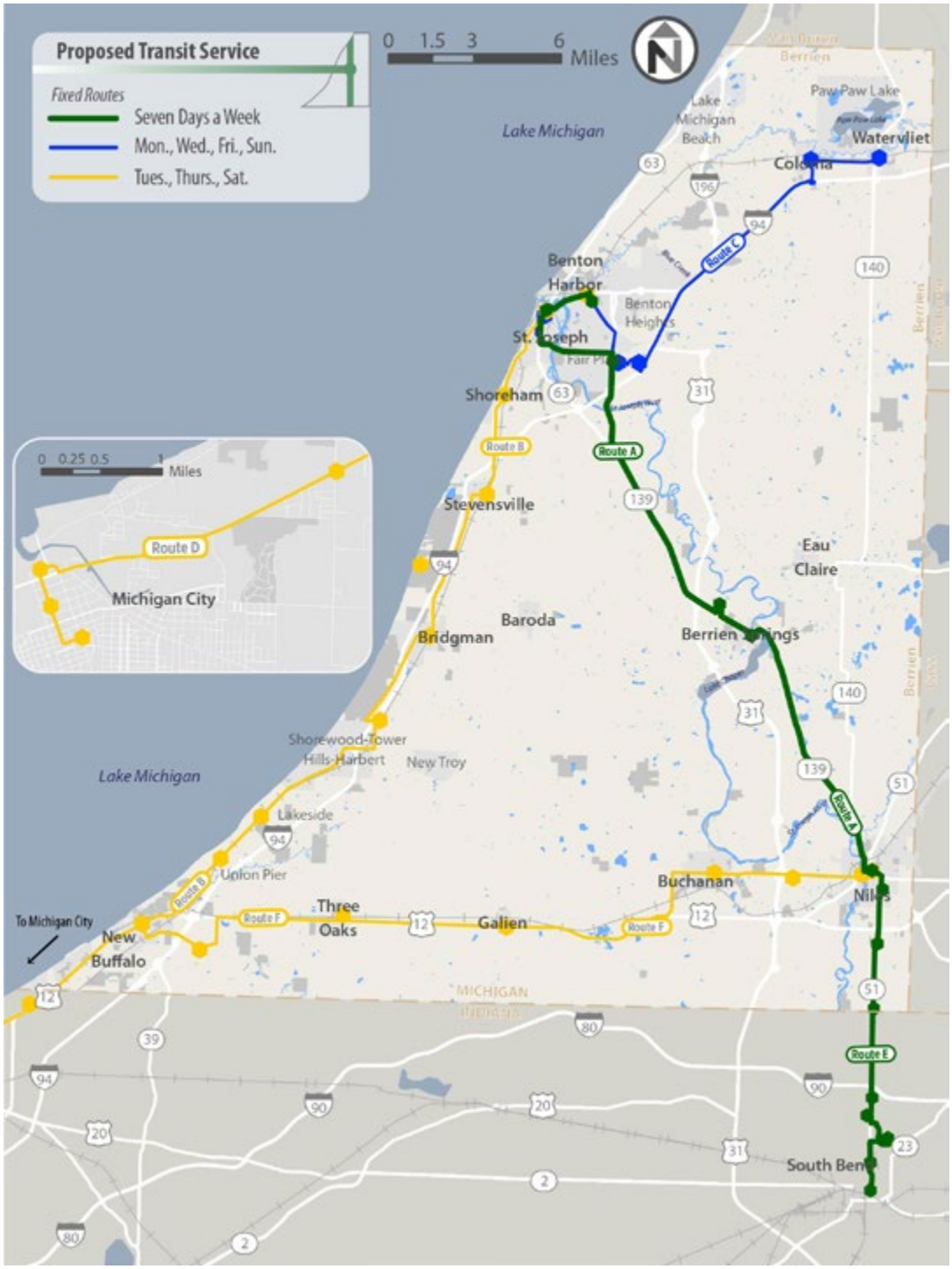
demand-response system. Following are examples of shorter trips that can be made using the proposed fixed-route service:

- Between St. Joseph and Benton Harbor
- Between St. Joseph/Benton Harbor and Fair Plain shopping area
- Between Andrews University and Berrien Springs
- Between downtown Niles and Martin's Supermarket or Niles Plaza
- Between Niles, Buchanan, Lakeland Hospital, and Lakeland Family Medicine
- Between Coloma and Watervliet
- Between St. Joseph and Shoreham
- Between New Buffalo and Four Winds Casino

Proposed Scheduled Fixed-Route Services in Berrien County

The six GoBerrien routes with scheduled service will be as follows (See Figure 6-2).

FIGURE 6-2 PROPOSED FIXED-ROUTE NETWORK



- **Route A** – Benton Harbor to Niles via Routes 63 and 139, with stops in St. Joseph, Fair Plain shopping area, Andrews University, and Berrien Springs
  - Operates seven days per week, with six round trips on weekdays and four round trips on weekends
- **Route B** – Benton Harbor to New Buffalo, via Red Arrow Highway, with stops in St. Joseph, Shoreham, Stevensville, Cook Nuclear Plant, Bridgman, Sawyer, Lakeside, Union Pier, and Four Winds Casino
  - Operates three days per week (Tue/Thurs/Sat), with six round trips on weekdays and four round trips on Saturdays
- **Route C** – St. Joseph to Watervliet, with stops in Benton Harbor, Fair Plain shopping area, and Coloma
  - Operates four days per week (Mon/Wed/Fri/Sun), with six round trips on weekdays and four round trips on Sundays
- **Route D** – New Buffalo to Michigan City, with stops in Michiana Shores, Long Beach, Michigan City Amtrak, Michigan City Bus (6th/Washington), Michigan City South Shore Line (11th/Pine)
  - Operates three days per week (Tue/Thurs/Sat), with six round trips on weekdays and four round trips on Saturdays
  - Michigan City Transit would need to provide permission to operate fixed-route service within their service area, possibly requiring fewer stops in Indiana.
- **Route E** – Niles to South Bend, with stops at Martin's Supermarket, Niles Plaza, State Line, Roseland/St. Mary's, Notre Dame University, Memorial Hospital, South Street Bus Station
  - Operates seven days per week, with six round trips on weekdays and four round trips on weekends.
  - South Bend Transportation would need to provide permission to operate fixed-route service within their service area, possibly requiring fewer stops in Indiana.
- **Route F** – New Buffalo to Niles, with stops at Four Winds Casino, Three Oaks, Galien, Buchanan, Lakeland Family Medicine, and Lakeland Hospital
  - Operates three days per week (Tue/Thurs/Sat), with six round trips on weekdays and four round trips on Saturdays
  - The last item listed above, Route F, is projected to have the least ridership, but fills what would otherwise be a large gap in the fixed-route network, and allows the on-demand vehicles to focus on shorter trips. Nevertheless, if resources are not available for the full network, Route F could be eliminated.

FIGURE 6-3 FIXED-ROUTE SERVICE STATISTICS

Route Name	Day Type	Cycle Time (min)	Peak Veh	One-Way Daily Tripe	Daily Veh Rev Hrs	Annual Total	Projected Annual Ridership	Psgrs / Hr	$ / Psgr
A - Benton Harbor - Niles	Wkdy - 5	210	2	12	21	$294,525	36,720	6.9	$8.02
B - Benton-Harbor - New Buffalo	Wkdy - 2	240	2	12	24	$137,280	13,728	5.5	$10.00
C - St. Joseph - Watervliet	Wkdy - 3	150	2	12	15	$128,700	18,720	8.0	$6.88
D - New Buffalo - Michigan City	Wkdy - 2	150	2	12	15	$85,800	13,728	8.8	$6.25
E - Niles - South Bend	Wkdy - 5	150	2	12	15	$210,375	33,660	8.8	$6.25
F- New Buffalo - Niles	Wkdy - 2	210	2	12	21	$120,120	9,984	4.6	$12.03
A - Benton Harbor - Niles	Wknd - 2	210	2	8	14	$84,700	8,800	5.7	$9.63
B - Benton-Harbor - New Buffalo	Wknd - 1	240	2	8	16	$45,760	3,744	4.5	$12.22
C - St. Joseph - Watervliet	Wknd - 1	150	2	8	10	$28,600	3,328	6.4	$8.59
D - New Buffalo - Michigan City	Wknd - 1	150	2	8	10	$28,600	3,744	7.2	$7.64
E - Niles - South Bend	Wknd - 2	150	2	8	10	$60,500	7,920	7.2	$7.64
F- New Buffalo - Niles	Wknd - 1	210	2	8	14	$40,040	2,496	3.4	$16.04
OVERALL:			**10**				**156,572**	**6.8**	**$8.08**

For fixed routes, the Annual Total noted above is based on a cost of $55 per vehicle revenue hour – this is slightly higher than the $52 per hour used for demand response in the next section. Both numbers are informed by the peers in Appendix D, as well as the consultant team's experience that costs for fixed-route service are often slightly higher than for demand-response service.

The total peak vehicles in Figure 6-3 above reflect the fact that not all routes operate every day.

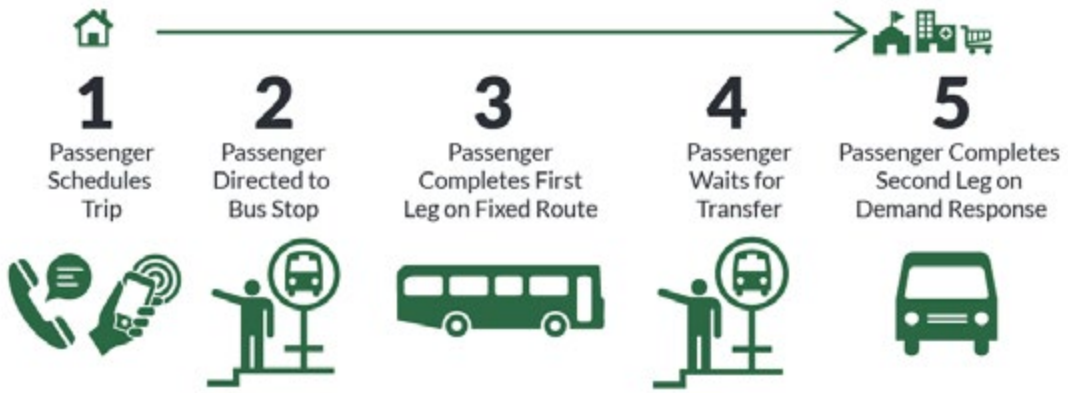
Transfer Locations

Currently, many transit trips within Berrien County require multiple providers. These transfers can be cumbersome to arrange, and often require extended waiting and travel time. As mentioned, the transfers also result in higher fares, since no provider grants free transfer privileges to any other provider. Finally, the need to transfer increases the uncertainty of travel, which can discourage the use of transit.

In the consolidated GoBerrien service, some trips would require transferring between on-demand vehicles and fixed routes. More trips could be made without a transfer or with scheduled service and timed transfers. For trips with a transfer, riders will be dropped off at the nearest fixed-route

stop. All of these transfer locations would be clearly marked and each would include a common set of amenities such as a shelter, bench, real-time vehicle arrival information signs, and lighting.

FIGURE 6-4 POTENTIAL TRIP TIMELINE INVOLVING FIXED ROUTE TO DEMAND RESPONSE VEHICLE TRANSFER



IMPROVED DEMAND-RESPONSE SERVICE

ON-DEMAND OPTIONS

For much of Berrien County, the low density will mean that demand response will continue to be the only viable option for transit service. However, emerging technology options for customers and providers mean that this demand-response service can be significantly upgraded.

The demand-response service complements the fixed-route network described above, and therefore operates in different areas of the county on alternating days. The span of service is the same as fixed-route services. The demand-response system will consume about 80% of annual operating resources (~$5.1 million per year).

Demand-response trips should feed the fixed-route network wherever possible, and not compete with scheduled trips. The program parameters should ensure that riders are connected to the fixed-route service wherever it is feasible to do so. For example, program rules could state that passengers will be delivered to or picked up from the nearest fixed-route bus stop, or driven point-to-point if both origin and destination are further than a half mile from a fixed-route service. It also may be necessary to establish a maximum trip length (for example, 15 miles) in order to provide service efficiently.

Generally, response time for requests should be minimized, and less than one hour at all times if possible. For trips that connect to the fixed-route network, waiting time at the transfer points should be minimized. Emerging technology and software will help to optimize the system for both the GoBerrien provider and the customer.

Demand response service will operate each day in the following areas:

- **Mon/Wed/Fri/Sun** – all parts of Berrien County north and east of M- 139, as well as all of the St. Joseph/Benton Harbor urbanized area south to Bridgman, all of Berrien Springs, all of Buchanan township, city of Niles, and all of Niles township
- **Tue/Thurs/Sat** – all parts of Berrien County south and west of M- 139, as well as all of the St. Joseph/Benton Harbor urbanized area, all of Berrien Springs, city of Niles, and all of Niles township

The on-demand zones can easily be adjusted after implementation if warranted. It may be found that different boundaries could be more efficient and effective, or that fewer zones are needed.

All on-demand service would operate as shared rides, in order to maintain efficiency. However, standards for directness of trips would also be incorporated so that efficiency did not come at the expense of unreasonably long or circuitous trips for customers.

The next three maps show the combined demand-response and fixed-route service operating on each day of the week in the preferred alternative.

The planned fixed routes will connect urban centers in and around Berrien County.

FIGURE 6-5 PREFERRED SERVICE SCENARIO – MONDAY, WEDNESDAY, FRIDAY, SUNDAY SERVICE

FIGURE 6-6 PREFERRED SERVICE SCENARIO – TUESDAY, THURSDAY, SATURDAY SERVICE

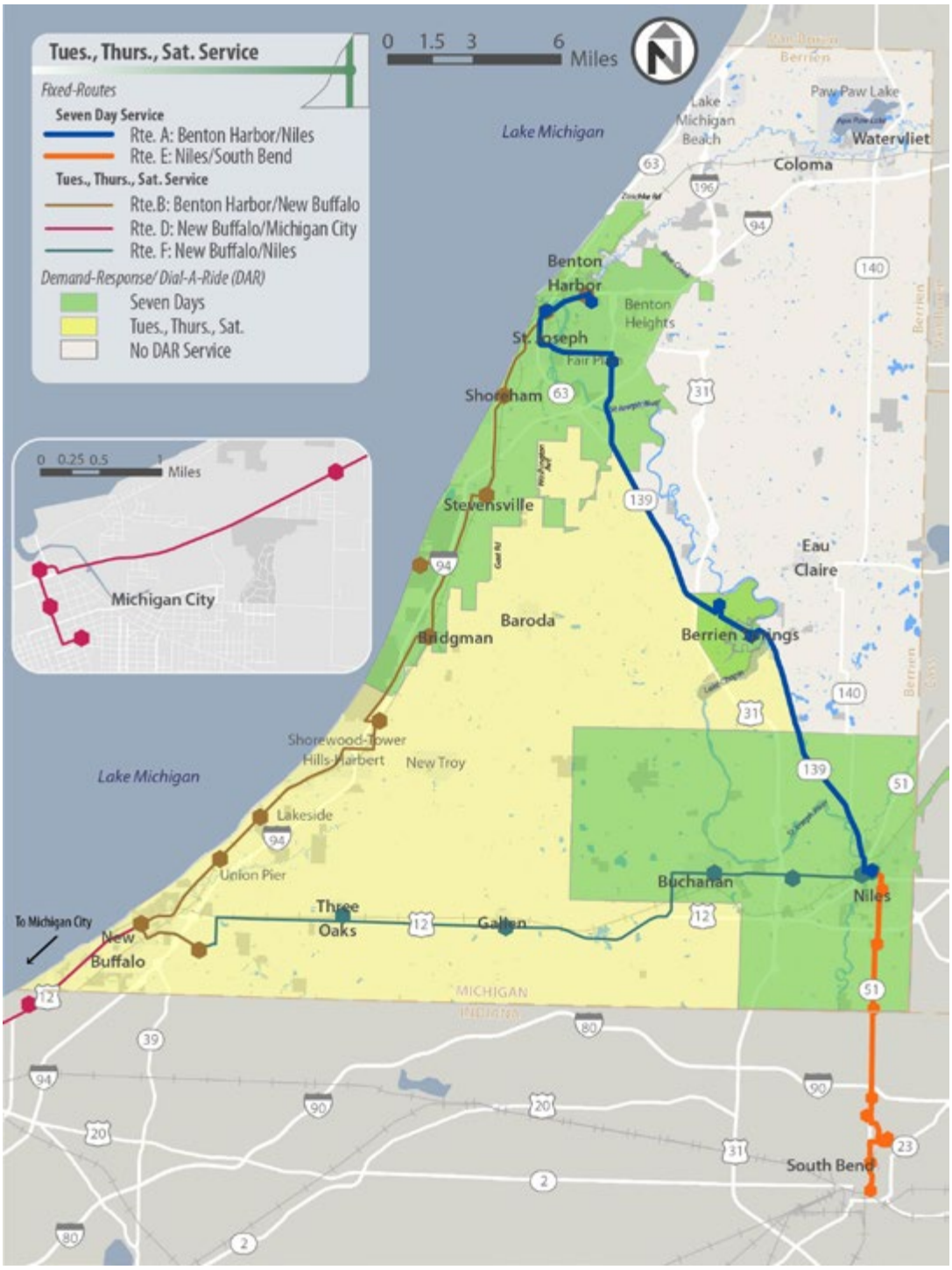
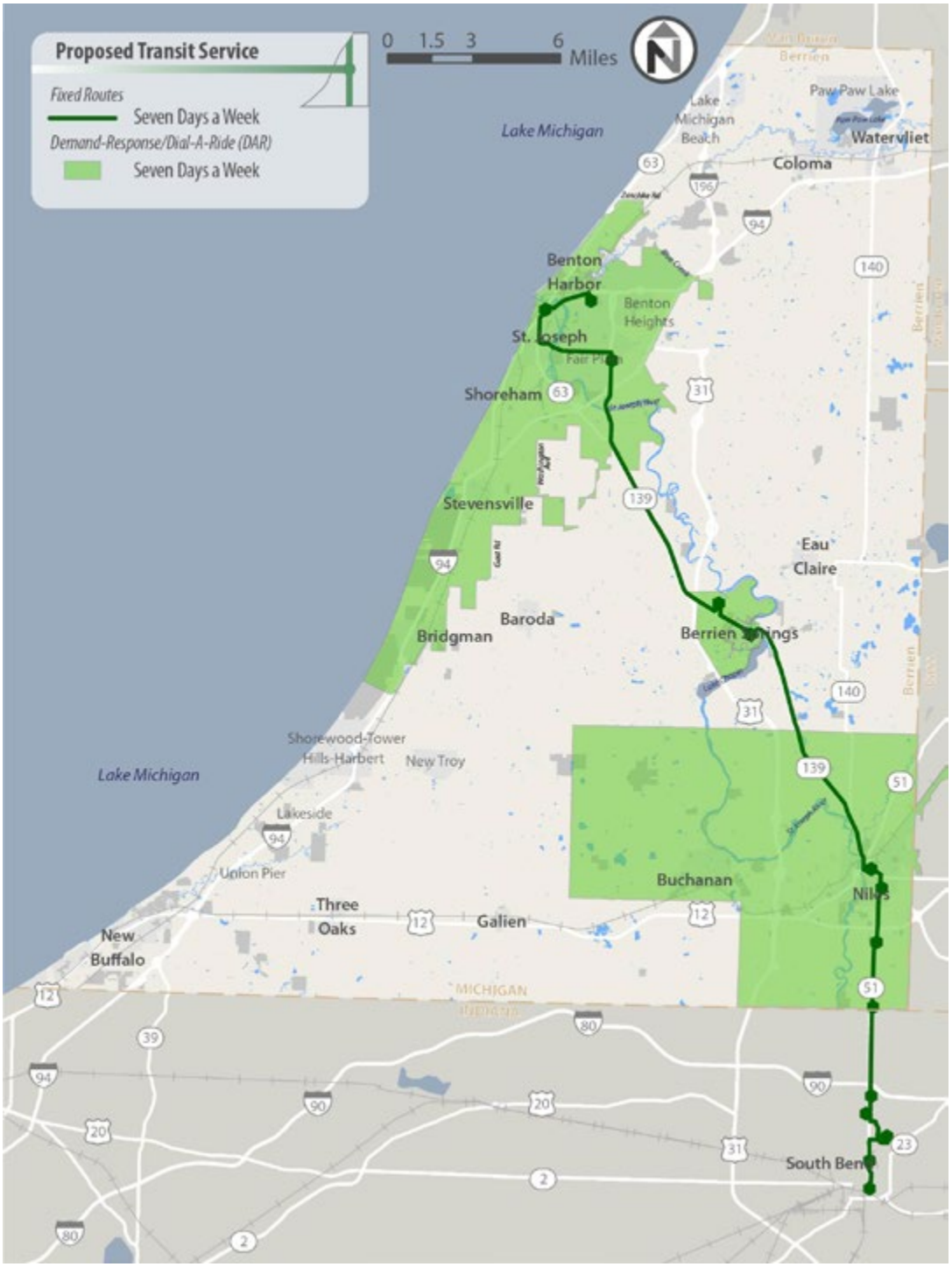


FIGURE 6-7 PREFERRED SERVICE SCENARIO – SEVEN DAYS A WEEK TRANSIT SERVICE



The chart below shows the service statistics for each demand-response zone:

FIGURE 6-8 DEMAND RESPONSE SERVICE STATISTICS

Zone Name	Day Type	Service Hrs per Day	Projected Trips per Day	Peak Veh	Daily Veh Rev Hrs	Annual Total	Projected Annual Ridership	Psgrs / Hr	$ / Psgr
Benton Harbor UZA	Wkdy - 5	15	562	14	141	$1,864,568	143,428	4.0	$ 13.00
Benton Harbor UZA	Saturday	14	394	13	131	$354,877	20,474	3.0	$ 17.33
Benton Harbor UZA	Sunday	12	337	11	112	$339,278	19,574	3.0	$ 17.33
Berrien Springs	Wkdy - 5	15	20	1	15	$198,900	5,100	1.3	$ 39.00
Berrien Springs	Saturday	14	15	1	14	$37,856	780	1.1	$ 48.53
Berrien Springs	Sunday	12	15	1	12	$36,192	870	1.3	$ 41.60
Niles/ Buchanan	Wkdy - 5	15	108	4	36	$477,599	27,554	3.0	$ 17.33
Niles/ Buchanan	Saturday	14	76	4	38	$102,262	3,933	2.0	$ 26.00
Niles/ Buchanan	Sunday	12	65	3	32	$97,767	3,760	2.0	$ 26.00
Northeast Berrien	Wkdy - 3	15	274	9	91	$740,520	42,722	3.0	$ 17.33
Northeast Berrien	Sunday	12	146	7	73	$197,472	7,595	2.0	$ 26.00
Southwest Berrien	Wkdy - 2	15	230	8	77	$414,758	23,928	3.0	$ 17.33
Southwest Berrien	Saturday	14	143	7	72	$193,554	7,444	2.0	$ 26.00
Total				**28**		**$5,055,605**	**307,163**	**3.2**	**$ 16.46**

The total peak vehicles for demand response reflect the fact that not all services operate on all days. Within the Benton Harbor-St. Joseph-Fair Plain Urbanized Area (UZA), per capita transit demand was assumed to be somewhat higher than elsewhere, due to shorter trips being required, more households without vehicles, and a history of existing transit use. However, the higher density of the UZA also allows greater efficiency and therefore higher passengers per hour than elsewhere. The Annual Total costs for demand-response service shown above are based on a cost of $52 per vehicle revenue hour, which is in line with the median of peer agencies in Appendix D. The Peak Vehicles shown would generally be needed from 10:00 a.m. – 5:00 p.m. on Monday through Saturday, and from 11:00 a.m. – 5:00 p.m. on Sunday.

The following summarizes the proposed fixed-route and demand-response service combined

FIGURE 6-9 COMBINED FIXED-ROUTE AND DEMAND-RESPONSE SERVICE STATISTICS

Type of Service	Peak Vehicles Required	Annual Cost	Annual Ridership	Psgrs / Hr	$ / Psgr
Fixed Route	10	$1,265,000	156,572	6.8	$8.08
Demand Response	28	$5,055,605	307,163	3.2	$16.46
Total	38	$6,320,605	463,735	3.9	$13.63

COMPARISON WITH EXISTING TRANSIT SERVICE

The service outlined here meets the most critical needs identified from the analysis and feedback received. In addition to the differences discussed in detail below, the following should be noted:

- Service will be simplified and more predictable – additional scheduled service and the likely consolidation of some providers facilitates better understanding of fare payment and the services provided.
- The hours of service will be greatly expanded on evenings and weekends.
- Few residents and commuters will have less service than today, however for most Berrien Bus customers outside of Berrien Springs (including those in Eau Claire), service will be reduced from five days to three to four days per week.

- The potential consolidation of providers will place the new organization in a good position to modernize systems, utilize emerging mobility and technology options, and partner with human services agencies as appropriate.
- The improved service will be provided in a cost-effective manner that is within the available funding.

NEW PLACES AND MORE PEOPLE SERVED

Connectivity both within Berrien County and to nearby locations would be improved under the preferred alternative transit service. The "spine" of the county from the Twin Cities area through Niles and to South Bend will receive scheduled service seven days per week. This robust spine facilitates commuting across the county for employees in St. Joseph, Benton Harbor, Berrien Springs, Niles, and South Bend. Near the midpoint between Niles and the Twin Cities area on M-139, Berrien Springs and Andrews University will receive seven-day service.

Surrounding this corridor, there will be supplemental on-demand service and additional fixed routes. The southwest and northeast corners of the county will receive much more robust on-demand service, as well as new fixed-route options to connect to the Twin Cities or to Niles. This additional service will make cross-county connections between urban centers that much easier.

Berrien County will have transit connections with Michigan City for the first time.

Existing Service (based on areas which effectively have service today)

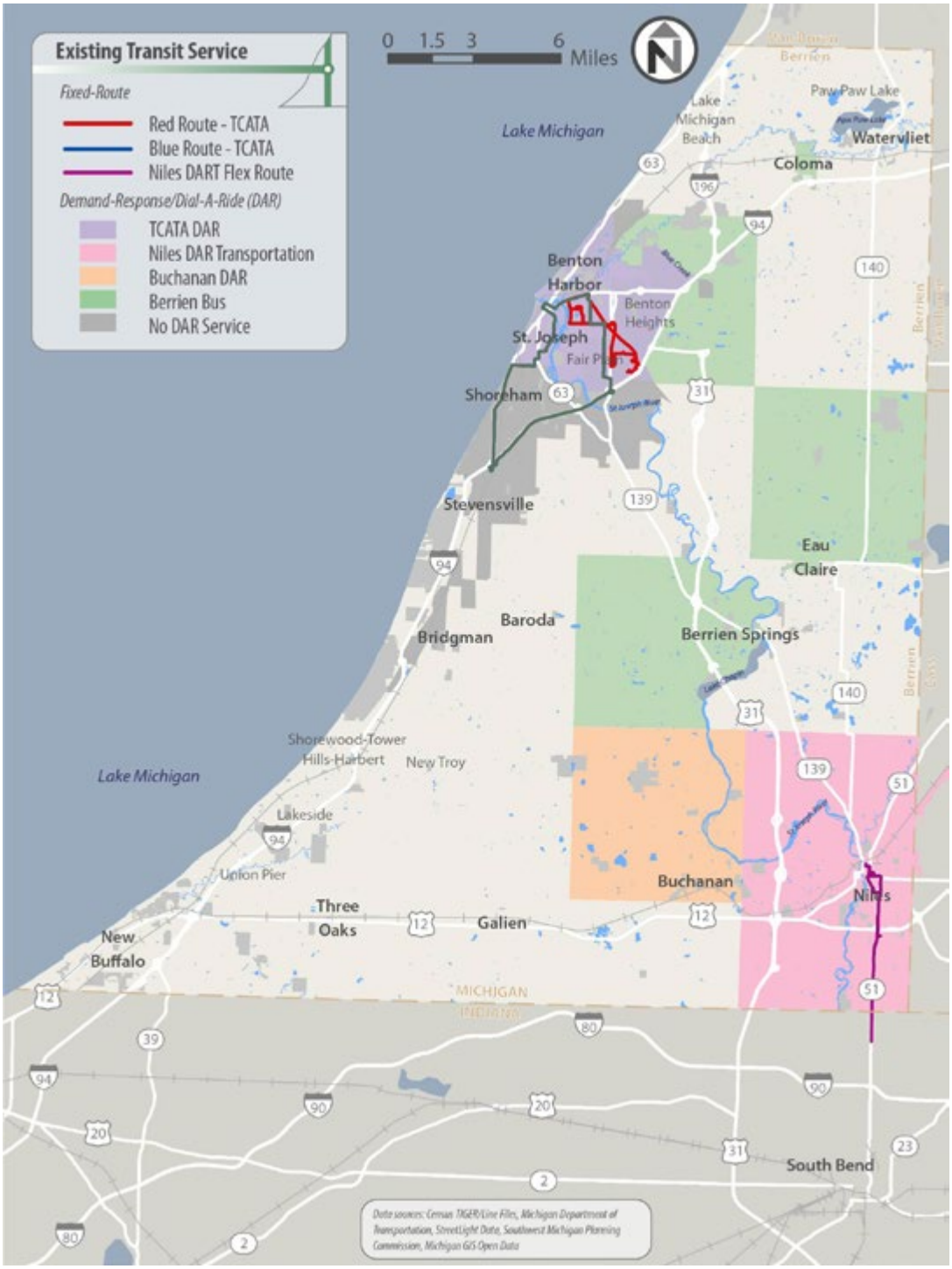
- 91,000 residents (58%)
- 40,000 jobs (66%)

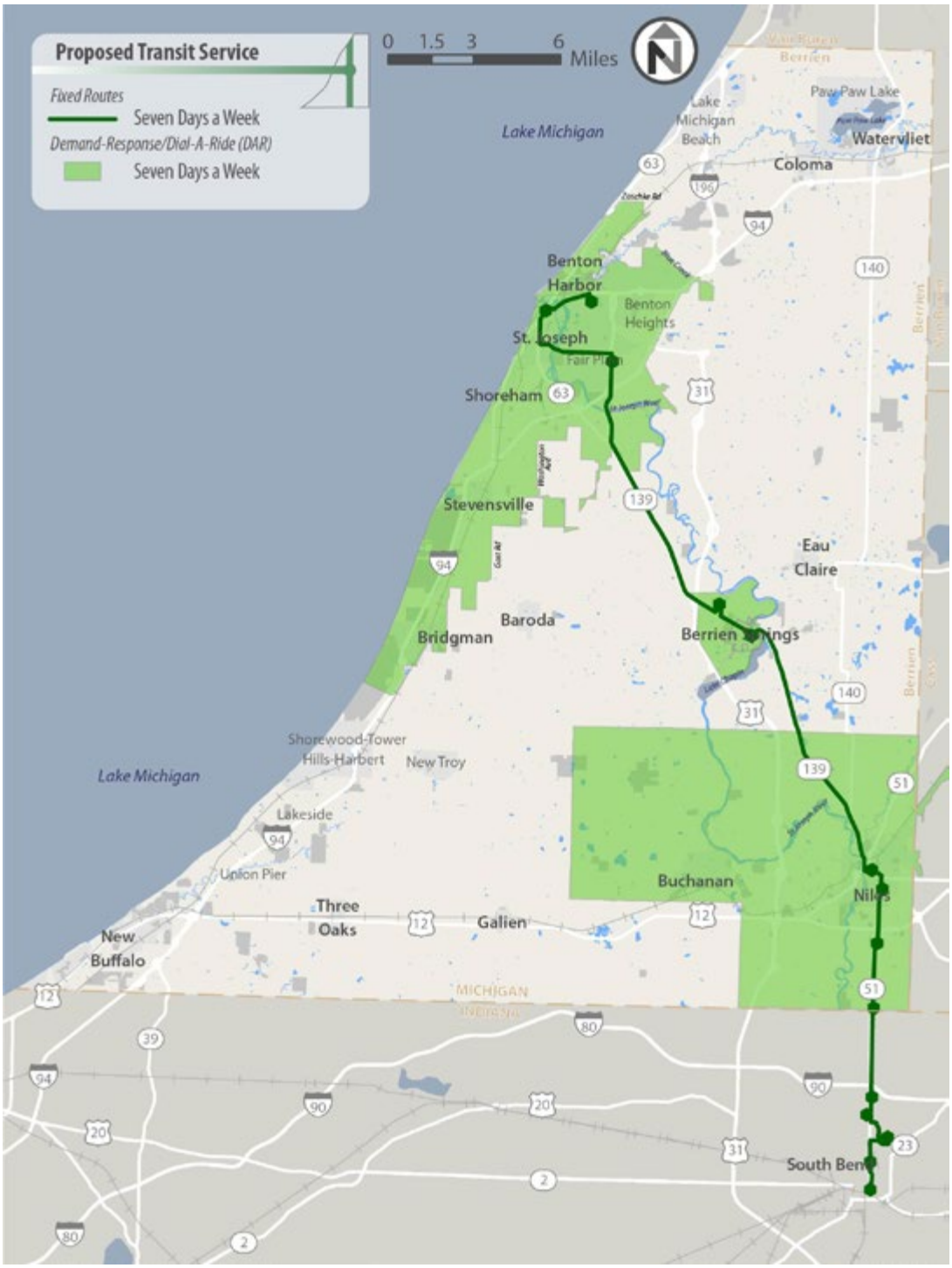
Preferred Alternative Service

- 157,000 residents (100%)
- 61,000 jobs (100%)
- Projected 50% increase in ridership
- 99,000 residents (63%) and 42,000 jobs (69%) get service seven days per week

Figure 6-10 illustrates the greater service area of the proposed service, as compared to existing service.

FIGURE 6-10 COMPARISON OF EXISTING TRANSIT SERVICE IN BERRIEN COUNTY AND SERVICE UNDER THE PREFERRED ALTERNATIVE





Service in Niles

Existing Service

- Six days per week
- Local connections only, with limited service to South Bend

Preferred Alternative Service

- No one gets less service than today
- Seven days per week service to Twin Cities and South Bend
- Three days per week service to New Buffalo

Service in Benton Harbor

Existing Service

- Six days per week
- Local connections only, with limited service and cumbersome transfers for anywhere outside immediate area

Preferred Alternative Service

- Likely that no one gets less service than today
- Seven days per week service to Niles (with transfer opportunity to South Bend)
- Seven days per week demand-response service anywhere within St. Joseph Township, Lincoln Township, Benton Charter Township, and Royalton Township.
- Three days per week service to New Buffalo (with transfer opportunity to Michigan City), Coloma, and Watervliet

Service in Buchanan

Existing Service

- Six days per week
- Local connections only, with limited service to Niles

Preferred Alternative Service

- No one gets less service than today
- Seven days per week service to Niles (with transfer opportunity to South Bend or to Berrien Springs and St. Joseph/Benton Harbor)
- Three days per week service to New Buffalo (with transfer opportunity to Michigan City)

SAMPLE TRIPS

Mr. Smith is trying to travel from his home in Benton Harbor to his job in Niles.

Existing Service

- Transfer from TCATA to Berrien Bus – two fares, longer travel time, more complex arrangements
- Fare: $1.00 for TCATA fixed-route trip or $2.00 for TCATA demand-response trip and $5.00 for Berrien Bus

Preferred Alternative Service

- Scheduled Route A on all days of the week; on-demand feeder service available if needed
- Fare: $2.00

Ms. Jones is trying to travel from her home in Three Oaks to Lakeland Family Medicine in Niles for a doctor's appointment.

Existing Service

- Berrien Bus call-ahead, no guarantee service can be provided
- Fare: $5.00 for Berrien Bus

Preferred Alternative Service

- Scheduled Route F on Tuesday, Thursday, or Saturday; on-demand feeder service available if needed
- Fare: $2.00

Mr. Johnson wants to travel from his home in Bridgman to go grocery shopping at Meijer in Stevensville.

Existing Service

- Cannot get any transit service
- Fare: N/A

Preferred Alternative Service

- Request on-demand ride on any day of the week; Scheduled Route B on Tuesday, Thursday, and Saturday
- Fare: $2.00

Ms. Thompson needs to commute from her home in Benton Harbor to her 7:00 a.m. to 3:00 p.m. shift at her job in Bridgman.

Existing Service

- Transfer from TCATA service to Berrien Bus, no guarantee service can be provided
- Fare: $1.00 for TCATA fixed-route trip or $2.00 for TCATA demand-response trip and $5.00 for Berrien Bus

Preferred Alternative Service

- Scheduled Route B, but only on Tuesday, Thursday, and Saturday; on-demand service available on seven days a week.
- Fare: $2.00

PREFERRED TRANSIT ALTERNATIVE SERVICE EVALUATION

Shown below is the evaluation of the preferred service alternative, based on the metrics defined earlier.

FIGURE 6-11 PREFERRED ALTERNATIVE SERVICE EVALUATION

Goal	Evaluation Metric	Existing Condition	Score	Notes
Enhance	Total annual revenue hours of service, combined fixed route and demand response	Fair	Very Good	From about 75,000 to a little more than 120,000 annual hours
	Total projected annual ridership	Fair	Good	From about 300,000 to estimated 460,000
	New annual transit passenger trips	N/A	Good	160,000 estimated new trips
	Projected average fare	Excellent	Excellent	From $1.85 to $1.17 (and with less variable fares)

Goal	Evaluation Metric	Existing Condition	Score	Notes
Connect	Ridership to and from vulnerable population communities	Excellent	Good	Service will be better for everyone and equal for vulnerable and non-vulnerable communities (but no longer relatively better in vulnerable communities)
	Ridership to new geographic areas	N/A	Good	Entire county will be served, but limited service in some areas
	Ridership to jobs and employment centers	Good	Very Good	More job centers served
	Ridership to key out-of-county destinations	Fair	Good	New service to Michigan City three days per week, additional service to South Bend
	Degree to which new transit service connects largest activity centers	Fair	Good	Daily service between Benton Harbor and Niles, others more limited
Simplify	Number of fare types	Fair	Excellent	Simple fare structure
	Ease of trip planning	Fair	Very Good	Improved service, but still limited options
	Number of trips requiring transfers	Good	Very Good	Many trips will no longer require transfer
	Consistency of policies and information	Fair	Very Good	Standardized
Sustain	Operating cost per passenger	Good	Good	Estimated $14.69 to $13.63
	Annualized capital cost per passenger	Excellent	Excellent	Service can use existing fleet and facilities
	Coordination with other county infrastructure improvements	Fair	Good	New network facilitates coordination with infrastructure
		Fair	Good	New transit could support some population growth

7. IMPLEMENTATION PLAN

PHASED OPERATING PLAN

The service described in Chapter 6 as the Preferred Alternative is designed to operate as a complete network, and it is recommended that all of the service be implemented at the same time. However, if absolutely necessary, it would be possible to implement the service planned for seven days a week first, with limited demand-response service for other parts of the county. It is estimated that this first phase would have annual operating costs of approximately $5.3 million per year, as compared to the full implementation of $6.3 million per year. The first phase would be an improvement over existing service, allowing some people to transfer to the Berrien-Niles and Niles-South Bend scheduled service. This would shorten trips for some people who need to get a ride currently from a friend, relative, existing transit provider, or social services agency. However, this first phase would not provide the connectivity benefits that the full network will bring. This phased approach is offered here as an alternative so that implementation is not unreasonably delayed if part of the additional funding can be secured more quickly, but the phased implementation should be viewed as a last resort to be used only if necessary.

SERVICE STANDARDS AND ONGOING EVALUATION

Once the new service plan is implemented, service guidelines can provide an objective and consistent basis upon which to track service performance and make service decisions. Service guidelines measure and evaluate operational performance, and support decisions about where and when service should be added, maintained, or reduced.

Since resources are always limited, having quantitative criteria can help with prioritizing the most effective use of those resources. Ideally, service guidelines help to establish a network that best meets travel needs, while maintaining reasonable productivity and efficiency. Recognizing that transit service requires flexibility, the guidelines indicate general rules to support the expertise of local planning staff and not a rigid prescription or strict minimum standard.

Service Coverage

Public transit is designed to be mass transportation rather than personalized transportation. As such, it is most effective in areas where sufficient numbers of people live and work in close proximity. The best indicators of whether there will be underlying demand for productive transit service are population and employment density. A corridor with at least 2,500 people and jobs per

square mile is generally the minimum density required to make hourly local fixed-route transit service viable. It is possible that Berrien County will have such corridors in the future if population and job growth occur.

Inter-city regional service will often have fewer passengers per hour compared to local service due to the longer passenger trips, and must be evaluated accordingly. The service plan outlined in this document uses inter-city regional scheduled service to also fulfill some local trips in Berrien County.

For dial-a-ride services, there are not currently sufficient densities of people or jobs to support services throughout the day or week and maintain an average cost per trip comparable to peer counties. In these lower density areas, services may only be provided a few days a week, providing service to different sides of the county on alternating days of the week. Alternatively, there may be a way for individual communities to fund or operate additional service if desired.

Other factors may also be considered. For example, socioeconomic characteristics such as income levels, the number of households without automobiles or fewer automobiles than workers, can increase or decrease underlying demand. Berrien County should reconsider these factors periodically when examining potential changes in demand for service.

Passengers per Vehicle Revenue Hour

Berrien County must use its resources effectively and all served areas should achieve a minimum level of productivity and performance. With limited exceptions, all services should attract a minimum level of ridership. This minimum level of ridership is expressed in terms of Passengers per Vehicle Revenue Hour (VRH), or in simpler terms, the average number of passengers that a bus should serve for each hour it is in service.

Each demand response zone should generally maintain at least two passengers per VRH, especially with emerging software options that help to optimize operations. For Berrien County, the entire network of demand-response service should be able to achieve three passengers per VRH, since the county includes some small cities whose density facilitates greater efficiency.

Each inter-city regional scheduled line (fixed route) should achieve at least four passengers per VRH, with the entire fixed-route network in Berrien County at least six passengers per VRH.

All of the standards for service are in line with peers across the country.

On-Time Performance (Fixed Route Only)

For scheduled fixed-route service, customers are relying on the bus arriving and departing close to the posted times. However, unforeseen events such as traffic and weather can affect performance. Service standards can address this balance – timepoints can be established along each fixed route. For

Berrien County this might be appropriate at each scheduled stop, since there are limited stops. Then a window for arriving on time should be established – typically this might be from 1 minute early up to 7 minutes late. Finally, a goal for percentage of timepoints for which the bus arrives on time should be created – again, a typical goal would be 85%.

Excessively Long Trips (Demand Response Only)

The duration of a demand-response trip is often called ride time, travel time, on-board time or in-vehicle time. For demand-response services, trips should not, as a pattern, take longer than a fixed-route trip between the same locations at the same time, including travel time to/from bus stops or rail stations, wait times at those stops, and transfer times. Transit agencies are obligated to ensure that there are no patterns or practices of excessively long trips. However, contributing factors that are beyond the control of the transit agency are not a basis for determining that a pattern or practice of excessively long trips exists.

For trips that occur outside of a fixed-route area, as in Berrien County, the standard for excessively long trips must be established outside of a comparative fixed route. Some examples of excessively long trip definitions are below:

- Determine average speed of system services. Trips that take more than 150% of the time needed using the average speed would be considered excessively long. The additional 50% is to allow for pickups and drop offs.
- The vehicle trip time is twice as long as a trip in a private vehicle, excluding boarding and alighting times.

When the excessive trip is defined, the agency should strive to deliver fewer than 2% of trips as excessively long. Modern software for demand response service can track this for management.

No Show Rate (Demand Response Only)

No shows occur when a demand-response customer fails to board a vehicle within five minutes of a vehicle arriving at the pick-up point within the pick-up window. The goal for no shows should be to have fewer than 2% of trips incur a no show. No shows should be tracked, and customers that regularly incur no shows should receive a warning and, if necessary, these customers should be suspended from the service for a short period. Repeat offenders should incur longer suspensions.

Missed Trips (Demand Response Only)

Missed trips are demand response trips that are scheduled to be served but were not served due to the provider, driver error, or another adverse operational circumstance. There are three types of instances that would be classified as a missed trip:

1. A GoBerrien vehicle never arrives at the designated pick-up location.
2. The vehicle does arrive at the designated pick-up location, but after the confirmed pick-up window and the customer is not present or cancels-at-door. If the vehicle arrives after the pick-up window and the customer agrees to still make the trip, it is considered a late trip and not a missed trip.
3. The vehicle does arrive at the designated pick-up location earlier than the end of the pick-up window, and the driver departs before waiting the required number of minutes or before the beginning of the pick-up window.

Pick-up windows are typically ±15 minutes from the negotiated pick-up time at the time of scheduling, however they may be 0-30 minutes. The longer the window, the higher the on-time performance should be.

In Berrien County, the goal for GoBerrien should be zero missed trips on any given day for demand-response trips scheduled in advance.

Late Trips (Demand Response Only)

On-time performance of GoBerrien vehicles allows riders to plan their daily lives. Late trips occur under two scenarios:

1. For pickups, when the on-demand vehicle arrives after the pick-up window and the customer still completes the trip.
2. For dropoffs, if the vehicle drops off the customer after the scheduled drop-off window or stated appointment time agreed upon during scheduling.

Late trips are a function of the pick-up window. If the pick-up window is 30 minutes, then the agency should have fewer than 5% of trips be late. If the pick-up window is narrowed, more late trips should be expected. Conversely if the window is lengthened fewer late trips should occur.

Late Cancellations (Demand Response Only)

Late cancellations occur when a customer cancels a trip on the same day as the trip, and does so within a specified time before the pick-up window, typically two hours. Customers who consistently late cancel trips may face sanctions. Fewer than 2% of trips should incur late cancellations. More than 2% and the agency should explore using penalties to discourage late cancellations.

OTHER RECOMMENDATIONS TO SUPPORT SERVICES

BRANDING/MARKETING

The new GoBerrien brand would first be used to help convince voters (or companies, etc.) to approve funding, and the brand can be rolled out in stages as resources allow. The vision of a more integrated transit system that better meets critical travel needs will make a compelling argument. Although no one likes to pay more taxes, the majority of similar referendums have been approved by voters in the U.S.

Once funding is approved, the branding/marketing strategy shifts to helping people get information about how the new system will work. Particular attention should be paid to ensuring that existing customers can shift to using the new system.

Branding

The development of a countywide transportation marketing campaign would inform current and potential riders (and human services agency personnel) about the services that are available to them and make the services easier to understand and use. Increasing the visibility of transit and paratransit services within local communities would also help to garner funding support.

When beginning to consolidate multiple transit systems, different vehicles, stops, signage, and online information may look very dissimilar and present different visuals from one another, making it hard to determine that the services are part of the same system. Consistent branding and design can go a long way towards improving the visibility of transit services. Strong colors and iconography are identifiable from long distances, and the use of distinct colors and shapes allows them to be easily associated with the service provider.

Implementing design interventions early on, to standardize (even if only partially) the branding of the services can communicate that the services are part of the same system and can be treated as such by the user. Elements like a shared logo, colors, and even font can send the message that even though the transit elements themselves look very different (e.g. different shuttle/bus types), they are part of the same system. In addition to providing

communication about which elements (vehicles, stations, and signs) are part of the same transit system, noticeable design and logos can provide subtle advertising for the new service, encouraging those who see the new design elements to seek out more information.

Marketing

Making transit service information widely available and easy to understand can not only attract transit riders currently in the area, but also have a positive impact on people's choices about where to live, work, and visit. This information should include routes and schedules, fares, and relevant policies. A consistent format for all service in Berrien County will promote increased transit usage as well as a more seamless experience for customers. The information should be disseminated to employers, churches, social services organizations, medical facilities, educational institutions, and other partners who can help raise awareness about transit options. In many cases, directing people to a website is appropriate, as long as the website is easy to use and kept up-to-date.

Beyond marketing the new cross-county fixed-route options, GoBerrien should widely publish the schedule of times for pickups in the on-demand service areas. Publishing the days of the week that the service operates increases the passenger's certainty of getting a ride from or within a particular zone if she or he requests a trip during the operating hours. This will also make it easier for the call taker or dispatcher to negotiate available pickup times. There is an added advantage of reassuring potential passengers that transit is more available and more reliable when it is scheduled on specific days of the week. Making the rules clear for everyone and raising awareness will help ensure that transit service is provided equitably to the public as designed.

ASSET TRANSFER

Facilities, vehicles, and other assets need to be transferred to the new authority, if applicable. Since the state and federal partners generally support these consolidations, their assistance will likely be forthcoming. Nevertheless, in many cases substantial efforts are required to find documents or research information related to assets that have not been needed for many years.

Fares

In order to encourage people to use transit, and to use it frequently for most travel needs, fares should be kept to a reasonable level. One of the advantages of Berrien County is a relatively low cost of living, but this also means that wages in the county are lower as well. Fares bring in a small percentage of overall revenue, so even if simplification and standardization of fares in Berrien County reduces fares somewhat, this will not have a very significant effect on the total amount of fare revenue available to support the operation of the systems. The combination of multiple providers and fares being influenced by local millages mean that fares do not currently correlate

with distance in many cases.

The existing TCATA regular adult fares of $1.00 for fixed route and $2.00 for dial-a-ride are a good example to follow, although more feasible for their smaller, denser service area. Since many Berrien County transit trips are and will be longer than those common on TCATA, a somewhat higher price is reasonable. However, currently some trips requiring a transfer cost $9.00 or more within Berrien County, and this should be reduced. The following is proposed for the preferred service alternative scenario, in order to maximize simplicity:

- Each regular adult fare costs $2.00, and is valid on any one-way trip on any Berrien County provider
- On the customer's first trip of the day, the vehicle operator would issue a ticket with the date and route/zone for $2.00; this ticket would be accepted on subsequent trips during the same day, although not for returning toward the origin
- Seniors and persons with disabilities would receive the one-way pass for $1.00
- Weekly or monthly passes could be offered if desired

For demand-response service, one of the advantages of advance reservations is that fare payment can also be handled through the account used for booking rides. This eliminates cash handling which improves revenue control, and also increases convenience for most customers who no longer need to carry cash, often in exact amounts for each trip.

Fixed-route service also has emerging options for fare payment, many of which take advantage of smartphones. Tickets can be purchased online and inspected visually by the bus operator when the passenger boards. This can speed up boarding, reduce cash handling, and improve customer convenience, and should be considered for Berrien County service.

SOFTWARE/TECHNOLOGY

Recent innovations in software allow much greater optimization of on-demand service, so that efficiency and customer service can be more effectively balanced. Modern technology also enables real-time information for dispatchers, drivers, and customers, which reduces uncertainty and contributes to better service.

While the existing software providers in Berrien County (PCTrans and FlexiRoute) seem to be innovating to adapt to this rapidly changing environment of new technology and mobility, it is worth considering additional options for the new GoBerrien. These generally fall into two main categories.

Established Demand-Response Software Providers

- Trapeze
- Routematch
- Ecolane (now used by all rural Pennsylvania counties)
- Adept

Emerging Options

- TransLoc (recently acquired by Ford Motor Co.)
- Via

Many of the established software providers are larger than those currently used in Berrien County, bringing diverse experience and problem-solving from other locales. The companies in the emerging category offer greater focus on customer information, integration with private providers, and even supplemental vehicles and drivers if needed.

Overall, it is recommended to make software and technology contracts contain as much open-source material as possible. The specific companies in the tech sector may be replaced, while the innovations remain, so GoBerrien should own its information and technology wherever possible.

COUNTYWIDE COORDINATION

Coordination allows service providers to leverage all of the resources in a community to increase mobility for everyone. There are a number of different approaches to providing transportation information from a centralized source, which vary in levels of technical complexity and cost. Printed directories are a cost-effective option and valuable for potential customers who do not have internet access or computer skills, but they are difficult to update in a timely way. Online directories are a common upgrade.

Increasingly, a county or region will utilize a central, single point of contact (a website and/or call center, often called a “one-call/one-click” resource) that is a relatively simple and cost-effective method for increasing global access to transit services. One-call/one-click systems may include information about general public fixed-route and paratransit services, ride-matching programs, taxis and other private transportation services, volunteer driver programs, voucher/subsidy programs, vehicle sharing programs, and real-time services available through transportation network companies (TNCs) such as Uber and Lyft. The primary benefits of one-call/one-click systems are improved customer service through simplified access to information about transportation services and increased ridership due to better promotion of transportation services.

One-call/one-click systems can vary considerably in the degree of trip planning and booking assistance they provide for customers, and in their

use of technology to support those functions. Consequently, development and implementation costs can vary quite a bit as well. Moving from simple to complex, one-call/one-click systems may consist of:

- A centralized list of transportation services, conveyed over the phone or on a website
- An online directory that transportation providers can update directly
- Opportunities for the user to narrow transportation options based on selected criteria
  - By speaking with a person
  - Through online prompts
- Trip planning assistance
  - With the help of a person or an online system
- Trip booking assistance
  - From a person or via a transferred call to the transportation provider
- Direct trip booking
  - Via web-based scheduling or portals to participating providers' reservations systems

Berrien County already has some of these capabilities via its use of the My Way There website, which may be a good platform to build from for the new environment of coordination between GoBerrien, private companies, and human services providers.

BROKERAGE MODEL

The GoBerrien system is designed to be flexible and take advantage of new technology and providers. Just as the demand-response service parameters and zones can be adjusted, the entire framework should be kept as flexible as possible. The centralized call center will be well positioned to operate with a brokerage model, in which any trip can be coordinated to be operated by any available provider. These providers can include traditional government transportation agencies, cab companies, human services agencies, for-profit providers such as Uber and Lyft, volunteer drivers, and others.

It is likely that all existing vehicles and operators will be maintained at the start of GoBerrien service but, over time, the mix of providers can change significantly.

NEXT STEPS

The service plan described in Chapter 6 is realistic when compared to peer regions in terms of per capita spending and service levels. The plan also takes advantage of recent mobility innovations, such as new on-demand transportation providers and software, so that Berrien County will be in a good position to adapt to whatever the future brings. Finally, the service plans reflect the large amount of public and stakeholder input which was received during this planning process as well as prior ones. The implementation of the GoBerrien system will not solve every transportation problem in the county, but substantially fulfills the goals and objectives that were defined in consultation with county residents and businesses. All of these factors should facilitate solid community support for increased investment needed to provide funding for implementation.

The following section outlines a series of actions for moving the plan forward.

PREPARE FUNDING REQUEST/START PROCESS

As described above, it is estimated that new local transit funding of about $1.5 million per year will be needed (proposed service needs $1.8 million per year of local funding as compared to $300,000 per year currently). This can come from general funds of municipalities or the county itself, as well as from private parties, but it seems likely that some ballot question will be needed for new taxes. Since it takes time to get any proposed tax approved by voters, planning should begin as soon as possible. It seems most likely that the tax will be administered by a new authority created under the State of Michigan Public Transportation Act (Act 196 of 1986), although other options are viable also.

DISCUSSIONS WITH EXISTING EMPLOYEES

Since the staffs at existing providers are already lean, the transition can likely be accomplished without any involuntary separations. Nevertheless, changes can be unsettling to employees of the existing providers, and many employees will need to undergo additional training, perform new job functions, and perhaps even be based in different locations. Since many of these employees are on the front lines with customers, it is critical to have ongoing dialogue about how the transition will be carried out.

FORMALIZE COLLABORATION/TRANSITION TEAMS

It is recommended to designate representatives from municipalities, transit providers, and other affected parties (including the SWMPC) for formal collaboration regarding the transition to GoBerrien. These representatives can also act as liaisons to others.

DISCUSSIONS WITH STATE AND FEDERAL PARTNERS

As mentioned, MDOT and FTA generally support consolidations, but ongoing dialogue is critical to ensure a smooth transition.

LONG-RANGE POSSIBILITIES

While the proposed GoBerrien system will be a substantial improvement over existing transit service, many compromises are incorporated into the service plan, mostly in order to keep costs to a reasonable level. At some point in the future, if resources become available, it may make sense to build on the success of GoBerrien by increasing transit service. This will be particularly appropriate if Berrien County has reversed recent trends and has incorporated more residents and jobs. The following are some possibilities for additional service in the long term:

OPERATE ALL SERVICES SEVEN DAYS PER WEEK

The GoBerrien proposed service contains fixed-route and demand-response services that alternate between halves of the county on different days of the week. Operating all services on all days would be a very significant improvement, and facilitate much greater use of public transit for commuting to work.

This would cost an estimated $2 million per year in addition to GoBerrien costs, although this enhanced level of service would still not be out of line with peer regions.

EXPAND SERVICE HOURS

Increasing the span of service until 9:00 or 10:00 p.m. would make the system more useful, especially for work trips. Although these evening hours will never be the most productive, the increased span can attract some new ridership. Adding one more weekday round trip on all inter-city fixed routes, and extending the demand response service two more hours until 10PM on weekdays, would cost an estimated additional $700K per year. While this would not be as useful as the more expensive item above to operate all service 7 days per week, the extended hours would be helpful.

INCREASE FREQUENCY

Especially for scheduled inter-city routes that have attracted higher ridership, any additional resources can be used to add more trips. The increased frequency gives riders more flexibility, especially if they must transfer. Alternatively, demand-response zones with relatively higher ridership can be allocated additional vehicles and operators, in order to reduce response time.

SERVE MORE LOCATIONS

Service is proposed to both Michigan City and South Bend, Indiana, locations that represent the destination for 7.2% of all Berrien County trips on an average weekday. There are additional locations nearby, outside of Berrien County, which may warrant service in the future. These could include Kalamazoo, Grand Rapids, and Dowagiac in Cass County. Providing these connections can help Berrien County residents and employers.

FIGURE 7-1 PERCENTAGE OF ALL TRIPS ORIGINATING IN BERRIEN COUNTY BUT ENDING OUTSIDE OF THE COUNTY

Zone Outside Berrien County	Percent of Weekday Trips
Chicago, IL	3.8%
Dowagiac, MI	0.5%
Gary, IN	0.5%
Grand Rapids, MI	0.6%
Holland. MI	0.3%
Kalamazoo, MI	1.1%
Michigan City, IN	2.1%
South Bend, IN	5.1%

8. FINANCIAL PLAN

Berrien Bus, in particular, is on an unsustainable financial path. For the last few years, expenses have been greater than revenues, and Berrien Bus has needed to draw down reserves that had been built up years ago. Within about three years, Berrien Bus will exhaust those reserves if nothing is done, and this would force drastic changes to service or perhaps the end of Berrien Bus operations.

TCATA is also vulnerable financially, since they currently rely on FTA Section 5307 funding for the entire St. Joseph/Benton Harbor urbanized area, but only serve about half of the area. No transit service is provided in the remainder of the urbanized area, so TCATA is eligible for the entire amount of funding. However, the unserved area contains some of the densest portions of Berrien County, and is in need of transit service. If another entity begins providing transit service to the currently unserved areas, then some of the FTA funding would shift away from TCATA and would be a significant disruption to TCATA's budget.

Overall, improved transit service as part of one GoBerrien system can avert these looming financial problems, as well as better meet the needs of Berrien County's residents and businesses.

OPERATING

As outlined in Chapter 6, the total annual operating cost for the proposed GoBerrien service is approximately $6.3 million annually (in 2018 dollars).

Federal funding would remain about the same as for existing service, since the funding formula is mostly population-based. State funding would increase by about $800,000 per year, since the funding amount is related to the amount of transit service supplied. Fare revenue would remain about the same as today, with a lower average fare being offset by additional new riders. As mentioned above, local funding will need to increase from the current $300,000 per year to $1.8 million per year. The current revenue from Berrien Bus contracts with schools and other facilities is not assumed, since the proposed service focuses on serving all county residents and may not allow these contract services. The federal funding amount and the state formula amount of 39% would remain the same, even if the transit service were increased or decreased from that proposed in this document.

FIGURE 8-1 POTENTIAL ANNUAL OPERATING FUNDING FOR GOBERRIEN SERVICE

Funding Source	Existing Berrien County Amount	Proposed Amount	Notes
Federal	$1.4M	$1.4M	Rural 5311 + Urban 5307
State	$1.7M	$2.5M	39% of cost per formula
Local Funding Needed	$300K	$1.8M	
Fares	$550K	$550K	More riders but lower avg fare
Berrien Bus Contracts	$350K	$0	No guaranteed revenue
TOTAL:	**$4.3M**	**$6.3M**	

The additional local funding can come from Berrien County, municipalities, or private parties. This is a large increase from the approximately $300,000 per year that is currently raised for local transit funding, through millages in the cities of Buchanan, Niles, and Benton Harbor. However, the benefits of having a robust countywide public transit system may persuade voters and/or elected officials to allocate funds for transit. The majority of referendums are successful each year in the United States, which ask people to raise their own taxes in order to fund better transit. This is especially true when there is a compelling service plan that meets critical needs and spends resources wisely.

CAPITAL

Based on the detailed service plan in Chapter 6, no fleet or facility expansion is required in order to implement the GoBerrien system. The existing bus maintenance facilities are geographically well located, and of sufficient size to maintain the required fleet, as they do today. Essentially, the GoBerrien plan redistributes the fleet to provide service more evenly throughout Berrien County, and better meet demand. While this improved service requires a substantial increase in operating costs, it does not require a greater number of vehicles than operate in Berrien County today.

This means that the capital needs for the program are not very substantial. As in the past, federal and state sources for capital funding will be used to replace vehicles and other assets as needed. However, some additional capital investment will be required, particularly for the following:

- Setting up the one-call/one-click center for reservations, scheduling, and dispatch
- Procuring new software for optimized demand-response service and customer information
- Installing bus stops with amenities where needed for the inter-city routes – these will also be transfer points to and from demand-response service
- Items needed for rebranding and marketing, including signs
- Some sidewalk improvements around bus stops may be needed

These capital items are not huge, and federal and state grants will likely offset much of the cost (estimated to be 70% of the total cost for most items, as shown in Figure 8-2 below). The local portion of the capital costs is expected to be $500,000 or less.

FIGURE 8-2 POTENTIAL CAPITAL COSTS

Item	Total Estimated Cost	Portion Paid Locally
Set up One Call/One Click Center	$400,000	$120,000 (30%)
Software for reservations, scheduling, and dispatch	$250,000	$75,000 (30%)
Branding/Marketing	$50,000	$50,000 (100%)
Bus stop and sidewalk improvements (25 stops at $20K/each)	$500,000	$150,000 (30%)
TOTAL	$1,200,000	$395,000

Regarding costs for the GoBerrien system, it should be noted that it has been assumed that all service would be operated in the most efficient possible way. If arbitrary boundaries are drawn for multiple providers to have their own service area within Berrien County, this will likely cause some redundancy and greater operating costs. Boundaries can also degrade the usefulness of transit service. However, if multiple providers are the only option, the GoBerrien network should still be the goal, and all providers should attempt to design service around that framework. The resources outlined in this document are based on the level of service needed, and the increased funding required would not change that much if multiple providers collaborated in offering efficient service.

GLOSSARY

ADA Paratransit

Transportation services for people with disabilities who are not able to use fixed-route services. Typically provided via demand response service.

Cycle Time

Cycle time is the time it takes for one transit vehicle to make a complete cycle of the route, including twice the running time (round trip) plus layover times at each end of the route.

Deadhead

Non-revenue bus travel time, including:

Time to and from the garage and where revenue service begins or ends.

Travel time between the end of service on one route to the beginning of another route.

Demand Response Service

Pre-scheduled service, typically with a small bus, that can pick up and drop off riders directly at their origin or destination. Service area for demand response is the area encompassing all possible origin to destination points wherever passengers can be picked up and dropped off.

Sometimes specialized service is dedicated to certain need groups. These services are customarily the result of a partnership between transit agencies and human services organizations.

Demand response service includes Dial-A-Ride service.

Dial-A-Ride Service

Typically, same day scheduled door-to-door pick up and drop off service. This is a subset of demand response service.

Feeder Service

Bus service that picks up and delivers passengers to a higher capacity or more frequent transit option. Demand response trips are also feeder service when passengers transfer to or from a fixed route.

Fixed-Route Service

Transit services that operate along a prescribed route according to a fixed schedule.

Flex Route

A hybrid of conventional fixed-route and demand-responsive service. It combines traditional fixed-route service (fixed stops and regular schedules) with door-to-door service for those users further from the route but still within a defined service area, or those who might require ADA Paratransit service.

Headway

Time interval between vehicles moving in the same direction on a particular route. Another way of describing frequency on a fixed-route service.

Layover Time

Time built into a schedule for a fixed route service between arrival at the end of a route and the departure for the return trip, used for the recovery from delays and preparation for the return trip.

Lifeline Service

Transit service to people without other feasible travel options, including those who don't have vehicles available or the ability to drive, so that they may have access to necessities like fresh food, employment, school, social activities with friends and family, and more.

One-Seat Ride

A one-seat ride occurs when a transit passenger completes their trip without having to transfer buses or trains.

Peak Hours

The busiest hours in a transit system's day. For many systems, peak hours are 'rush hour', when most people are traveling to and from work at the same time.

Peak Vehicles

The number of transit vehicles required to operate during peak period service to maintain the scheduled headways.

Running Time

The time needed for the movement of a bus in revenue service to complete a one-way trip over a route, usually adjusted by various times of day.

Span of Service

This is the number of hours in the day that transit service is operating. The maximum service span is 24-hour service. Service span can vary by weekday, Saturday, or Sunday.

Subscription Service

Demand response transit service operating based on on-going reservations made by passengers. The transit operator can schedule a consistent regular trip to pick up the passenger and transport them to their destination in advance.

SWMPC

Southwest Michigan Planning Commission, the designated regional planning agency for Berrien, Cass, and Van Buren counties in southwest Michigan.

Transfer Point

A fixed location where passengers interchange from one fixed route or demand response vehicle to another.

Travel Flows

Travel flows are the amount of trips traveling from one place to another, typically including all means of travel, such as automobile, transit, bicycle, walking, etc.. If many people in one neighborhood work downtown, for example, there will be heavy travel flow from that neighborhood to downtown.

Urbanized Area (UZA)

Defined by the U.S. Census Bureau, urbanized areas represent densely developed land area, and encompasses residential, commercial, and other non-residential land uses. Urbanized areas, including the St. Joseph/Benton Harbor area include at least 50,000 people. Berrien County also contains several urban clusters outside of the Twin Cities with populations of more than 2,500 people but fewer than 50,000 people.

Vehicle Revenue Hours

The hours that a transit vehicle is scheduled to travel, or actually travels, in passenger service, including layover time at each end of a route. Does not include deadhead time when the vehicle is traveling to and from the garage.

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APPENDIX A

Appendix A Technical Memo - Market Analysis and Existing Conditions

See attached documents

APPENDIX B

Technical Memo – Best Practices & Peer Review

See attached documents

APPENDIX C

Public Engagement Memo (including Goals and Objectives)

See attached documents

APPENDIX D

Service Statistics from Peer Agencies

See attached documents

NELSON
NYGAARD