

## **Appendix G**

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*2030 Transit Development Plan*





Fort Wayne, Indiana - Citilink

# Citilink 2030 Transit Development Plan



January 2020

**SRF**

**CTG** Connetics  
Transportation  
Group

**CITILINK**



# Citilink 2030 Transit Development Plan

## Final Report



**January 2020**

### **Fort Wayne Citilink**

801 Leesburg Road  
Fort Wayne, IN 46808

Prepared by:





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# Introduction

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This document represents a combined report of both the Comprehensive Operations Analysis (COA) and the Transit Development Plan (TDP) efforts of the Fort Wayne Public Transit Corporation, dba Citilink. The COA focuses on the current system characteristics and operations, while the TDP addresses opportunities for improvement over the 10-year planning horizon. The TDP is a planning document outlining a framework for the 10-year period through 2029. While this document is a principal planning document for the Transit Board and Citilink staff, annual review and minor update is recommended to keep the document current. To support this statement, a look back over the almost ten years since the last plan there are several key changes that have shaped the current Citilink including:

- **Technology:** Since 2010, Citilink has added technology to buses in the form of automatic vehicle location, advanced fareboxes, and automatic passenger counters. Additionally, vehicles in the Citilink fleet have advanced from diesel buses to include diesel-electric hybrids. Technology has also aided in improving customer service through more effective trip scheduling, ride dispatching, vehicle monitoring, communicating information and ways of paying fares.
- **Increasing costs:** The cost of labor, fuel, vehicles, replacement parts, facility maintenance have all increased. Over the period, investment into Citilink has also increased, however, over the last approximately three years operating investment has essentially remained the same. To retain service levels, Citilink has found efficiencies (including through deploying technology) to address the increasing costs without increasing funding.
- **Growing partnerships:** As transportation is critical to every business and person, Citilink has been able to grow partnerships with colleges/universities, medical providers and businesses to provide new or expanded funding for service.
- **Regional growth and changing demographics:** Over the last ten years there has been a combination of residential and employment growth in areas outside the central core of Fort Wayne as well as redevelopment of areas near downtown. Observed growth over the ten years creates opportunities for transit (more customers in the core) as well as challenges (serving higher density nodes in larger lower density areas).

These changes, and many others, set the foundation of expectation going forward and provide critical inputs to shaping how we consider transportation opportunities for the future. The 10-year planning horizon will provide a clearer understanding of unmet or unfunded needs. A longer planning horizon reflects significant capital replacement/rehabilitation needs, or the capital and operating budget implications of service changes.

Table 1 provides an overview of which parts of the document relate to the COA, which parts relate to the TDP and which are critical to both.

**Table 1. Arrangement of Sections Relative to Scope of Work**

Section Heading	Element of Focus	
	Comprehensive Operations Analysis	Transit Development Plan
Community Assessment		■
Existing Transit Services and Operations	■	
Peer System Comparison	■	
Fort Wayne Public Transit Goals	■	■
Community Engagement	■	■
Future Service Change Alternatives		■
Implementation of Recommended Network		■
Funding Going Forward		■
Technology	■	■
Transit Asset Management Plan Summary		■

The combined COA and TDP has been developed through a partnership of Citilink and stakeholders throughout the metropolitan area. Opportunities for input and comment from riders, community leaders, and the public at-large are documented in the Community Engagement section.

The TDP is developed within the overall framework of the long-range regional transportation plan, which the Northeastern Indiana Regional Coordinating Council (NIRCC) prepares. The purposes of the comprehensive operations analysis and transit development plan are:

- To provide a detailed analysis of the state of the fixed route and paratransit system in the Fort Wayne area, including comparison of Citilink performance metrics with similar agencies in Indiana and across the country.
- To document a comparison of the organizational structure employed by Citilink relative to similar agencies in Indiana and across the country.
- To serve as a planning, management, and policy document for the transit operators.
- To inform all local participants of Citilink’s capital, operating and maintenance needs.
- To provide the basis for inclusion of the capital and operating programs in planning and programming documents such as: the NIRCC Transportation Improvement Program (TIP), the Fort Wayne Capital Improvement Plan (CIP), and the Indiana Statewide Transportation Improvement Program (STIP).
- To provide a clear understanding of unmet or unfunded needs.



- To develop and track the progress of mid- and long-term visions for transit in the region.
- Plan to continually improve efficiency and effectiveness of public transportation services.
- To be better prepared to respond to internal and external factors.

## **Citilink Background**

Public transportation in a range of forms has been present in Fort Wayne since the early 1870s with introduction of the Citizens Street Railroad Company and its horse drawn trolleys. As electric service expanded throughout Fort Wayne, electric streetcar service through the Fort Wayne Traction Company became the mode of public transportation service. Regional public transportation was introduced in 1901 as interurban service between Fort Wayne and Huntington, which was expanded to other communities in years that followed.

Consistent with most Midwest cities, availability of diesel transit buses transitioned public transportation from streetcars to buses in the late 1940s. The private Fort Wayne Transit Company provided mass transportation service until 1968 when the Fort Wayne Public Transit Corporation was established as public utility to provide transportation within the city. The Fort Wayne Public Transit Corporation is in operation today as Citilink.

## **Planning Horizon**

The planning horizon for a TDP is 10 years; this includes the fiscal year for which funds are being sought and the subsequent nine years.

## **TDP Annual Review and Update**

Citilink staff and the Board recognize the TDP is a living document. The planning process must provide flexibility to address major changes in areas such as organizational/governance changes, fare changes, new services/facilities, available funding, economic conditions, demographic and employment patterns, and changes in federal and state laws and regulations. To reflect and address these changes, the plan will be reviewed each year. The annual reviews and minor updates serve as intermediate revisions to address changes that will occur to funding, technology, community priorities, etc. If there are no major changes or inaccuracies in the language, the only update required is a financial plan that removes the previous year and adds a new tenth year (rolling basis). Using this format, the TDP covers the present ten-year period beginning with the current year. Citilink will coordinate with NIRCC to complete all TDP updates and ensure current conditions and future plans are included in the regional planning document.

# Community Assessment

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The community assessment section discusses the key socioeconomic characteristics of Fort Wayne's and Allen County's population related to transit demand and supporting transit service. Figure 1 shows the county and the current Citilink service coverage. The socioeconomic data review focuses on Fort Wayne, where the majority of Citilink's service is located and Allen County where future opportunities may be present.

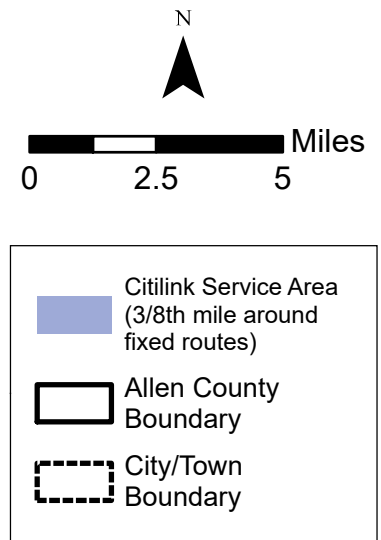
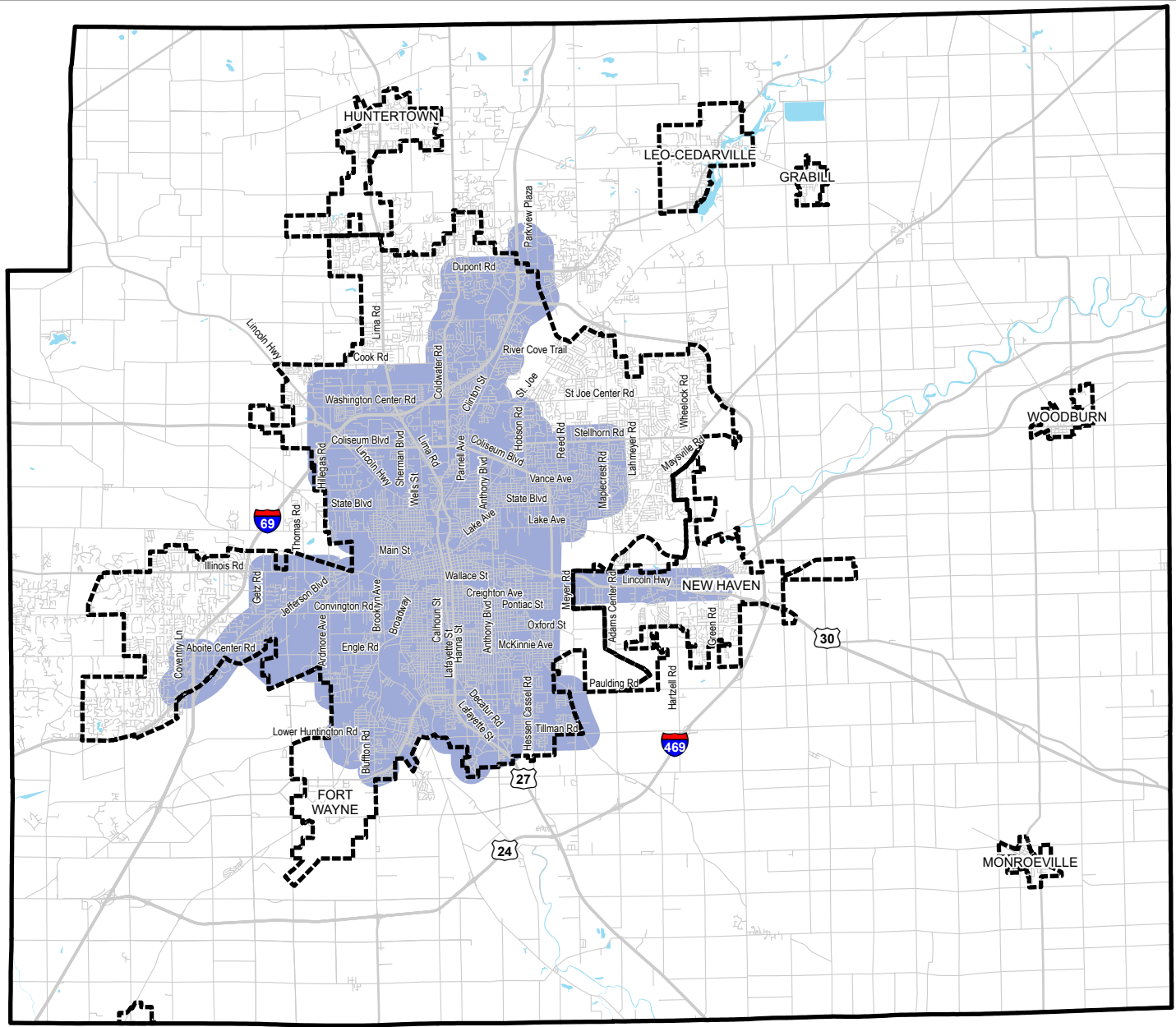
Geographically, Allen County is the largest in Indiana with an area of about 657 square miles. Review of current (2016) American Community Survey (ACS) 5-year estimates of population and employment estimates results in the following:

- Allen County's population is approximately 367,000 persons. Allen County's population is third largest in the state.
- Fort Wayne's population is approximately 261,000 (71 percent) residents live in Fort Wayne. Fort Wayne is Indiana's second largest city, based on population.
- About 23 percent of the employed population works in educational services, health care, and social assistance.
- Approximately 18 percent work in manufacturing.
- Approximately 11 percent in retail jobs.
- The remaining 48 percent of jobs are spread across the range of professional sectors, arts/entertainment, construction, transportation and others. The percent of the workforce in these individual sectors range from approximately one percent to approximately nine percent of total county employment.

## Population Distribution and Density

The population distribution and density in and around the Fort Wayne area is shown in Table 2 and Figure 2. For the demographic assessment the Fort Wayne area is defined as Allen County. Table 2 shows the past, present and projected population for Allen County and the communities in the county. Grabill has the highest growth rate of 6.4 percent among the communities while New Haven and Huntertown are growing at an approximate pace of two percent.

Figure 2 highlights the population density in Fort Wayne and the surrounding area. As would be expected, development density is greatest in central Fort Wayne along the Lima Road-Clinton Street-Lafayette Street (Highway 27) corridor between Coliseum Boulevard on the north and Paulding Road on the south. Outside the central corridor core, there are multiple moderate to higher density nodes offset by lower density development. The current fixed route network serves the high population density areas quite well.



**Table 2. Past, Present, and Projected Population**

Jurisdiction	2010 Population	2016 Population	Annual % Change	2040 Estimate
Allen County	351,332	365,565	0.66%	428,501
<b>Incorporated Municipalities in Allen County</b>				
Fort Wayne	253,721	260,954	0.47%	292,008
New Haven	13,857	15,677	2.08%	25,683
Woodburn	1,520	1,481	-0.5%	1,670
Monroeville	1,235	1,156	-1.1%	1,303
Huntertown	4,702	5,286	1.97%	8,443
Grabill	1,000	1,448	6.36%	6,366
Leo-Cedarville	3,464	3,721	1.20%	4,954

Source: U.S. Census Bureau, 2010 U.S. Census and 2012-2016 5-year American Community Survey. NIRCC: 2040 Estimate.

Note: The declining population observed in Woodburn and Monroeville estimates between is not anticipated to continue through 2040. Growth at 0.5% per year is assumed to be a conservative estimate

A key consideration in identifying areas of transit need is distribution and density of senior, youth and disabled populations. In addition, the economic characteristics, English language proficiency and employment and household densities are also likely to impact the transit need in the area. The following sections discuss the different populations.

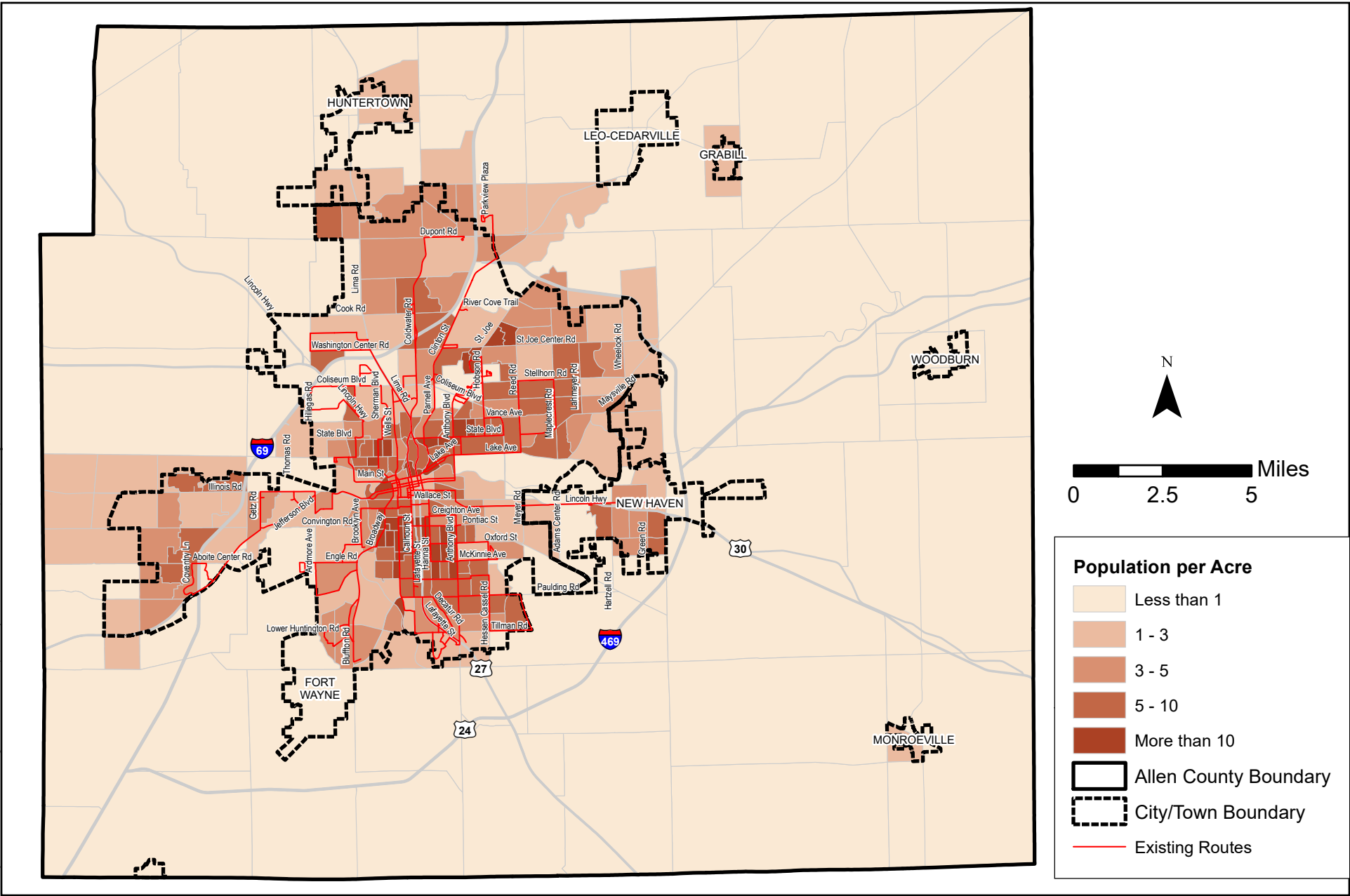
## Distribution of Transit-Dependent Population

### Senior Population

The senior population (65 years and above) are likely to be dependent on transit when driving becomes difficult or impossible due to health concerns or income constraints. Table 3 and Figure 3 show the distribution of senior population in the Fort Wayne area. Within Allen County, Monroeville has the highest percentage of their population represented by seniors (18.9 percent). Within Fort Wayne, according to ACS 2016 data, the northeast part of the city has the highest percent senior population.

**Table 3. Senior Population**

Jurisdiction	2010		2016	
	Seniors	Percent Seniors	Seniors	Percent Seniors
Allen County	42,137	11.9%	47,889	13.1%
<b>Incorporated Municipalities in Allen County</b>				
Fort Wayne	30,356	12.0%	34,185	13.1%
New Haven	2,060	13.9%	2,320	14.8%
Woodburn	159	10.5%	206	13.9%
Monroeville	246	19.9%	218	18.9%
Huntertown	306	6.4%	576	10.9%
Grabill	119	11.3%	181	12.5%
Leo-Cedarville	339	9.4%	413	11.1%

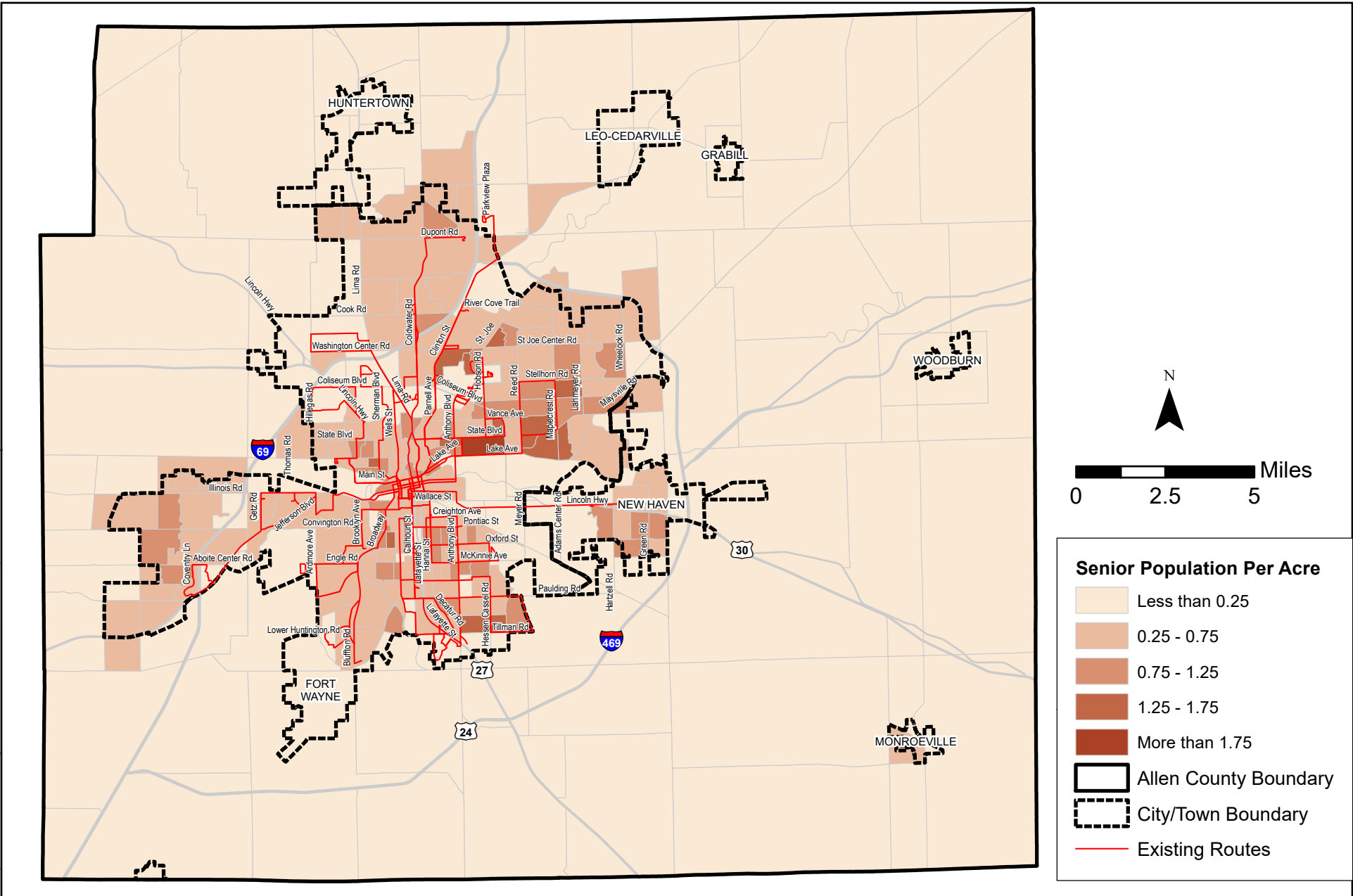


### Population Density

Fort Wayne - Citilink COA/TDP

Source: U.S. Census Bureau, 2012-2016 American Community Survey

Figure 2



**Senior (65 years and older) Population Density**  
 Fort Wayne - Citilink COA/TDP  
 Source: U.S. Census Bureau, 2012-2016 American Community Survey

**Figure 3**

## Youth Population

Youth population (under 18 years) is likely to depend on transit for accessing shopping, library, recreating and school-related activities. Most of the youth population are either ineligible to obtain a driver’s license or do not have access to a vehicle. Hence, they must either rely on public transportation, bike or walk to destinations or have friends and family drive them. Public transit provides youth population independent access to their destinations. Table 4 and Figure 4 show the distribution of youth population in the Fort Wayne area. Most of the youth population concentration is in central Fort Wayne between Jefferson Boulevard and East Paulding Street. All block groups with higher percentage of youth population are proximate to the fixed route network. It is important to note data at the block group level (moderately aggregated) somewhat masks smaller pockets of high concentrations of youth population. For example, Leo-Cedarville, Huntertown and Grabill have youth population percentage from 28 to 32 percent, but geographic size of the block groups does not reflect the pockets. The data is not available at block level.

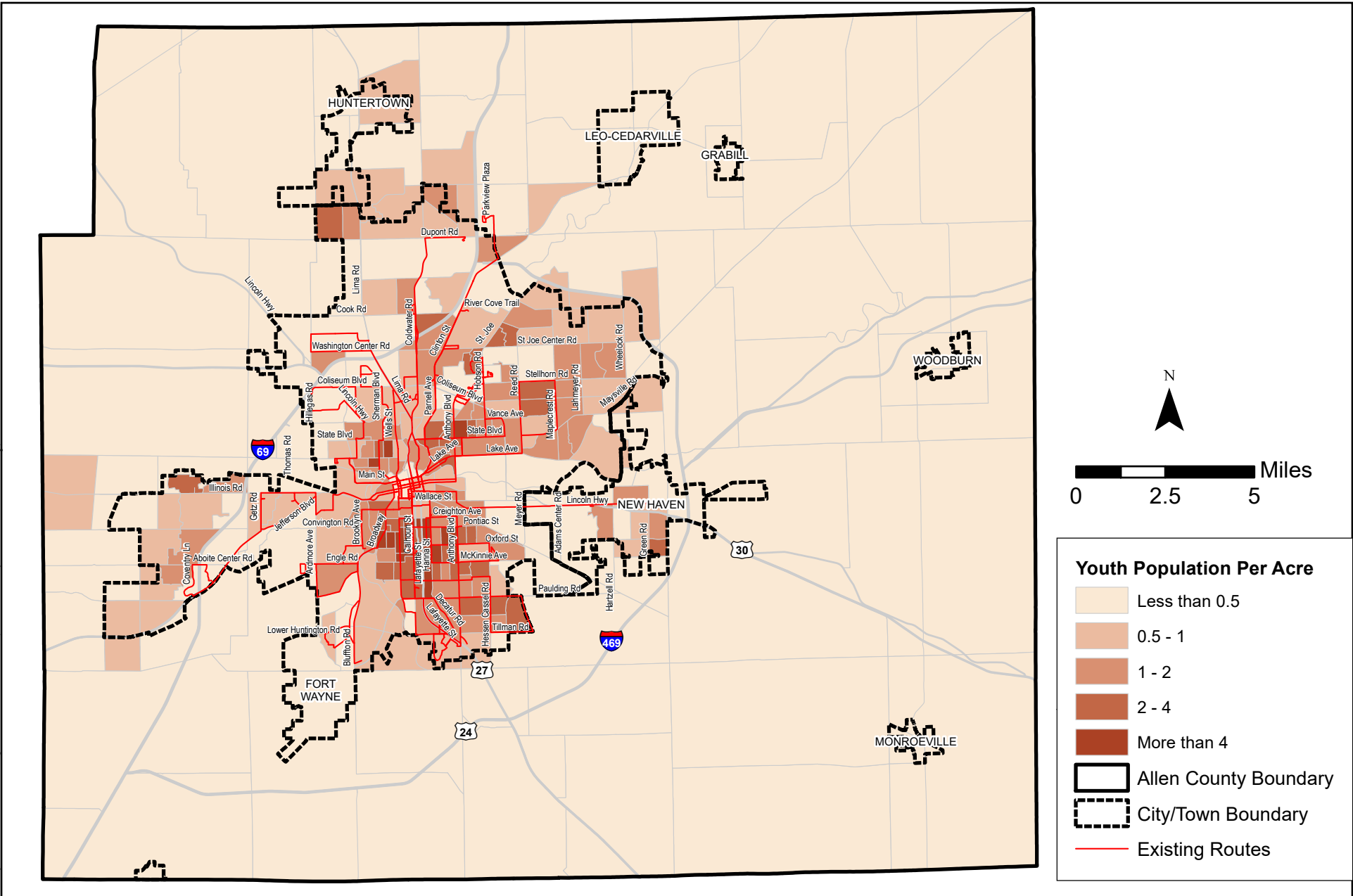
**Table 4. Youth Population**

Jurisdiction	2010		2016	
	Youth	Percent Youth	Youth	Percent Youth
Allen County	95,958	27.0%	96,144	26.3%
<b>Incorporated Municipalities in Allen County</b>				
Fort Wayne	66,888	26.4%	67,326	25.8%
New Haven	3,881	26.2%	3,998	25.5%
Woodburn	426	28.0%	373	25.2%
Monroeville	274	22.2%	244	21.1%
Huntertown	1,536	31.9%	1,533	29.0%
Grabill	325	30.9%	405	28.0%
Leo-Cedarville	1,162	32.3%	1,180	31.7%

## Populations with Disabilities

Another population group likely to be transit dependent is the population with disabilities. Although some of the disabled population may be eligible for rides through human service agencies, riding public transit is the most economical mode of transportation. Table 5 and Figure 5 show the distribution of the disabled population in the Fort Wayne area. Most of the block groups with a higher percentage of disabled persons are located along the Coldwater Road-Clinton Street-Lafayette Street (Highway 27) corridor and are currently served by the fixed route and paratransit services.





### Youth (Under 18 years) Population Density

Fort Wayne - Citilink COA/TDP

Source: U.S. Census Bureau, 2012-2016 American Community Survey

Figure 4



**Table 5. Disabled Populations (ACS 2012-2016)**

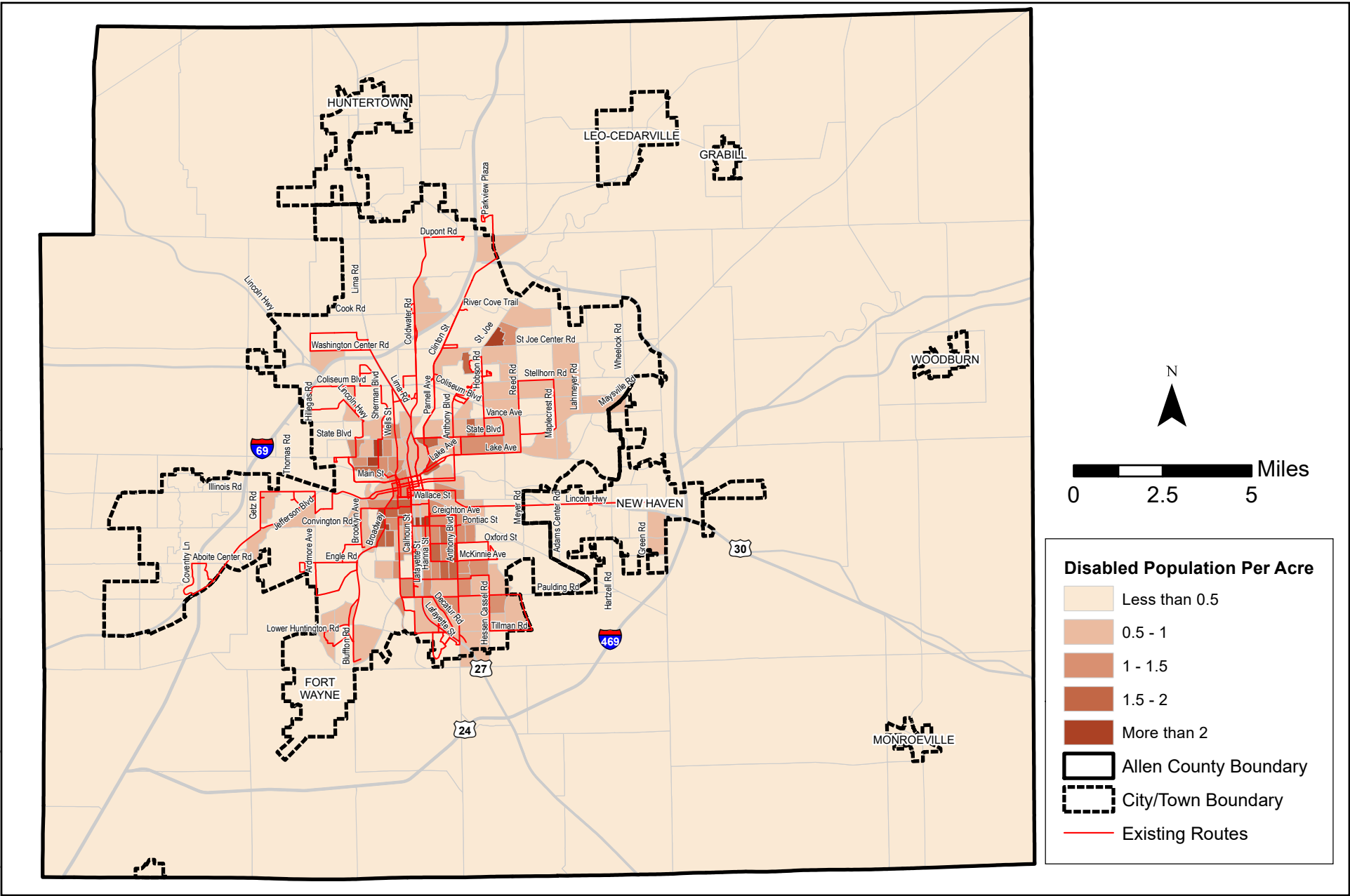
Jurisdiction	Total Disabled	Percent Disabled	Work Age Disabled	Percent Work Age Disabled	Mobility Impaired	Percent Mobility Impaired
Allen County	44,045	12.2%	23,983	10.9%	22,491	6.7%
<b>Incorporated Municipalities in Allen County</b>						
Fort Wayne	33,706	13.1%	18,950	12.0%	17,418	7.3%
New Haven	2,127	13.7%	1,080	11.6%	1,150	8.1%
Woodburn	222	15.0%	118	24.5%	90	6.5%
Monroeville	160	14.6%	88		59	5.8%
Huntertown	569	11.2%	303	9.9%	297	6.4%
Grabill	179	12.4%	91	10.6%	89	6.7%
Leo-Cedarville	236	6.4%	66	3.1%	129	3.8%

## Income and Poverty

Economic characteristics of the resident population that play a critical role in identifying locations with higher transit dependency include median household income, per capita income, poverty status and vehicle ownership. Higher rates of households below the poverty threshold, lower per capita income and lower vehicle ownership all relate directly to transit dependency. As shown in Table 6 and Figure 6, most lower income areas of Fort Wayne are within walking distance of a Citilink route. Higher median household income areas on the fringe represent lower transit use areas. These areas do not have the same transit coverage as lower income areas. Table 7 and Figure 7 show the per capita income distribution in the Fort Wayne area, which follows the similar trend as the median household income.

**Table 6. Median Household Income, in 2016 Dollars**

Jurisdiction	2010 Median Household Income (in 2016 Dollars for comparison)	2016 Median Household Income	Change	Percent Change
Allen County	\$54,007	\$49,574	-\$4,433	-8.2%
<b>Incorporated Municipalities in Allen County</b>				
Fort Wayne	\$48,611	\$44,449	-\$4,162	-8.6%
New Haven	\$52,869	\$46,691	-\$6,178	-11.7%
Woodburn	\$50,210	\$55,100	\$4,890	9.7%
Monroeville	\$42,060	\$41,818	-\$242	-0.6%
Huntertown	\$71,641	\$72,292	\$651	0.9%
Grabill	\$53,071	\$47,102	-\$5,969	-11.2%
Leo-Cedarville	\$71,488	\$74,047	\$2,559	3.6%

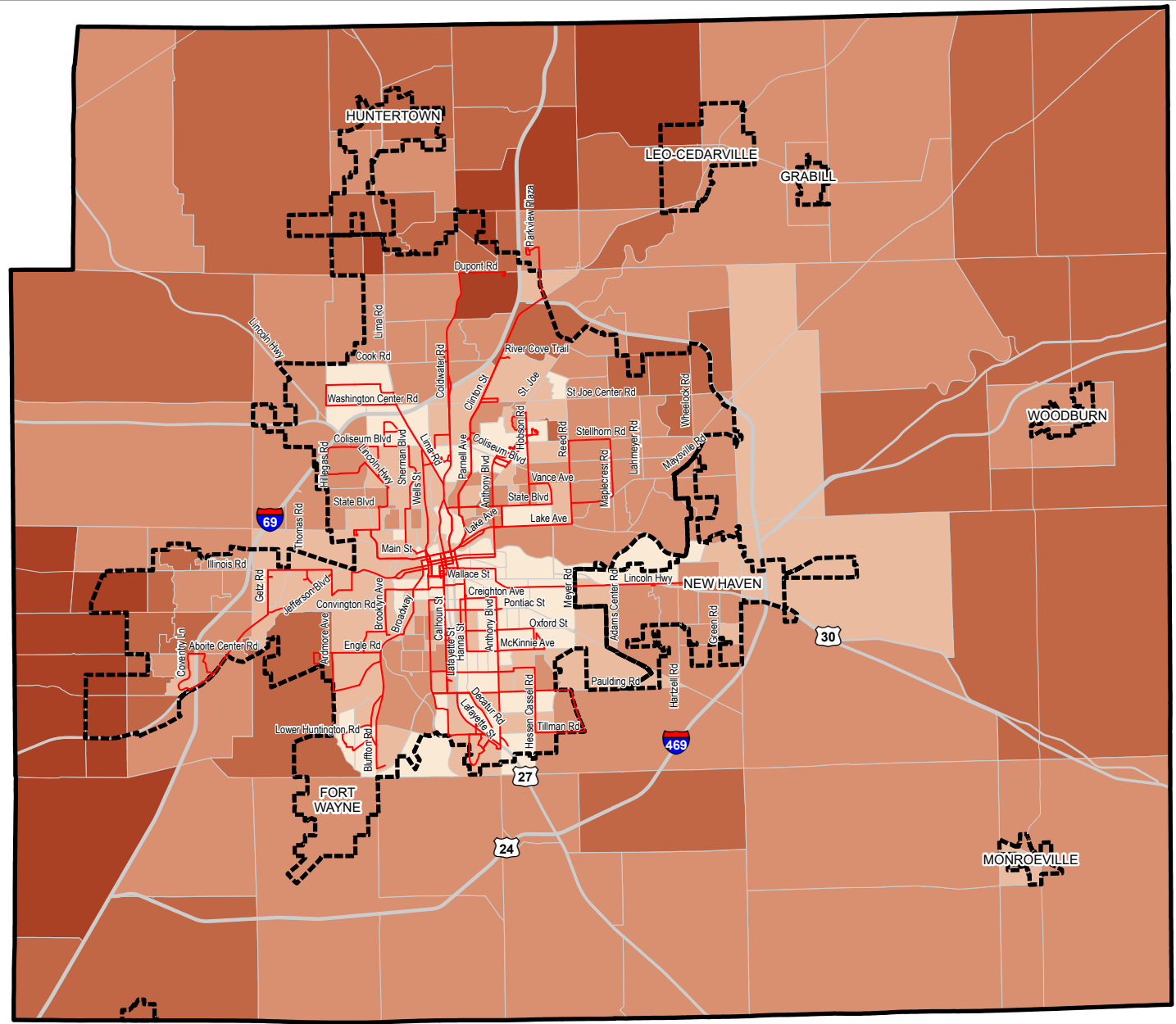


### Disabled Population Density

Fort Wayne - Citilink COA/TDP

Source: U.S. Census Bureau, 2012-2016 American Community Survey

Figure 5



N

0 2.5 5 Miles

**Median Household Income**

- Less than \$30,000
- \$30,000 - \$45,000
- \$45,000 - \$70,000
- \$70,000 - \$95,000
- More than \$95,000

Allen County Boundary

City/Town Boundary

Citilink Existing Routes

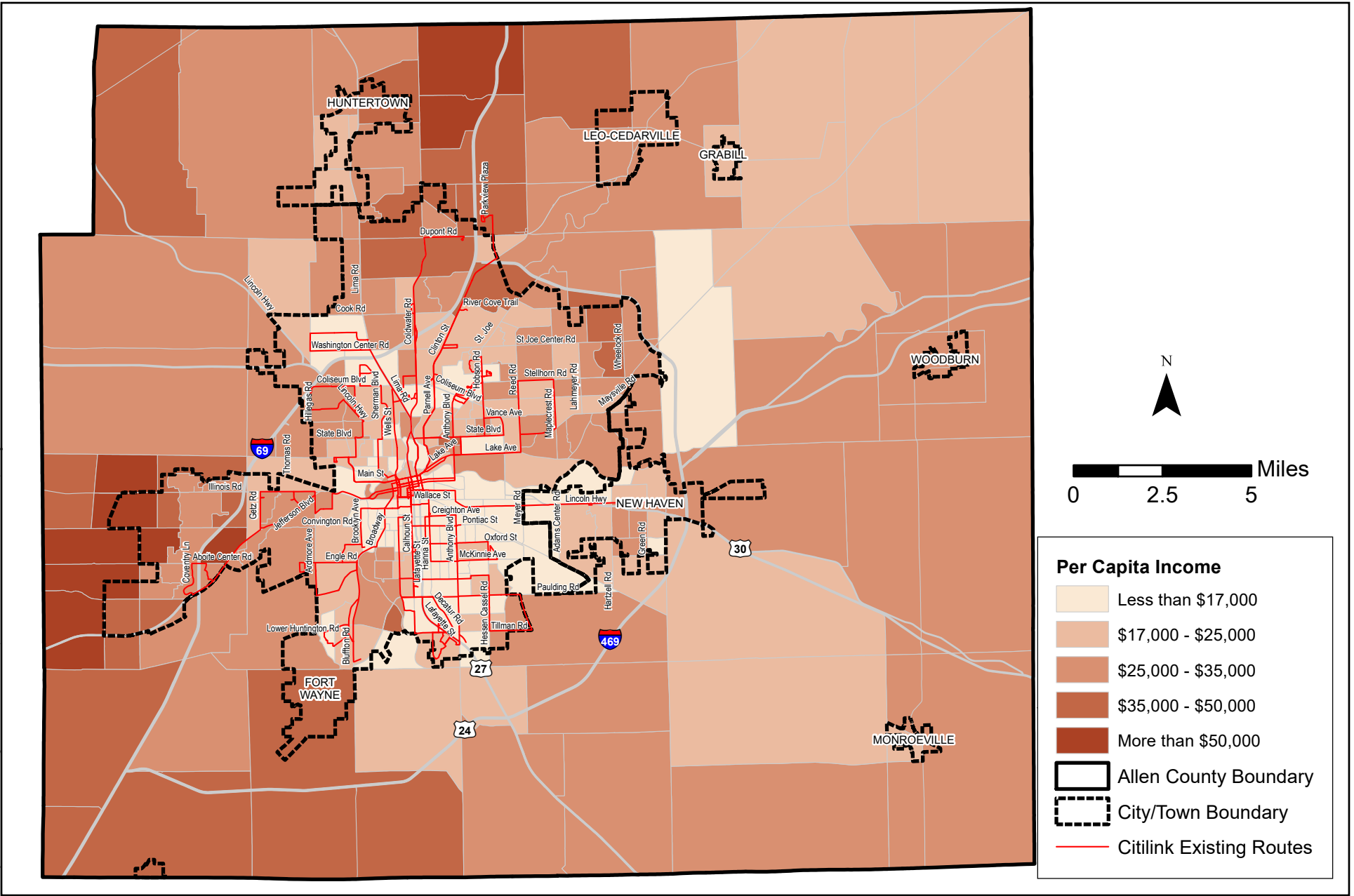


### Median Household Income

Fort Wayne - Citilink COA/TDP

Source: U.S. Census Bureau, 2012-2016 American Community Survey

Figure 6



### Per Capita Income

Fort Wayne - Citilink COA/TDP

Source: U.S. Census Bureau, 2012-2016 American Community Survey

Figure 7

**Table 7. Per Capita Income, in 2016 Dollars**

Jurisdiction	2010 Per Capita Income (in 2016 Dollars for Comparison)	2016 Per Capita Income	Change	Percent Change
Allen County	\$27,197	\$26,058	-\$1,139	-4.2%
<b>Incorporated Municipalities in Allen County</b>				
Fort Wayne	\$25,660	\$24,135	-\$1,525	-5.9%
New Haven	\$23,941	\$21,167	-\$2,774	-11.6%
Woodburn	\$21,510	\$24,684	\$3,174	14.8%
Monroeville	\$21,970	\$22,177	\$157	0.7%
Huntertown	\$27,133	\$28,266	\$1,133	4.2%
Grabill	\$20,832	\$21,422	\$590	2.8%
Leo-Cedarville	\$26,863	\$26,060	-\$803	-3.0%

The poverty thresholds used in this analysis are shown in Table 8. Table 9 and Figure 8 show the households below poverty level. Most block groups with more than 50 percent of the population below the defined poverty threshold are in the central parts of Fort Wayne and along Highway 930 east of Fort Wayne toward New Haven. These areas are located within the Citilink service area.

A few areas around the intersection of Lima Road/I-69 also had higher poverty level. Census block groups within Fort Wayne identified with higher percentages of the population below the poverty threshold are adjacent to or traversed by Citilink fixed route and Access service.

### **Vehicle Ownership by Area of the Region**

Vehicle ownership is also likely to affect transit ridership and households with zero vehicles are more likely to use transit to access destinations. Table 10 and Figure 9 show the distribution of zero vehicle households in the Fort Wayne area. Most areas of zero vehicle households are also the areas with higher percentages of the population below the poverty level. While most of the census areas with higher percentages of zero car households are located within the Citilink service area, there are areas along the Maysville Road corridor east of I-469 with elevated zero car household percentages. These areas are outside the Citilink service area.

**Table 8. U.S. Census Bureau Poverty Thresholds (2016)**

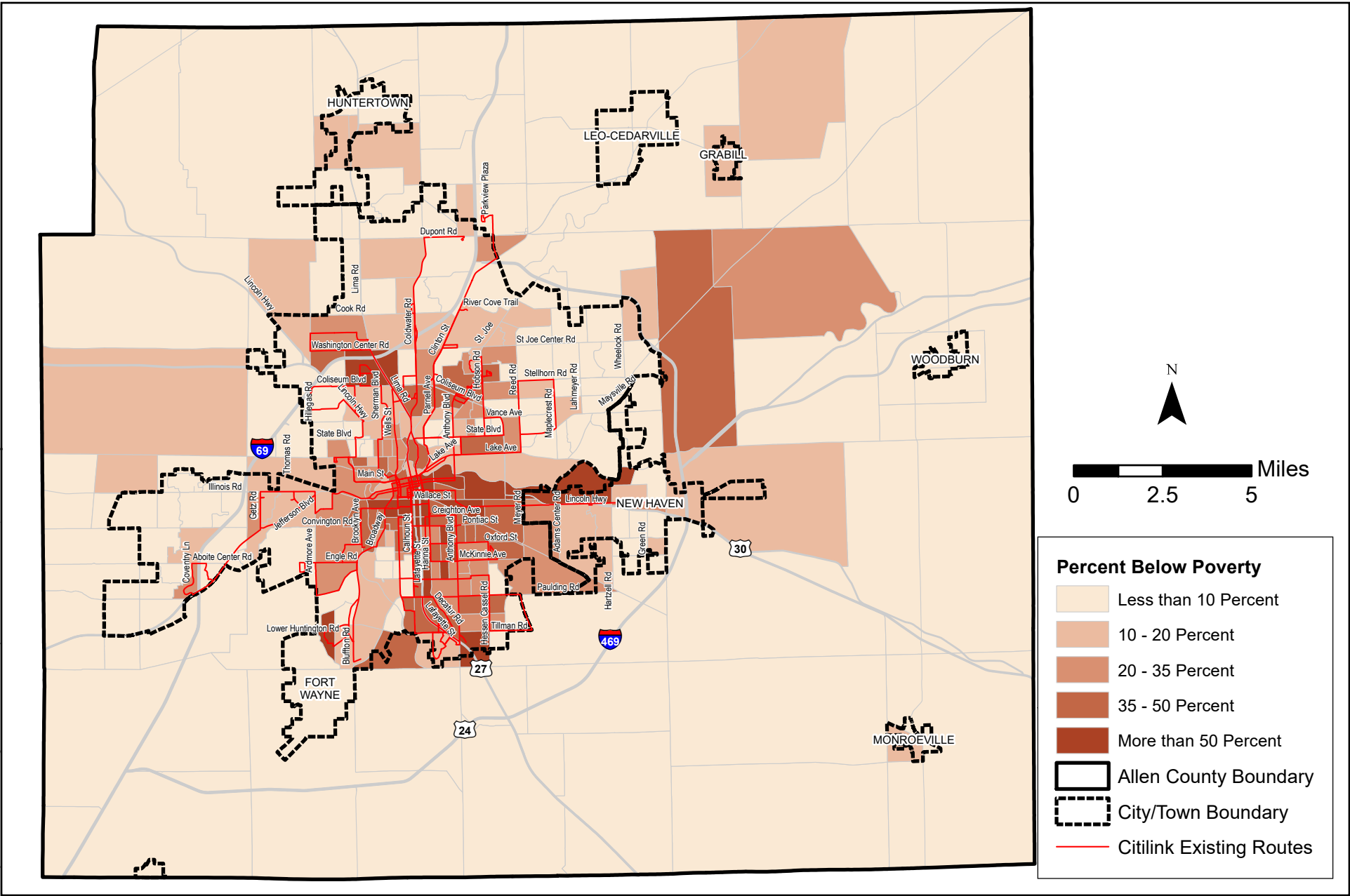
Size of Family Unit	Weighted Average Threshold	Related Children Under 18 Years								
		None	One	Two	Three	Four	Five	Six	Seven	Eight or More
One person	\$12,228									
< 65 Years	\$12,486	\$12,486								
65+ Years	\$11,511	\$11,511								
<b>Two persons:</b>										
Householder < 65 Years	\$16,151	\$16,072	\$16,543							
Householder 65+ Years	\$14,522	\$14,507	\$16,480							
<b>Three people</b>										
Three people	\$19,105	\$18,774	\$19,318	\$19,337						
<b>Four people</b>										
Four people	\$24,563	\$24,755	\$25,160	\$24,339	\$24,424					
<b>Five people</b>										
Five people	\$29,111	\$29,854	\$30,288	\$29,360	\$28,643	\$28,205				
<b>Six people</b>										
Six people	\$32,928	\$34,337	\$34,473	\$33,763	\$33,082	\$32,070	\$31,470			
<b>Seven people</b>										
Seven people	\$37,458	\$39,509	\$39,756	\$38,905	\$38,313	\$37,208	\$35,920	\$34,507		
<b>Eight people</b>										
Eight people	\$41,781	\$44,188	\$44,578	\$43,776	\$43,072	\$42,075	\$40,809	\$39,491	\$39,156	
<b>Nine people or more</b>										
Nine people or more	\$49,721	\$53,155	\$53,413	\$52,702	\$52,106	\$51,127	\$49,779	\$48,561	\$48,259	\$46,400

**Table 9. Persons Living Below the Poverty Level (2012-2016)**

<b>Jurisdiction</b>	<b>Population Living Below Poverty Level</b>	<b>Percent Below Poverty Level</b>
Allen County	54,545	15.2%
<b>Incorporated Municipalities in Allen County</b>		
Fort Wayne	46,716	18.3%
New Haven	2,101	13.5%
Woodburn	95	6.5%
Monroeville	119	11.0%
Huntertown	324	6.4%
Grabill	246	17.1%
Leo-Cedarville	80	2.2%

**Table 10. Zero Car Households (2012-2016)**

<b>Jurisdiction</b>	<b>Total Households</b>	<b>Zero-Car Households</b>	<b>Percent Zero-Car Households</b>
Allen County	141,483	9,609	6.8%
<b>Incorporated Municipalities in Allen County</b>			
Fort Wayne	103,930	8,001	7.7%
New Haven	6,101	355	5.8%
Woodburn	566	23	4.1%
Monroeville	488	27	5.5%
Huntertown	1,789	21	1.2%
Grabill	569	14	2.5%
Leo-Cedarville	1,207	11	0.9%



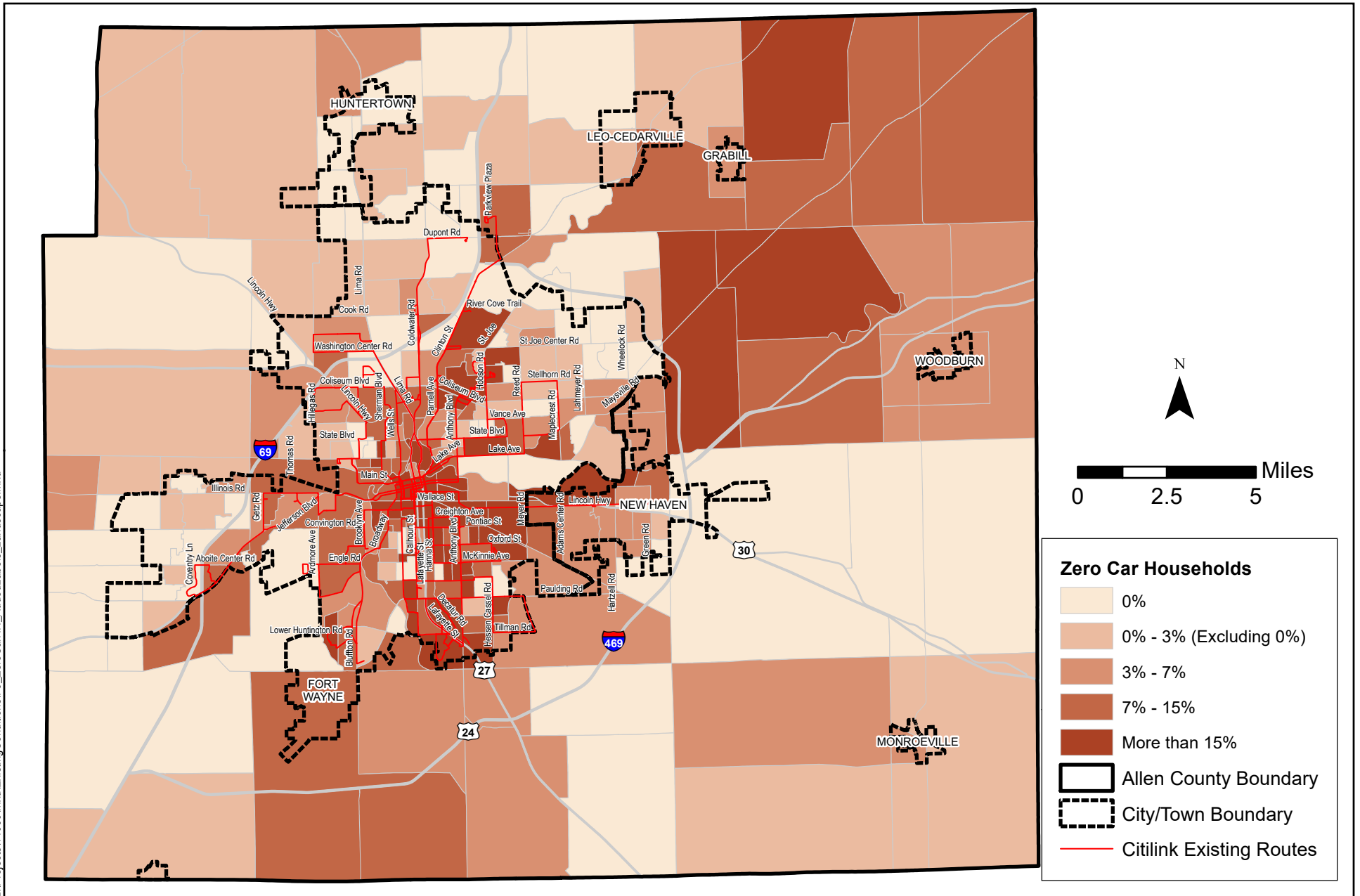
### Poverty Status

Fort Wayne - Citilink COA/TDP

Source: U.S. Census Bureau, 2012-2016 American Community Survey

Figure 8





### Zero Car Households

Fort Wayne - Citilink COA/TDP

Source: U.S. Census Bureau, 2012-2016 American Community Survey

Figure 9

## Limited English Proficiency Population

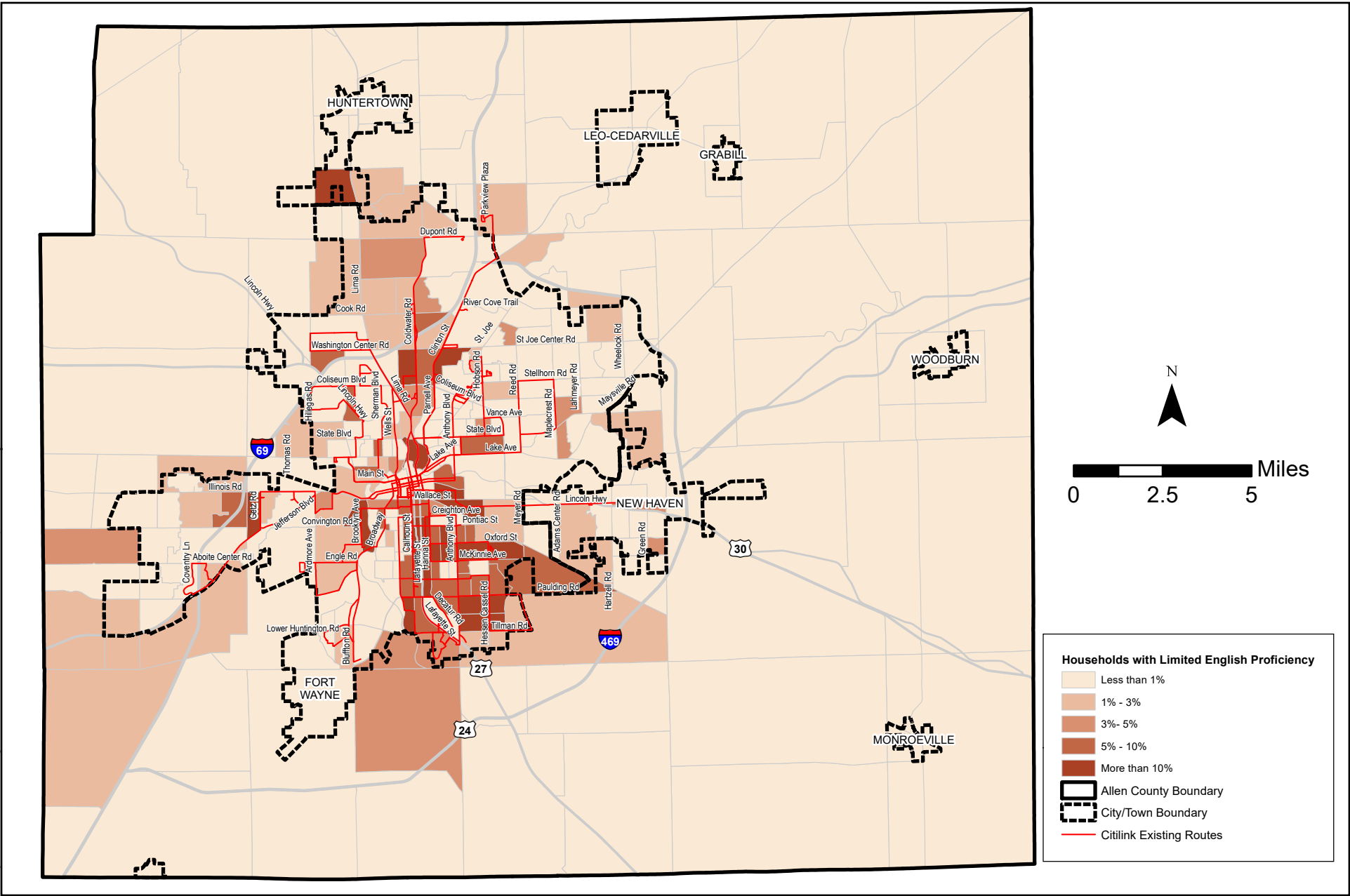
Individuals with limited ability to read, write, speak, or understand English are considered Limited English Proficient (LEP). This language barrier may prevent individuals from accessing public services and income opportunities. Hence, the population group needs easy access to public transportation services to be able to open more opportunities of employment and to encourage the overall mobility of individuals.

As shown in Table 11 and Figure 10, Limited English Proficiency households are located majorly around the southeast quadrant of Fort Wayne with a few census blocks scattered along Coldwater Road-Clinton Street-Lafayette Street (Highway 27) and I-69. Areas with the highest concentrations of LEP populations are currently served by public transit.

**Table 11. Limited English Proficiency Households (ACS 2012-2016)**

Jurisdiction	Total Households	Households with LEP	Percent of Households with LEP
Allen County	141,483	3,542	2.5%
Incorporated Municipalities in Allen County			
Fort Wayne	103,930	3,332	3.2%
New Haven	6,101	19	0.3%
Woodburn	566	0	0.0%
Monroeville	488	0	0.0%
Huntertown	1,789	43	2.4%
Grabill	569	-	0.0%
Leo-Cedarville	1,207	-	0.0%

LEP - Limited English Proficiency



### Limited English Proficiency

Fort Wayne - Citilink COA/TDP

Source: U.S. Census Bureau, 2012-2016 American Community Survey

Figure 10

## Employment and Household Density

The concentration of employment and household density in a region are likely to define commuting patterns. Although only about one to two percent of the Fort Wayne area population uses public transportation for commuting to work, many of the major employers are located within the Citilink service area. Table 12 show the major employers in the Fort Wayne area. Employers shown in bold in the table have reasonable walk access to Citilink services for at least some of their locations (assuming multiple business locations). Key to the review is that almost 70 percent of the employment listed has a work location adjacent to transit service.

**Table 12. Major Private Sector Employers in Fort Wayne Area**

Company	Local Employment	Industry
<b>Parkview Health Systems</b>	<b>7,858</b>	<b>Healthcare</b>
<b>Lutheran Health Network</b>	<b>4,768</b>	<b>Healthcare</b>
<b>Fort Wayne Community Schools</b>	<b>3,935</b>	<b>Education</b>
General Motors	3,900	Automotive Manufacturing
<b>Lincoln Financial Group</b>	<b>1,954</b>	<b>Insurance and financial services</b>
BF Goodrich	1,640	Tire Manufacturer
<b>City of Fort Wayne</b>	<b>1,608</b>	<b>Government</b>
<b>Frontier Communications</b>	<b>1,355</b>	<b>Telecom</b>
<b>Allen County</b>	<b>1,337</b>	<b>Government</b>
Sweetwater Sound	1,400	Online retailer
<b>East Allen County Schools</b>	<b>1,204</b>	<b>Education</b>
<b>Purdue University Fort Wayne</b>	<b>1,117</b>	<b>Education</b>
Fort Wayne Metals Research Products Corp	1,053	Research, Development, & Manufacturing
Southwest Allen County Schools	921	Education
Northwest Allen County Schools	917	Education
<b>Dana Corp</b>	<b>837</b>	<b>Manufacturing</b>
BAE Systems	1,050	Defense, aerospace, and security
<b>Benchmark Human Services</b>	<b>687</b>	<b>Social Services</b>
<b>Steel Dynamics Inc.</b>	<b>825</b>	<b>Steel production and recycling</b>
Indiana Air National Guard	650	National Security
<b>United States Postal Service</b>	<b>603</b>	<b>Postal Services</b>
Vera Bradley	600	Handbag and accessory design
Norfolk Southern Corp	575	Rail transportation
<b>Harris Geospatial</b>	<b>551</b>	<b>Communications</b>

Source: Greater Fort Wayne Inc, 2018, <https://www.greaterfortwayneinc.com/economic-development/doing-business/major-employers>

NOTE: Bold text notes employers located within acceptable walk access to Citilink fixed route service

## Transit Supportive Areas (TSAs)

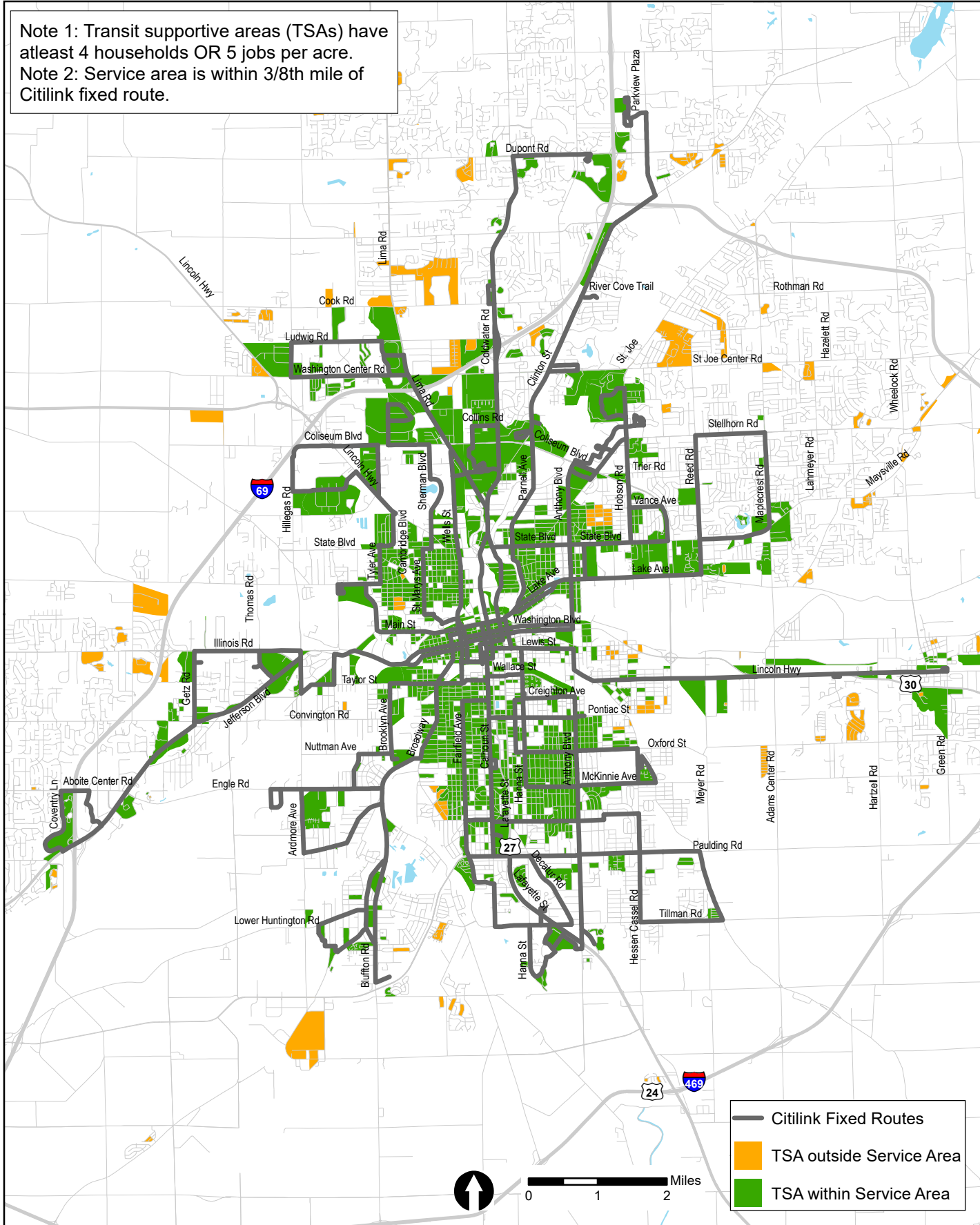
Figure 11 shows the transit supportive areas (TSA) in the primary study area of where fixed route service is provided today. TSAs represent census blocks with at least three households and/or four jobs per acre. Shown in the figure are locations within the Citilink service area (shown in green) with a development density that effectively supports fixed routes service and areas outside the current service area (shown in gold) that could support transit. Effectively supporting fixed route service is defined as producing enough riders per day to provide cost effective service.

Critical to providing cost effective service is continuous development areas with a development density above the locally defined TSA threshold. Islands of higher density development surrounded by lower density development (areas shown as a white background) create conflicts as there is the desire to serve these areas as they could be productive, but travel through lower density areas to get to and from them does not generate much ridership.

From the figure information, the following can be concluded:

- Most of the Fort Wayne core area of service area reflects continuous density that exceeds the TSA threshold. These areas would represent the highest level of productivity potential.
- The outer service area of most routes extends into areas where less than 50 percent of the area meets or exceeds the TSA density threshold. These areas are generally lower productivity segments.
- There are relatively few areas outside the Citilink fixed route service area that currently have a development density that would reasonably support fixed route service. Additionally, providing service to most of these areas would require extending routes by one or more miles through low density areas.
- There are a small number of smaller pockets of development contiguous to TSAs that exceed the TSA threshold. These areas are shown in the figure as gold colored and are connected to larger green colored areas.

Note 1: Transit supportive areas (TSAs) have at least 4 households OR 5 jobs per acre.  
 Note 2: Service area is within 3/8th mile of Citilink fixed route.



L:\Projects\11090\mxd\TSA\_Added\labels.mxd

**Transit Supportive Areas**

**Figure 11**



Fort Wayne, IN  
 Source: U.S. Census (2010) & LODS (2015)

# Existing Transit Services and Operations

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Residents of Allen County have access to many transportation services including fixed route service by Citilink and ADA paratransit by Citilink Access. Other transportation providers in the region are:

- Community Transportation Network (CTN): Provides transportation services as a non-profit agency to individuals with special needs, with the mission of “providing dependable and efficient transportation so no one is left behind”. The 2017 Coordinated Human Services-Public Transportation Plan described CTN as working with over 60 agencies/groups to provide mobility in the region.
- Non-Profit Agencies: St. Vincent De Paul “Carevan” provides medical trips during weekday periods.
- Private providers: There is a small number of private providers supporting transportation of customers within their circle of care. These services are not open to the entire community.

Citilink, is the primary public transit provider in the Fort Wayne area. This section highlights information on Citilink’s existing transit services and operations. The information used in this section was provided directly by Citilink for the most recent year available (fiscal year 2017 unless otherwise noted). Additionally, ridership information (used extensively in the fixed route analysis section) was collected over a three-week period in March of 2018.

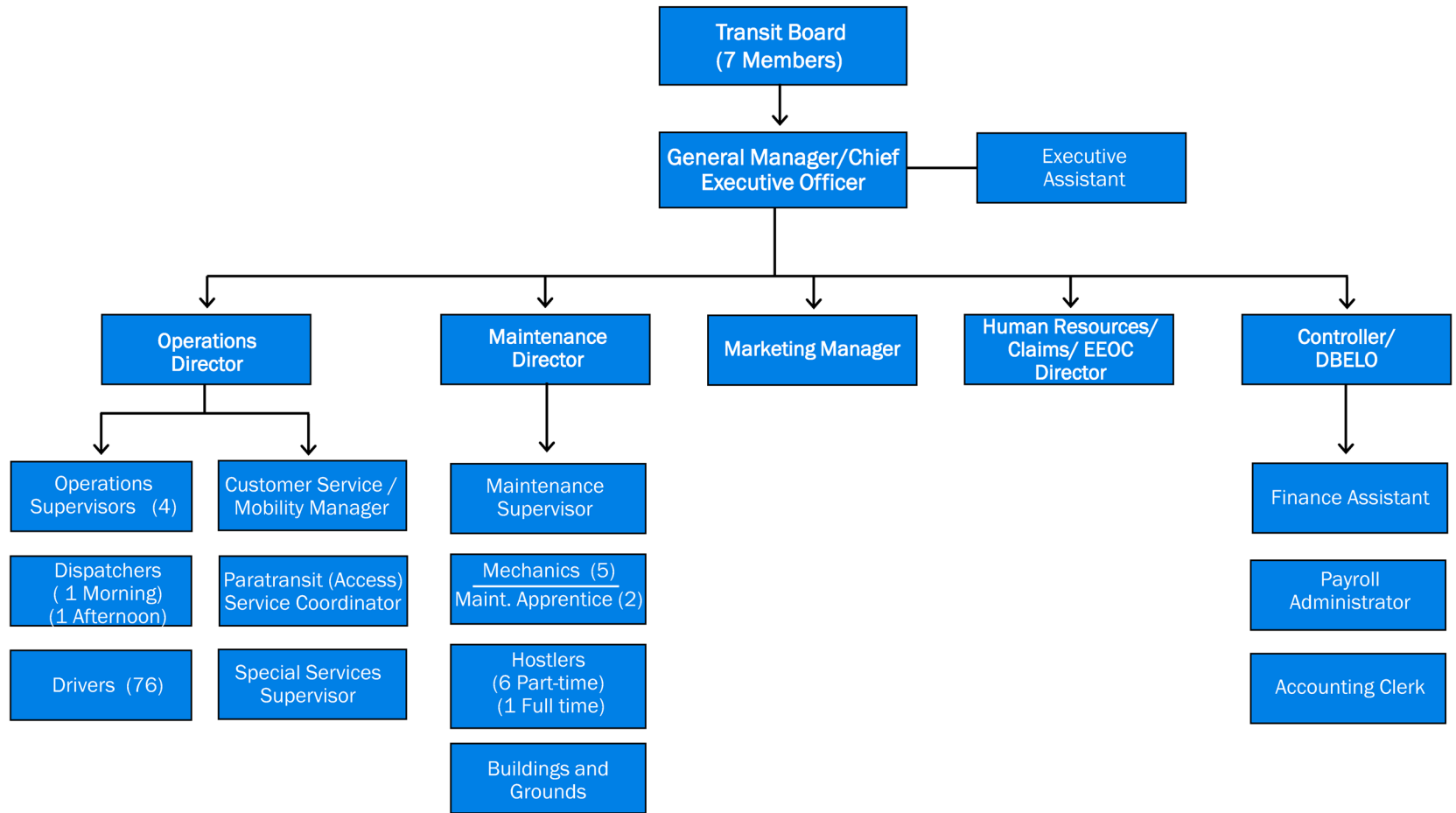
## Citilink Services and Organization Structure

Citilink provides a range of services including fixed-route service through the Central Station hub, flexible service routes that provide opportunity for deviation to locations off the route, and complementary paratransit service in Fort Wayne and New Haven. Citilink’s paratransit (demand-response) service is designed to provide persons who are unable to use the fixed route system with an equivalent level of service to that provided by Citilink fixed route service. Service runs from 5:30 a.m. and 9:40 p.m. on weekdays and 7:30 a.m. and 6:15 p.m. on Saturdays. Citilink does not have funding to provide service on Sundays.

Figure 12 shows the current organization structure of Citilink. Citilink is governed by a seven-member Board of Directors serving three-year terms, whose members are appointed from the residential population of the Citilink taxing district. Appointments to the Board are made by the Fort Wayne Mayor (three positions) and by the Fort Wayne Common Council. As a public transportation corporation, governance requirement of Citilink are defined in Indiana Code sections 36-9-4-15.



**Figure 12. Citilink Organization Structure**



Source: Citilink, October 2019



## Organization Peer Review

Citilink's current employment by department was compared to other Indiana transit agencies in the same funding classification and to agencies identified as peers for the service assessment. The national peer group for the organization assessment did not include Greensboro, North Carolina as employment reported to the National Transit Database was substantially outside the information reported for other operations peers. Based on the outlier status it was assumed Greensboro has a different employee model relative to the remainder of the service assessment peers, including Citilink. Indiana peer agencies, including those not included in the service assessment, represent agencies managing their service in similar federal and state funding conditions as Citilink. Thus, would have similar relative local funding responsibilities relative to state and federal funding available to provide service.

The organizational analysis includes assessment of the number of drivers/operators, maintenance staff and administration staff per unit of service in Fort Wayne relative to levels in other communities. Listed below are the units of service used in assessment of employment by department:

- **Drivers/Operators:** Assessed on the basis of drivers per revenue hour of service. Assuming the typical full-time employee works approximately 1,800 hours per year (five days per week for 52 weeks less traditional holidays, Sundays, and approximately two weeks of vacation/sick leave). Analysis compares the number of drivers per revenue hour of service between the range of peers.
- **Vehicle Maintenance Personnel:** The level of maintenance required is influenced by the number of revenue miles and number of vehicles. Revenue miles impacts the wear and tear on a vehicle, which results in the need for preventative maintenance. The number of vehicles reflects the order of magnitude of vehicles requiring maintenance by local personnel.
- **Facility Maintenance Personnel:** The unit of measure of activity for facility maintenance personnel is the number vehicles used in maximum service as this figure influences the number of maintenance staff needed.
- **Administrative Personnel:** Similar to operators, the number of administrative staff needed is related to the level of service provided, which is measured as revenue hours of service per employee.

The analysis requires several inputs that are reported annually by agencies to the National Transit Database. The most current year of data available across all of the peers is 2017. As there have been changes in the Citilink structure since 2017, current (2019) staffing information was used in the peer review. Inputs to the peer assessment extracted from the National Transit Database are:

- Number of vehicles operated in maximum service. Table 13 documents the vehicles needed to support the peak service level in each area.
- Annual revenue service miles. Table 13 provides a summary of the revenue miles for each peer and Citilink.
- Annual revenue service hours. Table 13 documents annual revenue hours of service for each peer and Citilink.
- Employees in the key classifications of drivers/operators, maintenance staff, and administration staff. Table 14 documents number of employees for each peer and Citilink.

Table 15 summarizes the results of comparing Citilink’s metrics to the combination of Indiana peers and others included in the service assessment. The purpose of the peer review is to provide an understanding of how the number and distribution of employees supporting Citilink services in Fort Wayne compares to peers. Does Citilink employ fewer or more people to provide daily service relative to the peer groups?

As transit is a service, much of the cost of providing the service is personnel costs for drivers, maintenance and administration staff. Key findings of the analysis are:

- Revenue hours of service per operator – Fixed Route: Each Citilink driver provides approximately 1,749 revenue hours of service annually, which is higher than the peer average. Relative to Indiana peers, Citilink is also above the average of the group. Selected providers (Bloomington, IN and Lubbock, TX) have much lower hours per driver/operator and these are systems that have higher part-time driver ratios. The NTD reports do not provide information regarding the full-time employee equivalents for part-time drivers. Thus, it is difficult to accurately convert the part-time to full time driver equivalents.
- Revenue hours per operator - Paratransit: Reported revenue hours per operator across the Indiana peers ranges substantially from a low of 1,075 revenue hours per operator in Muncie to approximately 2,020 hours per operator in South Bend. Citilink operators provide more hours of service per driver than most Indiana peers. Part of the reason for the higher ratio of hours per driver is Citilink provides more than an additional 5,5000 hours of paratransit service and approximately 15,000 more trips per year than the closest Indiana peer. Relative to the national peers, the revenue hours per operator remains above the average for the peers, exceeding all by Savannah.
- Revenue miles per maintenance employee: The number of miles driven per year and the level of maintenance required generally follow a similar pattern. More miles generally require more maintenance. The miles per maintenance employee at Citilink substantially exceeds the average for both the Indiana peers and the national peers. The difference between Citilink estimates and the average for the peer groups by more than 22 percent.

**Table 13. Citilink and Peer Agency Demographics and Service Parameters (2017)**

City	State	Service Area Population	Vehicles in Peak Operations	Annual Revenue Miles	Annual Revenue Hours	Annual Passenger Trips
<b>FIXED ROUTE SERVICE</b>						
Indiana Peers						
Lafayette	IN	147,725	56	1,763,794	138,874	4,554,827
South Bend	IN	278,165	35	1,282,349	94,066	1,576,792
Bloomington	IN	108,657	29	998,863	94,594	3,303,444
Muncie	IN	90,580	26	771,934	55,714	1,377,416
Evansville	IN	229,351	22	1,165,586	88,020	1,494,212
Fort Wayne	IN	313,492	28	1,435,808	103,208	1,696,829
National Peers						
Lubbock	TX	237,356	60	1,853,436	141,806	3,622,959
Savannah	GA	260,677	52	2,363,600	179,783	3,168,439
Lincoln	NE	258,719	56	1,762,093	131,373	2,313,717
Wichita	KS	472,870	42	1,696,805	116,316	1,262,552
<b>PARATRANSIT SERVICE</b>						
Indiana Peers						
Lafayette	IN	147,725	5	109,510	9,129	28,420
South Bend	IN	278,165	13	316,869	24,221	68,497
Bloomington	IN	108,657	8	138,255	13,973	34,907
Evansville	IN	229,351	14	354,618	30,638	67,375
Muncie	IN	90,580	10	208,178	20,245	55,589
Fort Wayne	IN	313,492	15	530,140	37,190	83,830
National Peers						
Lubbock	TX	237,356	29	633,457	42,633	99,286
Savannah	GA	260,677	24	1,070,730	68,825	107,729
Lincoln	NE	258,719	9	384,349	29,308	64,935
Wichita	KS	472,870	23	601,909	29,347	71,713

**Table 14. Employee Counts by Transit Department**

City	State	Vehicle Operations Count (Drivers)	Vehicle Maintenance Count	Facility Maintenance Count	General Administration Count	Capital Labor Count				
<b>Indiana Peers</b>										
Lafayette	IN	108	15	0	10	1				
South Bend	IN	62	8	4	7	NA				
Bloomington	IN	77	14	1	5	NA				
Muncie	IN	40	11	3	9	NA				
Evansville	IN	57	15	5	6	NA				
Fort Wayne	IN	59	13	2	8	NA				
<b>National Peers</b>										
Lubbock	TX	115	37	3	10	NA				
Savannah	GA	126	20	16	44	NA				
Lincoln	NE	92	21	0	18	NA				
Wichita	KS	72	16	4	18	NA				
<b>Paratransit Operators/Drivers</b>										
<b>Indiana Peers</b>										
Lafayette	IN	6								
South Bend	IN	12								
Bloomington	IN	13								
Evansville	IN	26								
Muncie	IN	14								
Fort Wayne	IN	18								
<b>National Peers</b>										
Lubbock	TX	34								
Savannah	GA	36								
Lincoln	NE	14								
Wichita	KS	22								

**Table 15. Citilink Staffing Comparison to Peers (2017 NTD Reported Data)**

City	State	Revenue Hours/Operator		Revenue Miles/Vehicle Maintenance Employee	Vehicles/Facility Maintenance Employee	Revenue Hours/Administration Staff
		Fixed Route	Paratransit			
<b>Indiana Peers</b>						
Lafayette	IN	1,286	1,522	124,887	3.97	14,742
South Bend	IN	1,517	2,018	199,902	5.83	18,813
Bloomington	IN	1,231	1,075	81,807	2.27	22,522
Muncie	IN	1,393	779	92,463	5.20	7,959
Evansville	IN	1,542	2,188	101,347	1.69	27,506
<b>Fort Wayne</b>	<b>IN</b>	<b>1,749</b>	<b>2,066</b>	<b>151,227</b>	<b>3.15</b>	<b>17,550</b>
<b>National Peers</b>						
Lubbock	TX	1,233	1,254	67,213	2.14	20,258
Savannah	GA	1,427	1,912	171,717	2.89	4,495
Lincoln	NE	1,774	2,108	118,907	2.94	10,834
Wichita	KS	1,825	1,332	150,095	4.57	9,370
<b>Indiana Peer Average</b>		<b>1,396</b>	<b>1,537</b>	<b>121,483</b>	<b>3.51</b>	<b>19,784</b>
<b>All Peers Average</b>		<b>1,464</b>	<b>1,583</b>	<b>123,683</b>	<b>3.36</b>	<b>16,366</b>

- Vehicles per facility maintenance employee: This category is the widest ranging in employees per unit across the measures. The primary reason for the range is selected operators that are departments of a city do not report facility maintenance employees to NTD. For the peers that do report, Citilink is an outlier with fewer employee completing the task of maintaining the facility.
- Revenue hours per administration department staff. Similar to revenue hours being a measure of how much work is required by drivers/operators, it is a logical measure of the amount of work to be completed by administrative staff who manage and plan the workload. This is a category of analysis that has very wide-ranging results across the peers and Citilink is on the end of the range for both the Indiana peers and the national peers. Citilink’s ratio of revenue hours of service per administration employee is consistent with the average for the in-state and national peers.
- Across most of the metrics used to compare Citilink’s employment to Indiana and national peers, Citilink employs fewer people per unit of service provided. The only category where Citilink is higher than the in-state peers is in administration, where Citilink’s revenue hours per employee is about 13 percent lower than the in-state peers. For the national peers, however, each Citilink administrative employ supports more revenue hours of service than the peers.

## Fleet and Facilities

The Citilink fleet includes buses for both fixed route and paratransit operations. Table 16 shows Citilink’s fleet summary and Table 17 document the minimum service-life standards for buses and vans as suggested by FTA.

The Citilink fixed route fleet consists of has 43 total vehicles, including a mix of Gillig and Chevy models of various lengths. Paratransit includes 20 total vehicles, all of which are 26-foot Chevy Titan II and Ford E-450 model vehicles.

**Table 16. Citilink Service Fleet Summary**

Service Type	Gillig Low Floor	Gillig Hybrid	Gillig Hybrid	Chevy Passport 5500	Chevy Titan II	Total
	35-foot	35-foot	40-foot	29-foot	26-foot	
Fixed Route	11	14	8	3	7	43
Paratransit	-	-	-	-	20	20

Source: Citilink Fleet Summary, April 2019

**Table 17. FTA Minimum Service-Life Standards for Buses and Vans**

Category	Typical Characteristics				Minimum Life (whichever comes first)	
	Length (Feet)	Approximate Gross Vehicle Weight (Pounds)	Seats	Typical Replacement Cost Range	Years	Miles
Heavy-Duty Large Bus	35 to 46	33,000 to 40,000	27 to 40	\$325,000 to \$600,000+	12	500,000
Heavy-Duty Small Bus	30	26,000 to 33,000	26 to 35	\$200,000 to \$325,000	10	350,000
Medium-Duty and Purpose-Built Bus	30	16,000 to 26,000	22 to 30	\$75,000 to \$175,000	7	200,000
Light-Duty Mid-Sized Bus	25 to 35	10,000 to 16,000	16 to 25	\$50,000 to \$65,000	5	150,000
Light-Duty Small Bus, Cutaways, and Modified Van	16 to 28	6,000 to 14,000	10 to 22	\$30,000 to \$40,000	4	100,000

Source: Federal Transit Administration – Useful Life of Transit Buses and Vans: Report No. FTA VA-26-7229-07.1 (2007).

## Maintenance Facility

Citilink’s maintenance facility and administration office is located at 801 Leesburg Road. The facility stores all 63 transit vehicles for fixed route and paratransit service, along with 15 support vehicles. The property consists of two buildings:

- The central administration office, dispatch, customer service, drivers' facilities and the maintenance garage occupy one building. The maintenance garage includes two separate maintenance areas, a parts center, tooling areas, a paint booth, and a wash bay. Maintenance offices and support facilities (storage, restrooms, and mechanical equipment rooms) fill out the maintenance garage.
- A second building, located west of the administration/maintenance building is utilized solely for Citilink vehicle storage. The bus barn contains three bays with a total of nine drive-through stalls with overhead doors at either end to facilitate bus traffic.

With a gross floor area of more than 94,000 square feet, the facility was placed in service in July of 1968 (additional bus storage added in December of 1977). With an expected life of 50 to 60 years, the facility will meet its useful life in 2027-2028. The replacement cost for the facility was estimated in 2016 to be approximately \$10.4 million.

## Passenger Facilities

Citilink's largest passenger facility is Central Station, located just south of downtown at 121 Baker Street. Central Station has bays for 18 buses (labeled A through R) and a heated indoor waiting area with restrooms, and a ticket vending machine. Intercity bus service provided by Greyhound also serves the station, with staging for intercity buses directly on Baker Street. Central Station was constructed at a cost of approximately \$4.4 million and opened in September 2012. The facility has an FTA identified useful life of 25 years.

Citilink also has three transfer centers located in the southern part of the city:

- Southgate Plaza
- Southtown Centre (Walmart)
- Hanna Creighton Transit Center/Urban League

Shelters are also provided at approximately 70 locations throughout the Citilink service area (not including Central Station or the three transfer locations). Of the shelters:

- Ten are owned and maintained by Citilink.
- Remaining are owned and maintained by Metro Media Partners under an agreement with Fort Wayne Public Works.

## Fare Structure

Citilink provides a variety of fare types for travelers in the system, as summarized in Table 18. Transfer tickets are not included in the Citilink system. Regular fares range from \$1.25 for a single ride to \$45.00 for a 31-day pass. The second column shows the number of trips required to break even. An all-day pass requires three (3), one-way trips to break even while a 31-day pass requires 36 one-way trips.

**Table 18. Fare Structure**

<b>Ticket/Pass</b>	<b>Regular</b>	<b>Trips to Break Even</b>	<b>Reduced</b>	<b>Trips to Break Even</b>
One Ride Cash or Ticket-to-Ride	\$1.25		\$0.60	
All Day Pass	\$3.00	3	\$1.50	3
10-Ride Card	-	-	\$6.00	-
31-Day Pass	\$45.00	36	\$22.00	37
Access One Ride Cash or Ticket-to-Ride	\$2.50	-	-	-
Summer fun pass	\$25.00	20	-	-
Children under 5	FREE	-	-	-

Source: Citilink website, accessed October 2019

Reduced fares are available to youths (18 or younger), seniors (60 or older), and disabled persons. Fares range from \$0.60 for a one-way trip to \$22.00 for a 31-day pass. An all-day pass requires three (3) one-way trips to break even while a 31-day pass requires 37 one-way trips. Citilink also offers a summer fun pass for youth riders that is good during summer months when school is not in session.

## Technology

The transit industry, like most parts of the business and social world, has increasingly employed technology to improve service, management, and operations. Nearly every facet of the transit industry has benefited from use of advanced technologies, including:

- Improved service operations and management
- More accurate reporting
- Increased productivity of vehicle and driver scheduling, deployment, and dispatch
- Safer and more reliable fare collection systems
- Expanded used of information gathered

Technology enhancements for transit vary in many of ways, including initial purchase costs and the costs to implement and manage technologies, as well as the type and amount of benefits achieved. With the variability and cost, it can be challenging for transit agencies to know when and how much to invest in transit technology. Citilink has incorporated new and upgraded technology into its transit operation over the last few years. Outlined below are key technology deployments benefiting customers and management of the system.

### Automatic Vehicle Location

The heart of many of the technology enhancements presently deployed or available to



consider in the future is continuous communication as to where every service vehicle is located. Citilink has implemented an automatic vehicle location (AVL) system on the fixed route and Access fleet that connects vehicles seamlessly with scheduling and dispatching software as well to customers through RouteShout and RouteWatch. While customers experience AVL through being able to see where their bus is presently located, for Citilink the benefits are much broader in that the data is used by dispatchers to monitor schedule adherence status, breakdowns and emergencies.

The AVL system can also integrate with other on-board systems to improve the convenience of information sharing while on the bus. AVL systems can be tied to head signs and automatically change them. It can connect with systems (annunciator systems) to announce the next stop, taking that role out of the operator's hands.

### **Automatic Passenger Counter (APC) System**

Citilink has been working throughout 2019 with Urban Transit Associates (UTA) to install and gather passenger boarding data using an automated passenger counting (APC) system. APC systems are electronic units mounted at bus doors capable recording activity of people getting on or off. This access information gathering can be connected to the automatic vehicle location (AVL) and farebox collection systems to provide a powerful integrated passenger analysis system.

The interconnected APC/AVL/farebox network provides Citilink with a continuous method of collecting information about passenger numbers at a variety of service levels, including route, route segment, or specific transit stops by time of day and by day of the week.

It is critical for federal and state funding programs to have more accurate and continuous ridership data as this data is part of the funding formulas. Without the APCs, Citilink would assign staff to sample each route over the course the year, which is a labor-intensive activity. APCs essentially eliminate the labor costs and allow more frequent and timely sampling. APCs provide benefits at the route level as ridership provides a general indication of the level of demand. More detailed ridership data can be used by Citilink operations department to analyze performance and to make changes at the route, trip and stop levels to better match the level of service with demand. Connecting the APC data with the AVL data allows Citilink to monitor at a high degree of granularity running times between active stops and schedule adherence.

APC data is primarily used to create, evaluate, and adjust schedules and run times and to plan and justify route changes. APC-generated data can also be used for National Transit Database (NTD) reporting requirements, monitoring driver performance, and determining the best places to locate transit bus stops. APCs allow automatic and continuous collection of additional information about operations, including maximum and minimum load points, entering and exiting rates, wheelchair ramp use, bikes being loaded and unloaded, transit vehicle dwell times, door cycles, distance traveled, and vehicle average speed.

## Vehicle APC sensor application

APCs provide a ridership and travel time database at a finer level of detail than fare box or manual counts. Key is that not every route has to be 100 percent covered with APC-equipped vehicles. Citilink presently rotates the four buses equipped with APCs throughout the route system. The increased number of observations over sampling by hand lends greater confidence to decisions regarding changes in service levels.

For the current COA/TDP, APC data was used to verify boarding and alighting information collected in March 2018 as initial data collection. Boarding and alighting counts for each stop along each route were collected over a week and a half. Each route was counted over a one-day weekday and one Saturday period, which are relatively short periods controlled by the study budget.

## Electronic Ticketing

There are two main mobile applications (apps) used by the agency, Token Transit and RouteShout. Token Transit is a mobile pay application that allows riders to purchase and store passes for use on board Citilink vehicles. There is no cost to the user for the Token Transit application and users can purchase one or multiple tickets or passes. Table 19 displays the monthly use statistics for 2018 and 2019 through September. Key take-aways from the information provided are:

- Token Transit use for each month in 2019 exceeded 2018 use.
- The monthly increase observed between 2018 and 2019 was observed in almost every ticket type for each month. The most significant deviation from this trend occurred in September in the Day Pass category.
- As a percentage of total ridership, Access riders use the Token Transit application more than fixed route users.
- Single ride use is the highest volume category, followed by day use tickets, which is consistent with how all riders pay their fare.
- Few reduced fare tickets are purchased using Token Transit, which could be due to needing a debit or credit card to pay for the initial purchase.

Citilink also uses the mobile application RouteShout to track bus location and provide real time arrival information. Route Shout is also free to download and use on smart phones.

Citilink also supports technology through its website, which is available in both desktop and mobile versions. Real time bus arrival information is available via RouteWatch (a cousin of the RouteShout application). Bus tickets can also be purchased on the website, which are then sent via mail.

**Table 19. Token Transit Ticket Sales – January 2018 through September 2019**

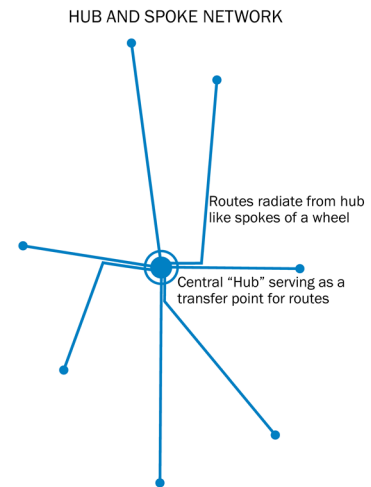
Month - 2018													
Ticket Type	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Access Total (\$2.50)	206	173	240	228	189	223	230	258	291	280	246	266	2,830
31-Day Pass (\$45.00)	40	36	45	35	41	44	51	49	50	57	57	48	553
31-Day Pass (\$22.50)	18	24	21	20	21	18	14	25	19	25	21	13	239
Day Pass (\$3.00)	469	534	520	460	508	577	578	768	1,149	977	803	791	8,134
Day Pass - Reduced (\$0.60)	80	40	66	73	68	111	84	104	96	114	93	80	1,009
Ticket to Ride (\$2.50)	529	627	831	619	569	601	693	1,054	745	1,320	1,143	1,141	9,872
Ticket to Ride - Reduced (\$1.25)	22	26	33	14	29	20	18	34	61	117	113	76	563
10 Ride Pass (\$6.00)	15	14	9	9	22	5	9	17	11	12	11	7	141
TOTALS	1,379	1,474	1,765	1,458	1,447	1,599	1,677	2,309	2,422	2,902	2,487	2,422	23,341
Month -2019													
Ticket Type	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Access Total (\$2.50)	355	292	408	403	392	436	476	413	491				3,666
31-Day Pass (\$45.00)	69	67	80	70	67	56	79	68	65				621
31-Day Pass (\$22.50)	22	18	14	15	18	16	23	36	27				189
Day Pass (\$3.00)	866	1,006	971	1,083	1,043	1,038	1,037	1,099	920				9,063
Day Pass - Reduced (\$0.60)	101	118	111	123	121	64	79	100	66				883
Ticket to Ride (\$2.50)	1,280	1,347	1,086	1,473	1,366	1,297	1,325	1,533	1,484				12,191
Ticket to Ride - Reduced (\$1.25)	70	114	112	110	111	33	19	50	64				683
10 Ride Pass (\$6.00)	8	15	9	11	16	8	10	14	11				102
TOTALS	2,771	2,977	2,791	3,288	3,134	2,948	3,048	3,313	3,128				27,398
Monthly Change													
Ticket Type	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Access Total (\$2.50)	149	119	168	175	203	213	246	155	200				1,628
31-Day Pass (\$45.00)	29	31	35	35	26	12	28	19	15				230
31-Day Pass (\$22.50)	4	-6	-7	-5	-3	-2	9	11	8				9
Day Pass (\$3.00)	397	472	451	623	535	461	459	331	-229				3,500
Day Pass - Reduced (\$0.60)	21	78	45	50	53	-47	-5	-4	-30				161
Ticket to Ride (\$2.50)	751	720	255	854	797	696	632	479	739				5,923
Ticket to Ride - Reduced (\$1.25)	48	88	79	96	82	13	1	16	3				426
10 Ride Pass (\$6.00)	-7	1	0	2	-6	3	1	-3	0				-9
TOTALS	1,392	1,503	1,026	1,830	1,687	1,349	1,371	1,004	706				11,868

## Google Transit Trip Planner

Citilink subscribes to Google Transit to support trip planning for riders. The online application includes both computer and mobile device format to allow users to see Citilink trip options. The application combines schedule and route data in Google Maps. Customers can input their origin and destination (either the addresses or as landmarks) and receive a description and map of where to access their best option, where to transfer if needed, and where to get off. Included are all walk distances and schedule times.

## Fixed Route Analysis

Citilink operates a hub and spoke network, with most routes radiating from downtown Fort Wayne. The network operates on a pulse, meaning that routes meet at timed intervals to allow for convenient transfer and movement throughout the network. Citilink operates a total of 14 routes. Ten routes meet at Central Station, while four routes (Routes 15, 21, 22, and 97) operate without connection to Central Station. Figure 13 shows the Citilink network.



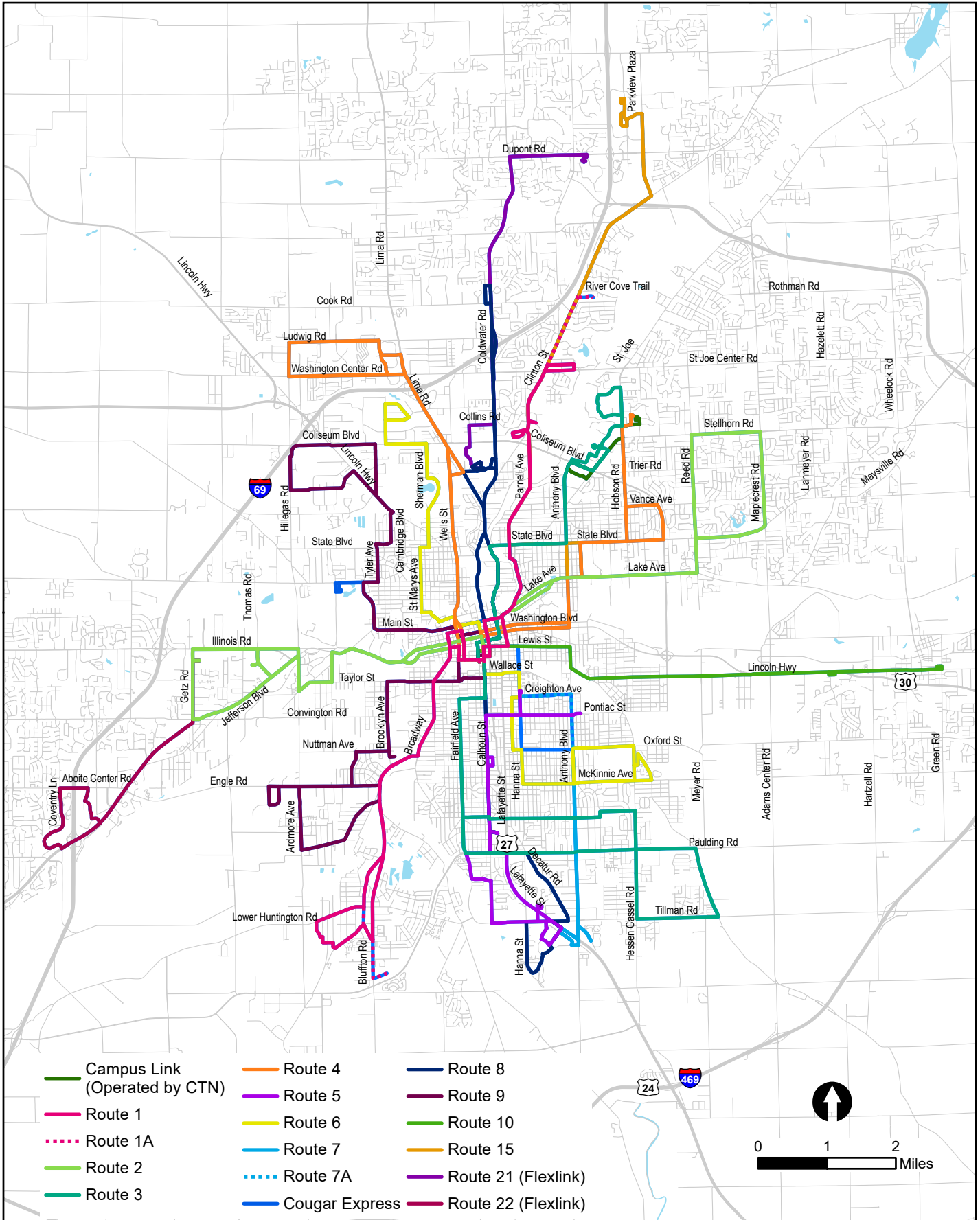
Most Citilink routes operate at a 60-minute frequency, while Routes 4, 7, and 8 operate at a 30-minute frequency. The use of clock face headways allows for pulse connections at Central Station. The only other route in the network with a high frequency is Route 97 (Cougar Express). Cougar Express is a fare free shuttle connecting the University of Saint Francis downtown and west campus. The cost of Cougar Express is subsidized by the University of Saint Francis, which allows the route to operate fare free.

CampusLink (Campus-to-Campus) is operated by Community Transit Network and connects the Coliseum Campus and North Campus of Ivy Tech. The shuttle service operates fare free on a 20-minute frequency through a subsidy provided by the college.

The typical span of a Citilink route is 15 hours on weekdays and 11 hours on Saturdays. Table 20 shows the summary of frequency and span by route.

## Ridership Analysis

Stop and route level ridership was collected for all routes in the network in March 2018. Route level data is shown in Figure 14 for weekday and Figure 15 for Saturday. The weekday data shows Route 8 has the highest daily ridership, accounting for 22 percent of Citilink's total weekday daily ridership. Routes 2 and 4 also perform well. After the top three, five routes cluster between 420 and 490 daily riders. Route 7 is fifth best in weekday daily ridership despite being one of three routes operating with a 30-minute frequency during weekdays. There is also a noticeable split between the core network (Routes 1 through 10).

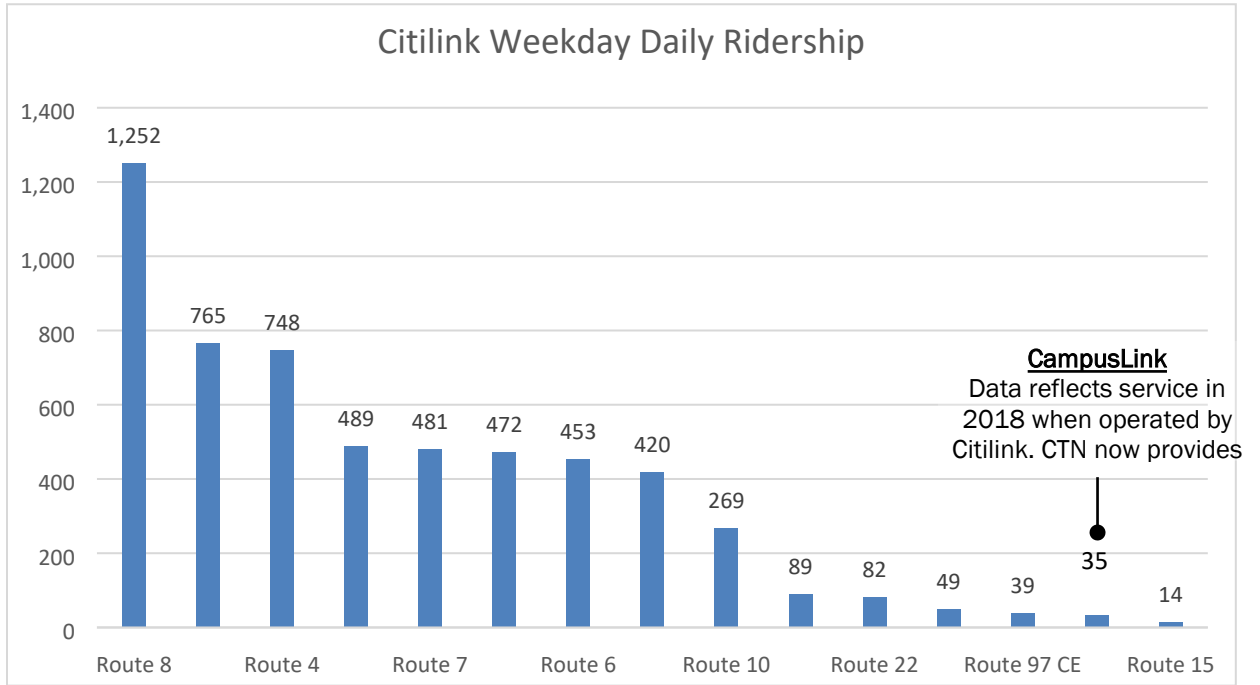


**Table 20. Bus Routes, Schedules, and Frequencies**

Route Number	Route Name	Weekday			Saturday		
		Span of Service	Headway	Peak Bus	Span of Service	Headway	Peak Bus
1	Waynedale – Northcrest	6:15 am - 8:10 pm	60	2.0	7:34 am - 6:10 pm	60	2.0
2	Time Corners - Georgetown	6:15 am - 8:10 pm	60	2.0	7:34 am - 6:10 pm	60	2.0
3	Canterbury - Village Woods	5:32 am - 8:52 pm	60	2.0	7:32 am - 6:10 pm	60	2.0
4	Wells Ludwig - Parkview	5:39 am - 8:45 pm	30	4.0	7:39 am - 6:10 pm	60	2.0
5	Southeast Local	5:40 am - 8:40 pm	60	1.0	7:40 am - 6:15 pm	60	1.0
6	Franke Park - McKinnie	5:27 am - 8:42 pm	60	2.0	7:27 am - 6:10 pm	60	2.0
7	Anthony via Oxford	5:38 am - 9:28 pm	30	2.0	7:38 am - 6:10 pm	60	1.0
8	Glenbrook/Northrup/Calhoun/Tillman Rd	5:35 am - 9:40 pm	30	4.0	7:35 am - 6:10 pm	60	1.0
9	Brooklyn/Taylor/St Francis/Gateway	5:30 am - 8:52 pm	60	2.0	8:15 am - 6:10 pm	60	2.0
10	New Haven	5:38 am - 8:38 pm	60	1.0	7:38 am - 6:10 pm	60	1.0
15	MedLink	8:00 am - 4:58 pm	60	1.0	Routes do not run on Saturday		
21	Glenbrook - Dupont (Flexlink)	6:25 am - 8:25 pm	60	1.0			
22	West Jefferson - Lutheran Hospital	5:50 am - 8:35 pm	60	1.0			
97	Cougar Express			1.0			
	Ivy Tech/CTN*	7:30 am - 6:00 pm	20	1.0			

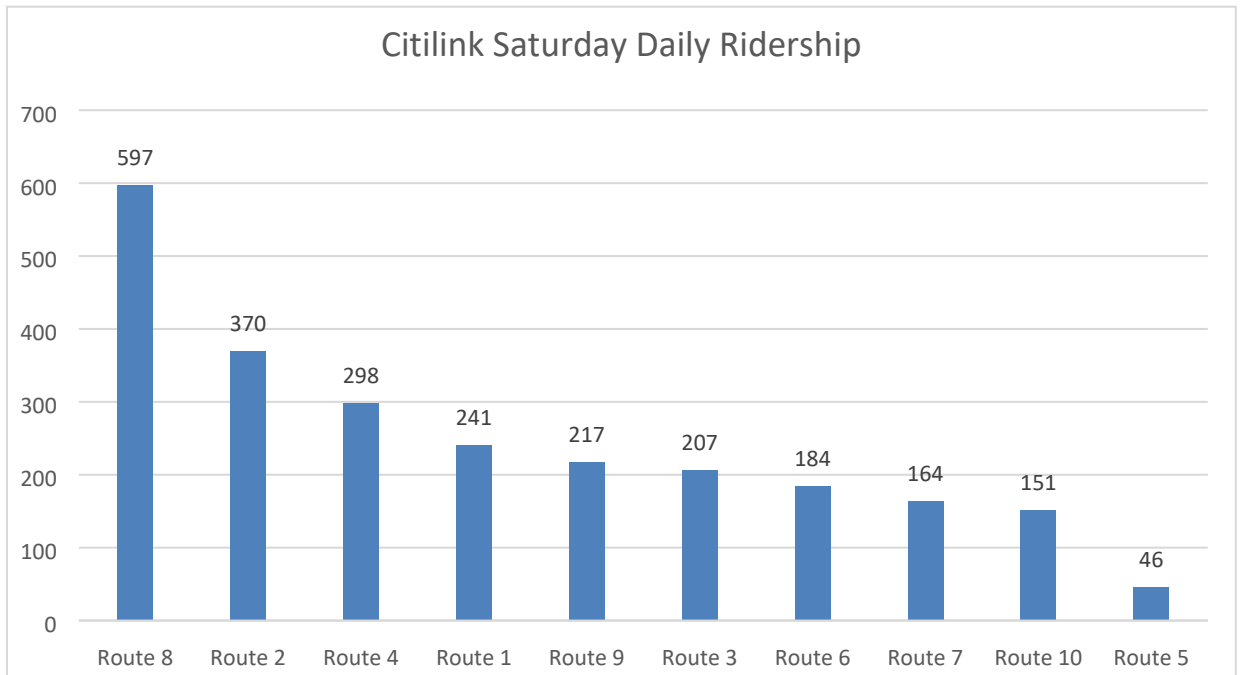
Note: Ivy Tech route is operated by CTN as a free campus-to-campus shuttle. Formerly referred to as CampusLink until CTN began operating in September 2018

**Figure 14. Weekday Daily Ridership by Route**



Source: Ride check completed March 2018

**Figure 15. Saturday Daily Ridership by Route**



Source: Ride check completed March 2018

and the routes that do not connect at Central Station (15, 21, 22, 97, and 98). The core routes do much better and account for almost 96 percent of Citilink's weekday ridership.

Citilink's Saturday daily ridership is approximately 43 percent of weekday daily ridership. Saturday shows the same pattern as weekday, with Routes 8, 2, and 4 performing the best and Routes 5 and 10 were the lowest performers of the core routes. Also noteworthy is that Route 1 ranks higher on Saturday than on weekday (8th on weekday and 4th on Saturday) and Route 7 ranks lower on Saturday than on weekday (5th on weekday and 8th on Saturday).

Stop level ridership is mapped for weekday and Saturday in Figure 16 and Figure 17, respectively. The maps show that many of the large ridership generators in the city are either retail or education destinations, including:

- Southtown Centre (Routes 5 and 7)
- Southgate Plaza (Routes 8, 5, 3)
- Jefferson Pointe Shopping Center (Route 2)
- Getz Road Meijer (Routes 2 and 22)
- Glenbrook Mall (Routes 8 and 21)
- Ivy Tech (Routes 3)
- IPFW Routes 3 and 4)

The ridership pattern shows most of the major generators are beyond the downtown or the inner neighborhoods of Fort Wayne. This suggests that many riders are riding through downtown to connect to their ultimate destination, while downtown itself is less of an attractor than in the past. Indeed, a review of the ridership numbers shows that downtown accounts for approximately 10 percent of the ridership activity in the system.

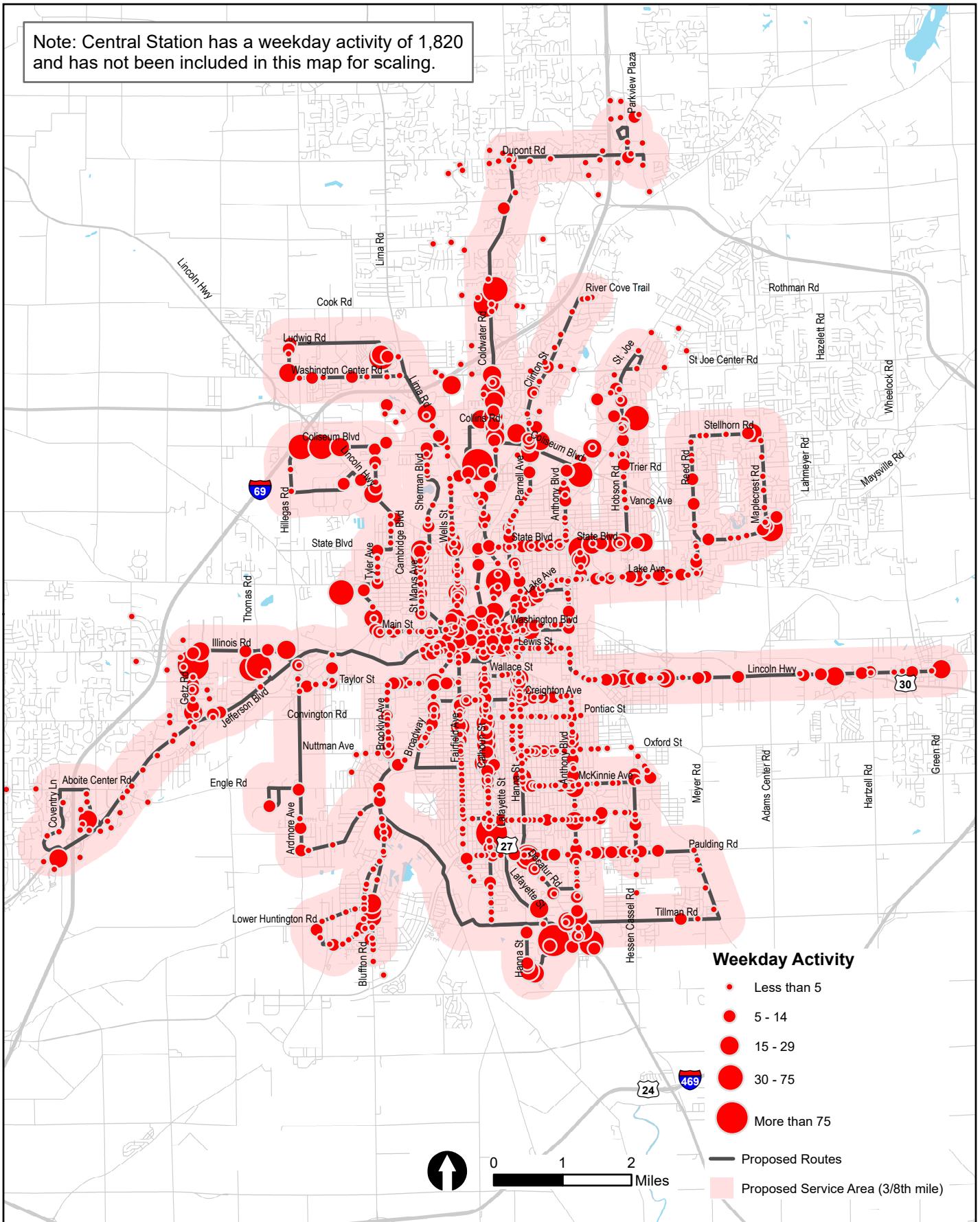
The Saturday map in Figure 17 shows the same pattern, with many of the large trip generators in the outer part of Fort Wayne.

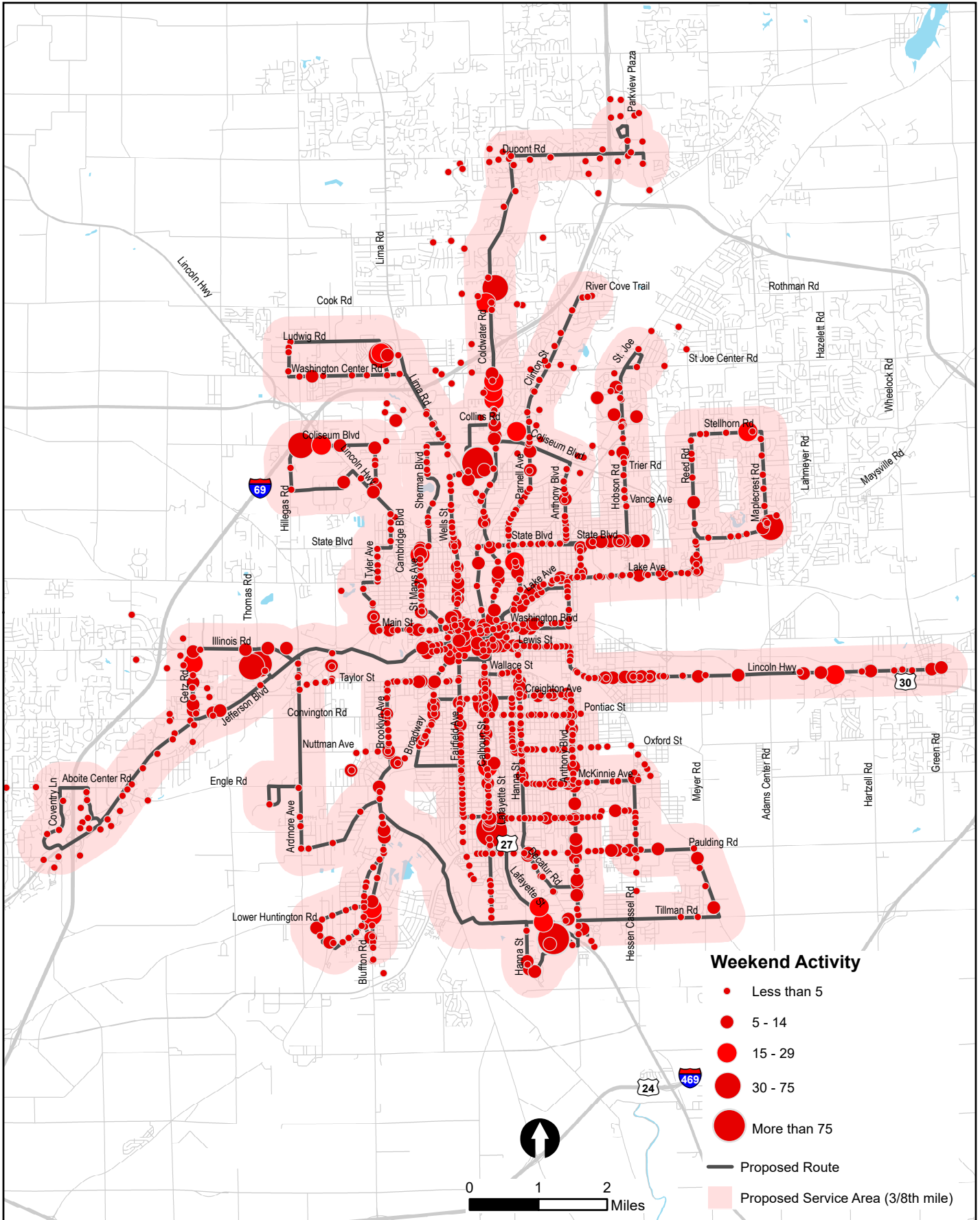
## **Route Level Analysis**

Citilink routes were ranked across ten productivity categories spanning ridership, economic, and financial metrics. Table 21 shows the ranking for the weekday routes. Overall, the ten core routes are more productive than the non-Central Station routes. The top-ranking routes (in order) are Route 3, 2, 8, 6, and 10. These routes tend to perform well across multiple categories. While Routes 3 and 6 are middle of the pack when it comes to ridership productivity these routes make it up with their higher economic and financial rankings.



Note: Central Station has a weekday activity of 1,820 and has not been included in this map for scaling.





One other noteworthy finding is the revenue per rider category. Routes 2 and 8 rank near the bottom, despite doing well in nearly all other categories. This may be because of subsidized fares on these routes. Also interesting is the high rank of Route 15 which is due to the financial arrangement with Parkview Hospital.

Table 22 presents Saturday rankings. Routes 2, 8, and 10 continue to do well. Routes 3 and 6, however, have dropped down the list, replaced with Routes 7 and 4. Route 7 ranks highly in productivity despite having a lower Saturday ridership ranking than on weekdays. However, it does well on economic and financial productivities, which moves it up the list.

Productivity benchmarks were established to determine which routes are under performing relative to the standard. Each benchmark was established by taking the route average and then subtracting (or adding) one standard deviation of the dataset. For example, the average riders per revenue hour is 12.1, while the standard deviation is 7.3. Thus, the riders per revenue hour benchmark is 4.7.

Two benchmarks were calculated – one for core routes and one for all routes. The reasoning is that the non-downtown routes are clearly the lowest performing routes in the network. By focusing the evaluation on core routes, we can better see which ones are underperforming.

Routes were graded to see which ones fall below the benchmark, as shown in Table 23. Green cells are routes that fall below the core route benchmark. Blue cells are routes that fall below the all routes benchmark. The table shows that the non-downtown routes routinely fall below the established benchmark. The table also shows that Route 5 is the lowest performing of the core routes. In addition, Figure 18 shows the route productivity based on riders per revenue hour.

Saturday routes were also evaluated using the same methodology as weekday. The results are shown in Table 24. As the table indicates, Route 5 is also the lowest performing Saturday route.

**Table 21. Route Rankings for Weekday (Weekday) Network**

Route No	Route Name	Average Overall Rank	Service Productivity			Economic Productivity			Financial Productivity			
			Wkday Riders/ Rev Hr	Wkday Riders/ Rev Mi	Wkday Rider/ Trip	Wkday Riders/ Rev Hr	Wkday Riders/ Rev Mi	Wkday Rider/ Trip	Wkday Revenue/ Rider	Wkday Cost/ Rider	Wkday Recovery Ratio	Wkday Subsidy Ratio
3	Canterbury-Village Woods	3.4	5	5	5	2	1	1	5	4	2	4
2	Time Corners - Georgetown	3.5	1	1	1	4	6	2	12	1	6	1
8	Glenbrook/Northrup/ Calhoun/Tillman Rd	4.0	2	2	2	6	5	4	11	2	4	2
6	Franke Park - McKinnie	5.2	8	3	6	5	2	3	6	7	5	7
10	New Haven	5.2	3	6	8	1	3	8	4	8	3	8
7	Anthony via Oxford	5.4	7	7	9	3	4	9	3	6	1	5
4	Wells Ludwig - Parkview	5.9	4	4	4	9	8	7	10	3	7	3
9	Brooklyn/Taylor/St Francis/Gateway	6.8	6	8	3	8	9	5	9	5	9	6
1	Waynedale - Northcrest	7.9	9	9	7	7	7	6	8	9	8	9
5	Southeast Local	9.4	10	12	10	10	10	10	2	10	10	10
22	West Jefferson - Lutheran Hospital	11.6	11	11	11	12	12	12	13	11	12	11
21	Glenbrook - Dupont (Flexlink)	11.7	13	14	13	11	11	11	7	13	11	13
15	MedLink	12.8	15	15	15	13	13	13	1	15	13	15
97	Cougar Express	12.8	12	10	12	14	14	14	14	12	14	12
98	CampusLink	14.4	14	13	14	15	15	15	15	14	15	14

Note: CampusLink figures represent 2017 Route - September 2018 CampusLink operations transferred to CTN.

**Table 22. Route Rankings for Saturday (SAT) Network**

Route No.	Route Name	Service Productivity			Economic Productivity			Financial Productivity				
		Average Overall Rank	SAT Riders/ Rev Hr	SAT Riders/ Rev Mi	SAT Rider/ Trip	SAT Riders/ Rev Hr	SAT Riders/ Rev Mi	SAT Rider/ Trip	SAT Revenue/ Rider	SAT Cost/ Rider	SAT Recovery Ratio	SAT Subsidy Ratio
8	Glenbrook/Northrup/ Calhoun/Tillman Rd	1.9	1	1	1	1	1	1	10	1	1	1
2	Time Corners - Georgetown	3.5	2	2	2	4	6	2	9	2	4	2
7	Anthony via Oxford	3.8	3	4	8	2	2	7	2	4	2	4
4	Wells Ludwig - Parkview	3.9	5	3	3	5	4	3	7	3	3	3
10	New Haven	5.5	4	5	9	3	3	9	5	6	5	6
3	Canterbury - Village Woods	6.4	8	7	6	6	7	4	4	8	6	8
1	Waynedale - Northcrest	6.8	6	6	4	9	8	8	8	5	9	5
6	Franke Park - McKinnie	6.9	9	8	7	7	5	5	3	9	7	9
9	Brooklyn/Taylor/St Francis/Gateway	7.2	7	9	5	8	9	6	6	7	8	7
5	Southeast Local	9.1	10	10	10	10	10	10	1	10	10	10

**Table 23. Weekday Route Level Productivity Benchmarks**

Route	Service Productivity			Economic Productivity			Financial Productivity			
	Riders/Rev Hour	Riders/Revenue Mile	Riders/Trip	Revenue/Revenue Hour	Income/Revenue Mile	Revenue/Trip	Revenue/Rider	Cost/Rider	Recovery Ratio	Subsidy/Rider
1	14.6	1.05	14.0	\$7.02	\$0.51	\$6.74	\$0.48	\$6.71	7.2%	\$6.23
2	24.8	1.74	25.5	\$7.76	\$0.54	\$7.97	\$0.31	\$3.92	8.0%	\$3.60
3	16.3	1.14	15.7	\$8.82	\$0.62	\$8.51	\$0.54	\$6.03	9.0%	\$5.49
4	16.9	1.20	16.3	\$6.68	\$0.48	\$6.43	\$0.40	\$5.43	7.3%	\$5.04
5	6.7	0.38	3.0	\$3.95	\$0.22	\$1.74	\$0.59	\$18.61	3.2%	\$18.03
6	14.9	1.21	15.1	\$7.64	\$0.62	\$7.72	\$0.51	\$6.31	8.1%	\$5.80
7	15.7	1.08	8.0	\$8.81	\$0.60	\$4.50	\$0.56	\$6.24	9.0%	\$5.68
8	20.0	1.55	20.9	\$7.03	\$0.55	\$7.33	\$0.35	\$4.31	8.1%	\$3.96
9	16.1	1.06	16.3	\$6.87	\$0.45	\$6.95	\$0.43	\$6.15	6.9%	\$5.72
10	17.9	1.12	9.0	\$9.80	\$0.61	\$4.90	\$0.55	\$6.57	8.3%	\$6.03
15	1.6	0.08	0.8	\$1.19	\$0.06	\$0.59	\$0.76	\$94.74	0.8%	\$93.98
21	3.5	0.23	1.8	\$1.73	\$0.12	\$0.86	\$0.49	\$33.84	1.5%	\$33.34
22	5.6	0.48	2.7	\$1.33	\$0.11	\$0.65	\$0.24	\$19.88	1.2%	\$19.64
97	3.9	0.61	2.0	\$0.01	\$0.00	\$0.00	\$0.00	\$30.33	0.0%	\$30.32
98	2.6	0.29	1.0	\$0.00	\$0.00	\$0.00	\$0.00	\$42.62	0.0%	\$42.62
Average	12.1	0.88	10.1	\$5.24	\$0.37	\$4.33	\$0.41	\$19.45	5.2%	\$19.03
Benchmark (core routes)	11.9	0.80	7.9	\$5.84	\$0.40	\$4.24	\$0.38	\$11.21	5.8%	\$10.68
Benchmark (all routes)	4.7	0.38	2.0	\$1.76	\$0.12	\$1.03	\$0.20	\$43.69	1.6%	\$43.25

Note: Green cells are under performing as compared to the core route benchmark. Blue cells are underperforming as compared to the all route benchmark.

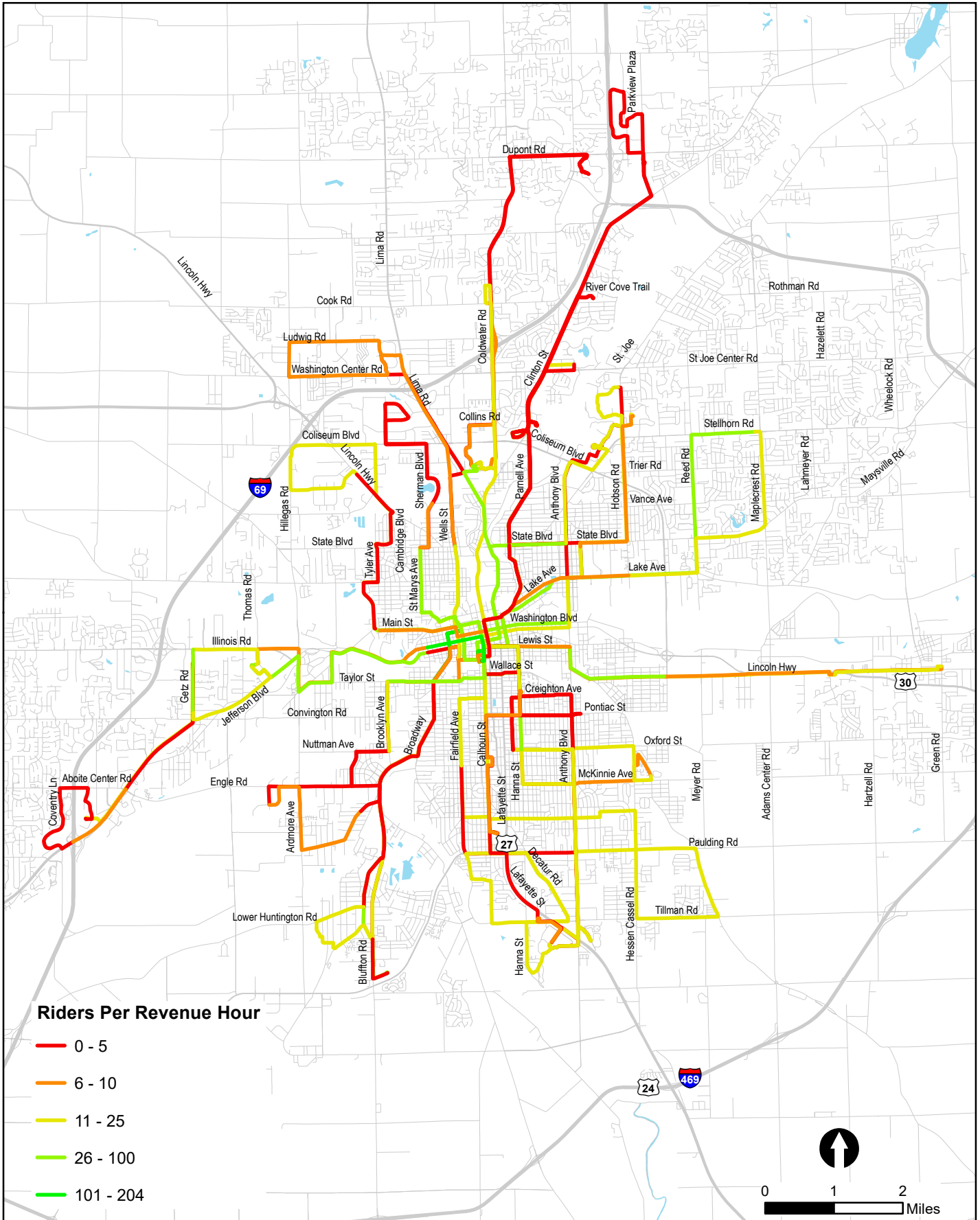
Note: CampusLink figures represent 2017 Route - September 2018 CampusLink operations transferred to CTN.

**Table 24. Saturday Route Level Productivity Benchmarks**

Route	Service Productivity			Economic Productivity			Financial Productivity			
	Riders/ Rev Hour	Riders/ Rev Mile	Riders/ Trip	Revenue/ Rev Hour	Revenue/ Rev Mile	Revenue/ Trip	Revenue/ Rider	Cost/ Rider	Recovery Ratio	Subsidy/ Rider
1	11.4	0.9	24.1	\$5.15	\$0.41	\$10.89	\$0.45	\$8.95	5%	\$8.50
2	17.6	1.3	37.0	\$6.54	\$0.47	\$13.74	\$0.37	\$5.93	6%	\$5.56
3	10.1	0.8	20.7	\$5.95	\$0.44	\$12.20	\$0.59	\$10.32	6%	\$9.73
4	14.2	1.1	29.8	\$6.48	\$0.50	\$13.60	\$0.46	\$7.23	6%	\$6.78
5	4.6	0.3	4.6	\$3.59	\$0.23	\$3.59	\$0.78	\$29.17	3%	\$28.39
6	8.8	0.7	18.4	\$5.62	\$0.47	\$11.80	\$0.64	\$11.52	6%	\$10.88
7	14.9	1.1	16.4	\$10.08	\$0.74	\$11.09	\$0.68	\$8.46	8%	\$7.78
8	28.4	2.2	59.7	\$10.36	\$0.81	\$21.75	\$0.36	\$3.61	10%	\$3.24
9	10.9	0.7	21.7	\$5.61	\$0.37	\$11.23	\$0.52	\$9.97	5%	\$9.45
10	14.4	0.9	15.1	\$8.02	\$0.53	\$8.42	\$0.56	\$9.13	6%	\$8.57
15	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-
97	-	-	-	-	-	-	-	-	-	-
98	-	-	-	-	-	-	-	-	-	-
Average	13.5	1.0	24.8	\$6.74	\$0.50	\$11.83	\$0.54	\$10.43	6%	\$9.89
Benchmark (core routes)	7.1	0.5	9.7	\$4.59	\$0.33	\$7.28	\$0.41	\$17.40	4%	\$16.75

Note: Green cells are under performing as compared to the core route benchmark. No routes were underperforming as compared to the all route benchmark.  
 Note: CampusLink figures represent 2017 Route - September 2018 CampusLink operations transferred to CTN.







## Route Profiles

Appendix 1. Existing Route Profiles includes succinct information for each route showing the following information:

- Route Map
- Span of Service
- Frequency
- Peak Buses
- Operating Characteristics
  - One-Way Trips
  - Revenue Hours
  - Revenue Miles
- On-time Performance
  - Weekday Outbound
  - Weekday Inbound
  - Saturday Outbound
  - Saturday Inbound
- Service Productivity for Weekday and Saturday
  - Average Daily Riders
  - Riders/Revenue Hour
  - Riders/Revenue Mile
  - Riders/One-Way Trip
- Financial Performance for Weekday and Saturday
  - Daily Operating Cost
  - Cost/Rider
  - Farebox Recovery Ratio
  - Subsidy/Rider
- Economic Productivity for Weekday and Saturday
  - Average Daily Revenue
  - Revenue/Revenue Hour
  - Revenue/Revenue Mile
  - Revenue/One-Way Trip

## Paratransit – Citilink Access Analysis

Citilink operates paratransit service ‘Citilink Access’ Monday through Friday 5:45 a.m. to 9:30 p.m. and on Saturdays 7:45 a.m. to 6:15 p.m. Citilink Access serves the needs of customers:

- Who are unable to use Citilink’s fixed route network due to their disability.
- Who meet the eligibility criteria established for the origin to destination paratransit service.

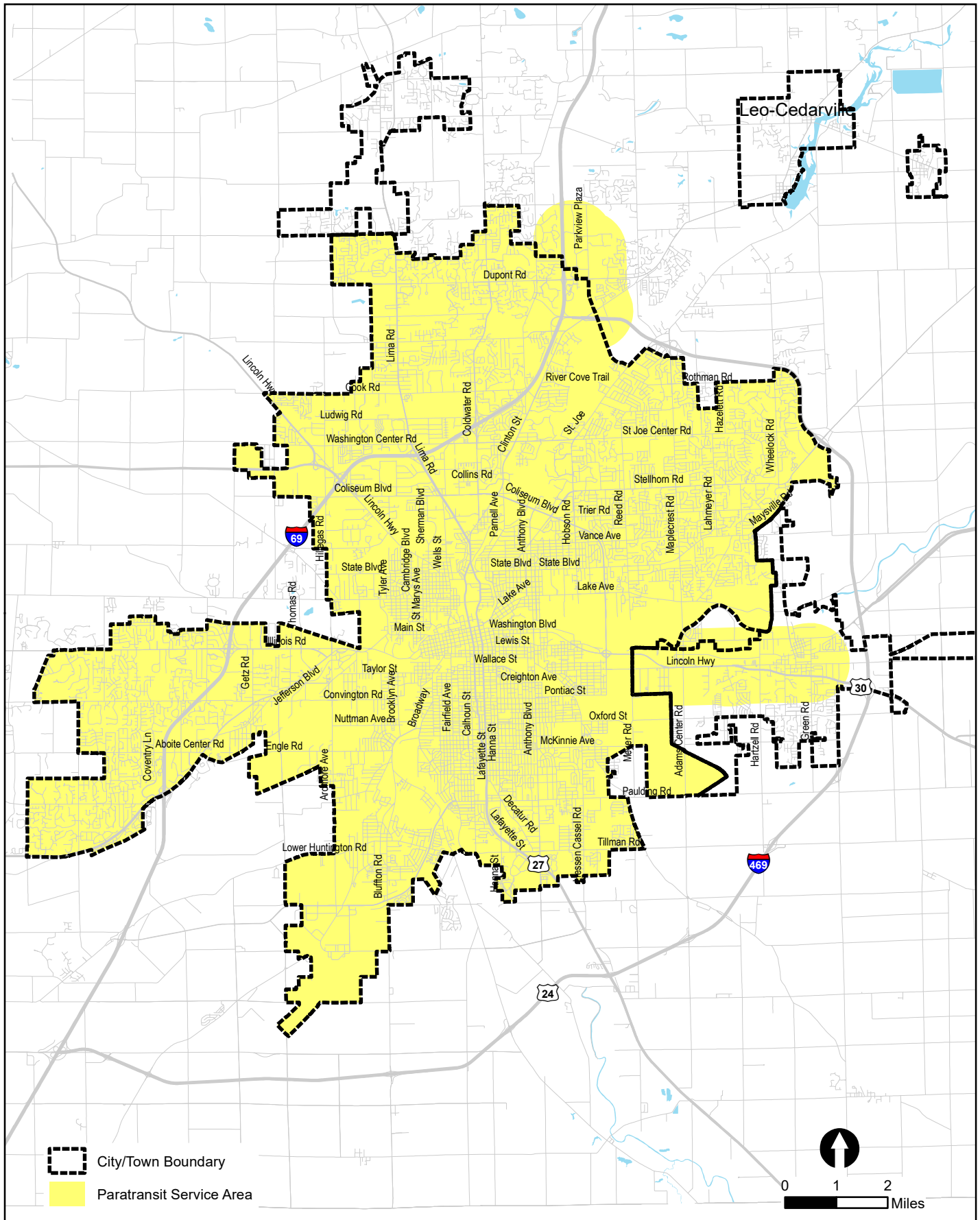
Figure 19 shows the service area for Citilink Access. Citilink Access serves areas within the Fort Wayne city limits and within 3/4-mile of Route 10 in New Haven and the Route 15 (MedLink) to Parkview Regional Medical Center. Service vehicles include 26-foot Chevy Titan II model buses equipped with wheelchair lifts.

On weekdays, Citilink Access is busiest during 7 – 9 a.m. and 1:30 – 4 pm. The fare for one-way trip is \$2.50 and trips need to be scheduled by 5 p.m. the day before and as early as 14 days in advance. As shown in Table 25:

- Citilink Access was on-time more than 97 percent of the time (the standard was 95 percent).
- The cost per trip went down by 3.3 percent from \$26.03 in 2016 to \$25.18 in 2017. A reason for the slight decline includes software improvements that have increased the number of passengers per vehicle. The Citilink guideline for cost is \$28 or less per trip.
- The ‘free access trips on fixed-route’ went up by 6 percent from 2015 to 2016 but reduced by 3.5 percent in 2017.
- The farebox revenue rose by about 28 percent and ridership increased by 23 percent from 2015 to 2017.

**Table 25. Citilink Access Performance Measures 2015-2017**

	2015	2016	2017
On-time Performance	97.59%	97.36%	97.31%
Cost/Trip	\$26.03	\$26.18	\$25.18
Free Access Trips on Fixed Route	20,490	21,729	20,960
Farebox Revenue	\$146,206	\$155,916	\$186,735
Passenger Trips	58,271	63,091	71,489

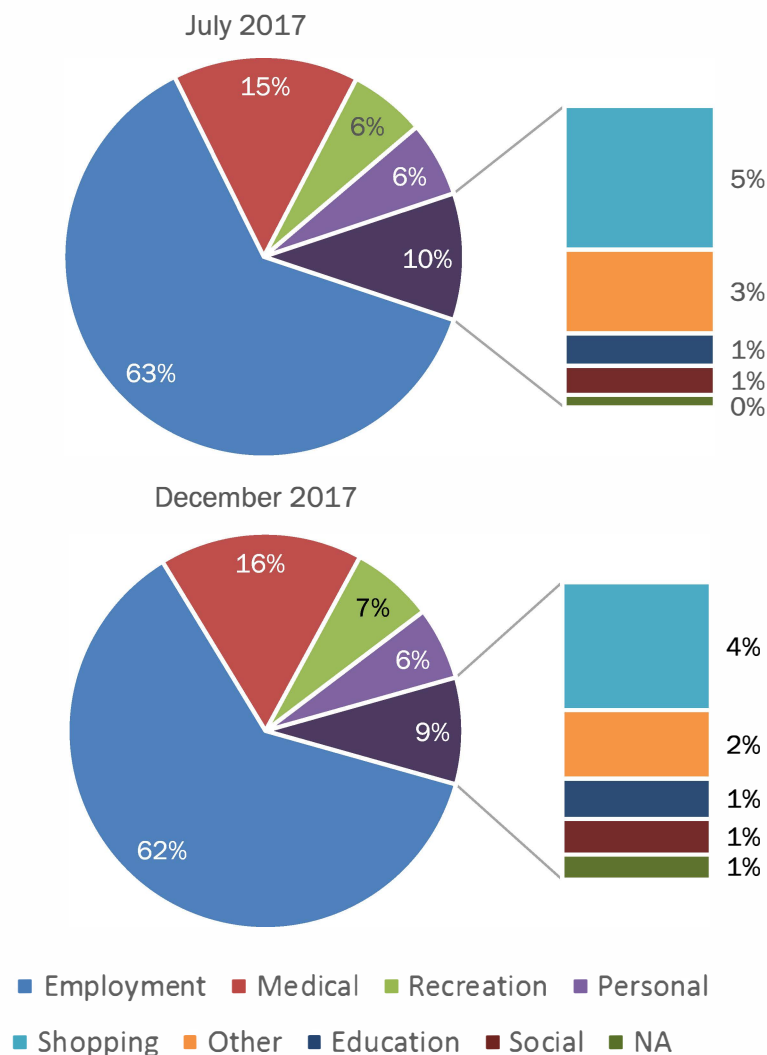


**Figure 19**

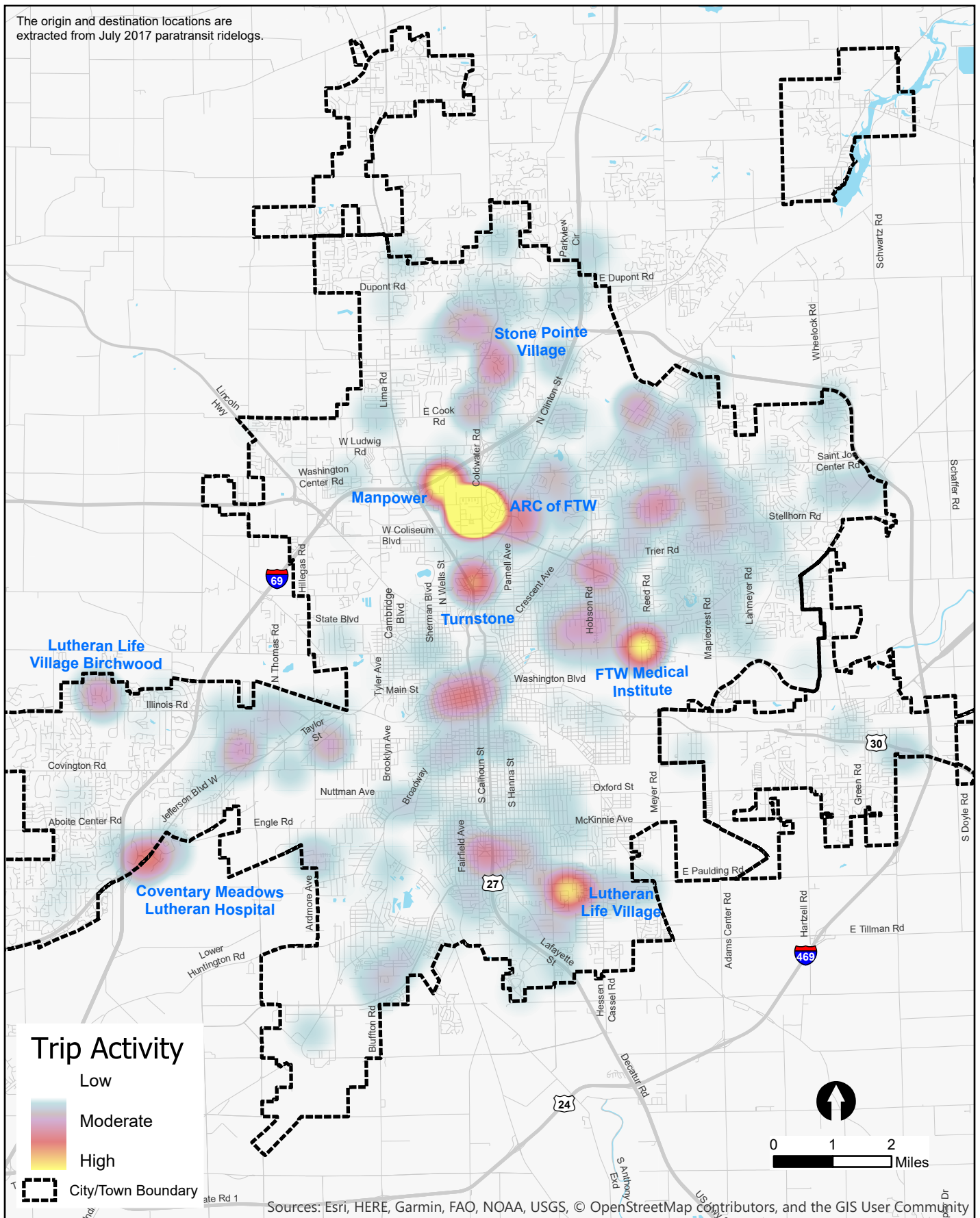
Based on the ride logs from July 2017, of the total 5,454 paratransit trips, 15 percent were medical trips and 62.5 percent were employment related trips serving 342 unique customers. In December 2017, of the total 5,189 trips, 16.6 percent trips were medical trips and 61.9 percent were employment related trips serving 342 unique customers. Figure 20 shows the distribution of all trip purposes in July and December of 2017. The distribution of trip purposes is fairly similar between the 2 months. Figure 21 displays key customer origin/destination locations and intensity of activity for April 2017. Key activity areas include:

- ARC of Fort Wayne
- Fort Wayne Medical Institute
- Stone Pointe Village
- Manpower
- Lutheran Life Village
- Coventry Meadows

**Figure 20. Citilink Access Trip Purpose Distribution**



The origin and destination locations are extracted from July 2017 paratransit ride logs.



# Peer System Comparison

## Introduction

This section presents a peer analysis, comparing Citilink to similar systems. Data for the peer analyses herein were taken from the 2017 National Transit Database (NTD) summary reports for fixed route service, the last full year for which data on all the peer systems is available.

## Peer Group Selection

Peers are defined as cities with similar service area population size and density. It should be noted that agencies likely comprise different organizational structures and different funding sources, characteristics which are excluded from this peer selection. Based on 2017 NTD data, Citilink has a service area population of 313,500 and a service area population density of 1,823 people per square mile. The 2013 Bus Fort Wayne Plan included a peer comparison and was the source of peer metropolitan areas. An exception was made to the Bus Fort Wayne peer list to remove Durham, North Carolina from the list. While Durham reflects a similar population, the level of transit service provided deviates substantially from Citilink and other areas in the peer group. Table 26 documents the key population characteristics of the identified peers.

**Table 26. Peer Group Comparison Characteristics – Population, Density and Vehicles**

City	State	Service Area Population	Service Area (Sq. Miles)	Population Density (Persons/ Sq Mile)	Vehicles For Peak Service
Savannah, GA	GA	260,677	165	1,580	76
Greensboro, NC	NC	311,810	185	1,685	83
Lubbock, TX	TX	237,356	96	2,472	88
Lincoln, NE	NE	258,719	88	2,940	63
Evansville, IN	IN	229,351	119	1,927	35
Rockford, IL	IL	296,863	153	1,940	51
South Bend, IN	IN	278,165	161	1,728	48
Wichita, KS	KS	382,386	215	1,779	65
Fort Wayne, IN	IN	268,485	172	1,561	43
AVERAGES		252,381	154	1,761	61

## Peer Group Analysis

This section compares Citilink's 2017 operating performance to that of the peer systems. Table 27 presents an overview of Citilink and the peer group's service characteristics. Data presented on this table is divided into:

- Operational metrics, which are systemwide measures of the level of service provided.
- Service Efficiency – Measures of what is returned on the investment.

Outlined below are findings from the peer assessment:

- With a logical peer group of metropolitan areas of comparable size and similar population density, there is a substantial range in the level of service provided. The level of service provided in Fort Wayne is in the lower quarter of the group. Relative to this investment into service, Citilink returns a greater than expected level of productivity (boardings per hour). The level is still slightly below average, but relative to how much service is provided (measured revenue hours and revenue miles), Citilink is closer to the peer average on riders per increment of service than would be expected.
- The amount of service put on the street in Fort Wayne is less than the average for peers. Measuring the amount of service as vehicle revenue miles and revenue hours, Fort Wayne has 17 to 18 percent less service than the peers.
- The Fort Wayne community invests less into transit service on a per capita basis than the peer group on average. In 2017, the peer group averaged an investment of \$50.15 per capita to the \$47.13 per capita for Fort Wayne.
- The cost per revenue hour of service in Fort Wayne is more than the average for the peer group. As there is a wide range in the investment, the higher end investment peers were removed (Savannah, Greensboro and Lubbock). The resulting comparison showed Fort Wayne is very competitive with those peers in a similar level of investment pool. One conclusion from this assessment is there are certain fixed costs to providing service (building costs and administration costs are examples) that are relatively constant no matter the level of service provided. These costs tend to influence the smaller provider overall costs more than in larger agencies in the peer group.
- Farebox recovery data for the peer is skewed by Lubbock, Texas, where the recovery ratio is 38 percent of total cost. Student fees support fare free transit rides in Lubbock, and the payment from the university is counted as farebox revenue, which increases the farebox recovery percentage. Remove Lubbock from the metric assessment and Fort Wayne's recovery is only two percent lower than the average, or essentially comparable to the peer group.

**Table 27. Peer Group Service Metrics Comparison**

Characteristic	Peer Value/ Group Average	Ft Wayne Value	Percent Difference
<b>Operational Metrics</b>			
Vehicles Operational in Maximum Service	64	43	-31.7%
Vehicle Revenue Miles	2,375,200	1,965,900	-17.2%
Vehicle Revenue Hours	172,300	140,400	-18.5%
Unlinked Passenger Trips	2,446,600	1,780,700	-27.2%
Total Passenger Miles	7,619,900	6,104,600	-19.9%
Operating Expenses	\$13,964,600	\$12,653,600	-9.4%
Transit Investment Per Capita	\$50.15	\$47.13	-6.0%
Revenue Hours per Capita	0.62	0.52	-16.2%
<b>Service Efficiency</b>			
Farebox Recovery Ratio	17.9%	13.1%	-26.7%
Subsidy per Passenger	\$5.25	\$6.18	17.5%
Passengers per Revenue Mile	1.02	0.91	-11.2%
Passengers per Revenue Hour	13.89	12.68	-8.7%
Operating Expenses per Revenue Hour	\$81.91	\$90.13	10.0%



# Community Engagement

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Five main engagement efforts were conducted as part of the TDP outreach plan: On-board survey, community survey, Citilink Access Rider Survey, public meetings and stakeholder interviews. The following sub-sections summarize the information gathered during each engagement effort.

## On-Board Rider Survey

This section includes a summary of the on-board passenger survey results prepared by SRF Consulting Group, Inc. on behalf of Fort Wayne Public Transportation Corporation (dba Citilink). The on-board survey was conducted on the Citilink fixed route system in March-April 2018 in fulfillment of Title VI regulations (49 CFR part 21)<sup>1</sup> of the Federal Transit Administration (FTA). Detailed summary of the on-board survey is included as Appendix 2. On-Board Survey Summary.

The on-board survey provides Citilink with information on passenger origins and destinations, demographics, satisfaction with the services and preferences for service expansion. The survey is a part of the customer engagement efforts for developing a Transit Development Plan (TDP) for Citilink.

SRF designed the survey instrument and AJM & Associates were responsible for: printing and fielding the survey, data-entry of the survey data to prepare electronic database, providing cleaned survey database to SRF. The survey effort generated 611 valid survey responses.

## Survey Instrument and Schedule

The survey consisted of 24 questions in simple, easy to understand language. The questions collected the required information from riders while keeping the survey short. The survey collected information on a trip's origin and destination, trip purpose, and bus transfer information. Demographic questions asked about the passenger's vehicles in the household, income, age, race, and gender. The survey further asked about the passenger experience, and which potential destinations would be preferred by the riders.

The survey, included in the appendix, was designed in 11 X 17 inch tri-folded paper format and spanned 6 days from March 26<sup>th</sup> to March 30<sup>th</sup> and on April 10<sup>th</sup>. All surveys had a serial number to serve as a unique identifier of the survey response.

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<sup>1</sup> Title VI analysis is required by FTA to ensure that transit service in a particular area do not result in a disparate impact on the basis of race, color, or national origin (Circular: FTA C 4702.1B)

## Trip Purpose Summary

Based on Question 1 of the survey about origin type, 72 percent of the origins were home locations and 8 percent were work locations. On the other hand, based on question 7 about destination type, 42 percent of the destinations were work locations. Moreover, if we define trip type by location type at either origin or destination, out of the total 611 transit trips recorded in the survey, there were 485 (79 percent) home trips<sup>2</sup>, 266 (44 percent) work trips and 76 (12 percent) medical trips. Table 28 shows the trip type details based on each location type.

**Table 28. Number of Trips by Trip Type<sup>3</sup>**

	Number of Trips	Percent
Home trips	485	79%
Work Trips	266	44%
Non-home Trips	126	21%
Non-home and Non-Work trips	93	15%
Medical Trips	76	12%
College or University Trips	36	6%
School Trips	44	7%
Personal/Social/Recreation Trips	41	7%
Shopping Trips	59	10%
Other Trips	96	16%

## Ingress and Egress Mode and Transfer Summary

Survey included questions on ingress and egress mode of transportation. Majority of respondents (93 percent) indicated walk/wheelchair/ other devices as their mode to and/or from the bus stop. It is important to note than about 67 percent respondents had no access to vehicles in the household and 22 percent had only one vehicle in the household.

About 70 percent of the respondents transferred to another bus on the Citilink system. Out of the 70 percent, 32 percent transferred once while 21 percent transferred twice. Route 8 was indicated the greatest number of times for transfers.

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<sup>2</sup> Home trips are defined as trips indicating a home location for either the origin OR the destination type. Work trips, medical trips, school trips, etc. used in Table 26 are also defined similarly.

<sup>3</sup> Trip type is defined by location type at either origin or destination. For example, a home trip is a trip with home location as either the origin OR the destination

## Socio-Demographic Characteristics Summary

About 60 percent respondents belonged to a 1 or 2-person household and more than 50 percent respondents had a household income of less than \$25,000. About 20 percent respondents were 25-34 years old and 34 percent were 35-54 years old. The race/ethnicity of about half of the respondents was Black/ African American, 44 percent were White Non-Hispanic and about 10 percent were others including Hispanic, Asian and American Indian.

## Citilink-Use Characteristics and Rider Perception Summary

Table 29 shows the summary of rider’s perception and Citilink use characteristics.

**Table 29. Summary of Rider Transit-Use and Perception**

<b>Duration of Use</b>	More than half of the respondents had been using Citilink for more than 3 years
<b>Frequency of Use</b>	62 percent used Citilink for 5 or more days per week.
<b>Fare Payment</b>	90 percent of the respondents used cash fare, all-day pass or 31-day pass (divided equally) to pay for their rides.
<b>Technology Use</b>	More than 30 percent used Citilink’s website and Route Watch while 20 percent used Route Shout and 16 percent used Token Transit.
<b>Experience and Preference</b>	<p>Majority of respondents agreed to:</p> <ul style="list-style-type: none"> <li>• Buses being clean and on-time</li> <li>• Schedule information being easily accessible</li> <li>• Citilink taking them where and when they need to go someplace and being safe and easy to transfer</li> <li>• Drivers being friendly and helpful</li> <li>• Bus stops being easily accessible for pedestrians/bike.</li> </ul> <p>More than a quarter of the respondents ‘Did not Agree’ with buses being on-time and clean.</p>

## Community Survey

This section includes a summary of the community survey prepared by SRF Consulting Group, Inc. on behalf of Citilink. The community survey gathered input from Fort Wayne area residents for developing the Citilink TDP.

A detailed summary of the community survey results is included as Appendix 3. Community Survey Summary.

## Survey Instrument, Schedule and Responses

The community survey consisted of 11 questions about Citilink’s service and suggestions for improvement. The survey was designed in both online and paper format for maximum

outreach and was open from May 20<sup>th</sup> to July 12<sup>th</sup> of 2018. The survey generated 496 valid survey responses.

### **Citilink Awareness, Use and Access**

The respondents were divided equally on their opinion about accessing destinations they want to go to. About 47 percent indicated that there are destinations that they or their family members need access to but cannot due to lack of transportation.

About 70 percent of respondents were aware of the Citilink's services and had used Citilink in the past.

### **Citilink Improvement Preferences**

Respondents were asked to rank Citilink improvements by importance and serving new destinations was selected as the most important followed by early/late service hours and more frequency service on weekdays.

### **Primary Mode of Transportation**

For all trip purposes, personal vehicle was used by most respondents but 25 percent or more respondents indicated using transit as the transportation mode. Respondents used personal vehicle the least for social/recreational trips while using Taxi/Uber or Lyft more than other trip purposes.

### **Barriers to Taking Transit**

The most indicated barrier (for about 60 percent respondents) was service taking too long or schedule not convenient while stops not being convenient was at second spot with 45 percent respondents selecting it.

## **Citilink Access Rider Survey**

This section includes a summary of the Citilink Access rider survey (referred as Access survey) prepared by SRF Consulting Group, Inc. on behalf of Citilink. The Access survey gathered input from Fort Wayne area paratransit riders for developing the Citilink TDP.

A detailed summary of the Access survey results is included as Appendix 4. Access Survey Summary.

### **Survey Instrument, Schedule and Responses**

The Access survey consisted of 7 questions about Citilink's service and suggestions for improvement. The survey was designed in paper format and was open from June 18-20, 2018. The outreach effort included Rider Alert and survey was distributed to everyone riding Access during the survey period. Since the survey primarily included preference questions,

riders were asked to complete the survey only once even if they rode Access multiple times during the survey period.

The survey generated 171 valid survey responses. The survey population includes approximately 600 Access riders (July and December 2017 ride-logs included 428 unique riders). At 95 percent confidence level, the sample size is at 6.3 percent confidence interval.

## Rider Characteristics Summary

Table 30 shows the summary of rider perceptions and Access rider characteristics.

**Table 30. Summary of Rider Characteristics and Perceptions about Citilink Access**

<b>Duration of Use</b>	68 percent respondents had been using Citilink Access for more than 2 years
<b>Frequency of Use</b>	63 percent used Citilink Access Daily (Monday through Friday)
<b>Use of Fixed Route Service</b>	<p>About 20 percent of the rider sample used fixed route services for a variety of reasons. Some of the reasons include:</p> <ul style="list-style-type: none"> <li>• Option to ride fare free on fixed route</li> <li>• To access destinations not currently served by Access</li> <li>• To stay active and for trip purpose of volunteering</li> <li>• To save money</li> <li>• Convenient or close to home/destination fixed route bus stop location</li> </ul>
<b>Access Improvements</b>	<p>The survey asked respondents to indicate the single most important improvement that they would like to make to Access service.</p> <ul style="list-style-type: none"> <li>• Most respondents (51 percent of the 140 responses) indicated ‘add more vehicles between 6 am and 6 pm’.</li> <li>• More than 20 percent indicated to ‘improve electronic communication’ and ‘operate earlier or later’.</li> <li>• About 19 percent marked ‘other’ as their response and provide an open-ended comment on the improvement they would like to see. Most open-ended responses included improvements like service available on Sunday, more comfortable buses, better communication of pick-up times between rider and driver especially for medical trips and driver training.</li> </ul>
<b>User Perception</b>	<p>More than 80 percent of the respondents agreed to:</p> <ul style="list-style-type: none"> <li>• Buses being clean and on-time</li> <li>• Schedule information being easily accessible</li> <li>• Citilink Access taking them where and when they need to go someplace and being safe</li> <li>• Drivers, schedulers and dispatchers being friendly and helpful</li> <li>• Fares being affordable</li> </ul>

## Public Meetings

In each stage of completing the COA and preparing the TDP, a unique series of public meetings were conducted as a combination of presentation, open house and opportunities for gathering stakeholder input. Public meetings were advertised through the Citilink, City of Fort Wayne and NIRCC websites and social media platforms, as well as press releases through Citilink outlets.

### Round One – Public Meetings

Initial public meetings were conducted on July 25 and 26, 2018 and were focused on:

- Introducing the work elements of the COA and the TDP.
- Summarizing input received through the on-board survey.
- Reviewing findings of the comprehensive operations analysis.

Two meetings were held over a two-period, including:

- Presentation and open house at Fort Wayne Urban League
- Presentation and open house Allan County Public Library (downtown)

At each meeting people in attendance were asked to provide input to the following questions:

- What are things Citilink does well?
- What are areas where Citilink could improve.
- Where are locations you would like to go on Citilink, but cannot?

### Round Two – Public Meetings

The primary focus of the second round of outreach meetings on November 12 through 14, 2018 was to gather input on the initial Revenue Neutral option and a range of service enhancement options associated with alternate increased funding options.

Meetings were held at the following locations:

- Central Station: 3:00 PM to 5:00 PM, which represents the peak afternoon transit ridership period.
- Turnstone Athletic Center: 6:00 PM to 7:30 PM.
- Central Station: 8:00 AM to 10:00 AM, which represents the morning peak travel period.

In addition to the public meetings, presentations of the initial concepts were made at the regularly scheduled Southwest Partnership and Northeast Partnership meetings.

## Round Three – Public Meetings

The final round of public information meetings presented the recommended plan and provided opportunity for comment on the plan over four meetings over December 10 and 11, 2019. Presented at the meetings were the proposed Revenue Neutral alternative, implementation steps to the recommended plan and potential service improvements if additional funding could be identified.

Meetings were held at the following locations:

- Central Station: December 10, 2019 - Noon to 1:30 PM. Open house where staff was available to discuss the recommended plan.
- Allen County Public Library (downtown): December 10, 2019 – 5:30 to 7:00 PM. Presentation of the plan and open house discussion.
- Central Station: December 11, 2019 - Noon to 1:30 PM. Open house where staff was available to discuss the recommended plan.
- Allen County Public Library – Shawnee Branch: December 11, 2019 – 5:30 to 7:00 PM. Presentation of the plan and open house discussion.

Summary of public meetings is included as Appendix 5. Public Meetings Summary.

## Stakeholder Interviews

Working with Citilink staff, community leaders/stakeholders were identified and asked to be a part of the transit plan outreach by participating in an interview regarding their experience with Citilink services. Interviews included the following groups:

- Fort Wayne Mayor’s Office
- City of New Haven Mayor’s Office
- Downtown Improvement District
- Allen County
- Community Development
- Homeless Task Force
- Fort Wayne City Council
- New Haven Planning and Public Works
- Greater Fort Wayne
- Fort Wayne Urban League
- Ivy Tech

Table 31 summarizes key input received through the interviews completed by phone in June and July 2018 and is organized by the questions asked of each person.

**Table 31. Input Received through Stakeholders Interviews**

Question	Summary of Responses
What is your experience with Citilink?	<p>All participants are aware of the services Citilink provides.</p> <p>Few are regular or occasional riders.</p> <p>None of the persons interviewed were regular riders.</p>
What are Citilink's strengths?	<p>People – Citilink drivers and administration demonstrate interest in their customers.</p> <p>Community coverage.</p> <p>Access paratransit service – Without it, many have no other option.</p> <p>Level of accessibility provided to downtown.</p> <p>Use of technology (Google Maps, RouteShout, Token Transit).</p>
Transportation/Mobility gaps in region (Including with Citilink)	<p>Access to second or third shift jobs – Citilink hours are too short to assist.</p> <p>Citilink - No Sunday service.</p> <p>There are parts of the community that do not have transit service but need it.</p> <p>North end of town – Few routes and little service (lots of medical activity).</p> <p>Level of service in southwest – Not enough.</p> <p>Incomplete pedestrian network connectivity to transit.</p>
How do you see transit/Citilink helping to fill these gaps	<p>Without public transit, many would not be able to make it to medical visits, work, or even get to the grocery store.</p> <p>Provide opportunities for people to get ahead by providing access to education.</p> <p>Transit can be an economic development catalyst</p> <p>Supporting economic development on fringe (if there is enough density).</p>
What do you see as the obstacles to providing service?	<p>Perception that Citilink services are just for those that cannot afford a car.</p> <p>Money – There is never enough money and Citilink competes with other community needs.</p> <p>Adding revenue is very difficult – tax restrictions/circuit breakers.</p> <p>Citilink essentially restricted to operating in Fort Wayne (unless local funds come from outside city tax funds).</p> <p>Ability to find qualified applicants – Low unemployment in sectors Citilink competes.</p> <p>Citilink's ability to show increase in ridership to support argument to increase funding.</p>
What must transit/Citilink accomplish to be successful?	<p>Find ways to attract people that use transit as a choice, not out of necessity.</p> <p>Extend services to other parts of town.</p> <p>Provide added service types.</p> <p>Increase partnerships with private sector and others.</p> <p>Increase ridership.</p> <p>Provide a downtown circulator.</p> <p>Be a part of bold actions in city (bold action examples: downtown ballpark, landbank alliance, Riverfront Park)</p> <p>Enhance convenience (more competitive with auto).</p>



# Fort Wayne Public Transit Goals

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Transit system goals, objectives, and service performance measures combine to create the foundation for Citilink today and into the future. This foundation establishes direction for the agency and outlines how to measure progress. Goals define a longer-term purpose for Citilink and community partners to work toward, while objectives provide additional details and targets of how the goal will be achieved. The objectives presented encompass a combination of more immediate actions that can be implemented within the current budget and those that require longer-term actions to be fully implemented.

Goals, objectives and performance measures for the 2019 Comprehensive Operations Analysis and Transit Development Plan integrate content from the 2010 Transit Development Plan, the 2013 Bus Fort Wayne Plan and information gathered through public outreach completed as part of the current planning effort. Defining 2019 Transit Development Plan goals and objectives incorporated input from the following:

- The community survey completed over a month from mid-June to mid-July 2018. As part of the Internet-based survey, respondents were asked what services and/or service change (improvements) are most important. Responses to the questions formed input to refining goals and objectives.
- 2010 Transit Development Plan goals and objectives. While the plan is over 10 years old, community values and needs remain relatively consistent. Central in the 2010 plan goals were to assess the effectiveness of the system and develop a plan that reflects community needs, community priorities and affordability to the community.
- 2013 Bus Fort Wayne Plan. The primary goal promoted through the plan was to lay a foundation to grow and improve Citilink services. By improving service, connectivity across the community would be enhanced and promote a positive perception of transit.

The following sections provide added detail regarding input from each of the sources highlighted above and is followed by goals and objectives forming the foundation of the work and products of the 2019 process.

## Community Survey - 2018

Over the month from mid-June to mid-July 2018, Fort Wayne residents were asked through an Internet-based survey to provide input regarding their awareness and use of Citilink services. Over the month the survey was open, 496 responses were received. Key information gathered through the survey is highlighted below:

- Most respondents (71 percent) are aware of Citilink service.
- Most respondents (70 percent) were Citilink customers.

- Potential changes/improvements to Citilink services noted most by respondents and identified as most important were:
  - Serve new destinations/areas of the community.
  - Operate earlier and/or later in the day.
  - Provide service on Sunday.
  - Provide more frequent service (less time between buses).
- Barriers non-users identified to choosing to ride were:
  - Trips take too long (not convenient enough relative to other options).
  - Stops are not convenient to trip origins and/or destinations.
  - Respondents do not understand how to use the system.

Responses to desired changes and reasons for not using Citilink service were integrated into the 2019 plan goals and objectives.

## **2010 Transit Development Plan Goals and Objectives**

The 2010 update process yielding the transit development plan was intended to document how service progressed from the previous planning period (2004) and current (2010) community sentiment regarding service. Consistent with the 2019 funding environment, the 2010 plan was developed with the assumption that the 2010 revenue hour budget would not substantially increase going forward. Goals and objectives guiding the 2010 plan were:

- Goal 1: Examine effectiveness of Citilink as a provider of mobility services in Greater Fort Wayne:
  - Analyze service effectiveness
  - Analyze service interaction and integration
- Goal 2: Develop community-based service and strategic plan:
  - Offer opportunities for comprehensive public input
  - Utilize survey data for service recommendations
  - Match service recommendations to local needs
  - Examine 10-year timeframe for service recommendations
- Goal 3: Establish Citilink as a key resource within the Fort Wayne transportation market:
  - Consider alternative service delivery methods
  - Identify unmet needs and methods to address these needs
  - Address desired increase in market share

- Goal 4: Provide sensible, implementable service alternatives
  - Recognize fiscal and regulatory limits and issues
  - Match recommendations to stated needs
  - Develop strategic approach to long-range planning

## **2013 Bus Fort Wayne Plan Goals**

The Bus Fort Wayne Plan included a primary goal and three specific goals to support improving public transportation as a key element of a well-balanced transportation system. As part of the plan, several action steps or policies were developed corresponding to each specific goal. Documented below are the primary goal and each of the focus area goals. These goals retain their pertinence and inform the 2019 TDP process.

- Primary Goal – Bus Fort Wayne Plan – Lay the foundation to grow and improve the community’s public transit systems in order to increase public transit ridership, and to establish public transit as a viable, preferred transportation choice.
- Goal 1: Public Transit Network and Services – Enhance and maintain the public transportation network and levels of services to increase ridership and connectivity within the community.”
- Goal 2: Education and Outreach – Promote and encourage a positive perception of public transit services that results in broader transit use in the community.
- Goal 3: Legislation – Encourage and support legislation and policy adoption that enables the implementation of the Bus Fort Wayne Plan.

## **Goals for the 2019 Transit Development Plan**

Presented in the Existing Conditions section are the annual expenditures for fixed route and paratransit service for the last five years. Over this period expenditures on fixed route, the service transporting most people, has stagnated and since 2015 has declined each year. Examination of current local, state and federal funding environments concluded little support or opportunity without structural change to funding methods for increasing funding beyond the current level. Current conditions influencing opportunities for the future include:

- Federal funding: Funds are allocated based on a combination of ridership and miles relative to other systems across the country. While ridership on the Citilink system has declined in the last years, bus transit ridership nationally has also declined. As funding levels are recalculated each year based on ridership, revenue miles and revenue hours relative to other systems, it is difficult to state whether federal funds in the future will be higher or lower than current levels.

- State funding: The Public Mass Transit Fund (PMTF) has increased by \$1.8 million since 2015 from \$42.2 million to \$44 million in 2018. Over this period, the number of agencies drawing from this fund has increased from 63 to 64 agencies. Additionally, the PMTF is a discretionary fund, which means there is not a dedicated source to ensure future funding. The combination of little growth and the fund being discretionary, there is not an expectation increased funding in at least the near term.
- Local funding: In the period from 2014 to 2017 local funding has remained stable at approximately \$6 million. Over the period, the annual change has been less than \$200,000.

Thus, the fundamental Citilink expectation for the near future was to identify opportunities to build resiliency against service reductions by reducing/eliminating redundant service and reducing in-vehicle time. These efforts provide opportunity to identify revenue hours that could be reassigned to more productive parts of the system and to build support for Citilink.

Goals and objectives for the 2019 transit development plan are documented in Table 32. Performance measures represent metrics that allow Citilink to monitor how well the Transit Development Plan goals are being met and how service conditions change over time. Table 32 documents performance measures and targets Citilink has established for monitoring service.

**Table 32. Citilink Goals, Objectives and Performance Measures**

Goals	Objectives	Performance Measures
<b>Goal 1: Provide an effective public transportation system that supports Fort Wayne economic growth and vitality.</b>		
	<ul style="list-style-type: none"> <li>• Integrate transit availability/need for service questions into the Fort Wayne/Allen County Site Plan Review Requirements.</li> <li>• Develop and implement a process for review and comment of city plans (comprehensive, development and roadway) to improve and raise awareness of transit supportiveness.</li> <li>• Coordinate future local land development decisions with Citilink service plans.</li> <li>• Identify gaps in the current/proposed service areas relative to sidewalk, bicycle and multi-use path network.</li> <li>• Evaluate current and future Citilink funding capacity for operations.</li> <li>• Work with local and State Representatives to identify new or increase current funding sources.</li> <li>• Identify new or expand current funding partnerships.</li> <li>• Update marketing materials to include quantified benefits of public transit service for use in discussion with new partners.</li> </ul>	<ul style="list-style-type: none"> <li>• Show reduction in sidewalk/bicycle and multi-use path gaps along bus routes each year.</li> <li>• Include transit service need and knowledge of questions in development review checklist.</li> <li>• Involve Citilink staff in long range planning processes for city and NIRCC.</li> <li>• Increase funding by 10%, which will allow implementation of new/expanded service.</li> <li>• Prepare a marketing packet to use in discussions with potential partners.</li> <li>• Meet the peer average for annual per capita transit investment (\$50.15).</li> </ul>
<b>GOAL 2: Continuously improve existing services and identify opportunities to expand service.</b>		
	<ul style="list-style-type: none"> <li>• Identify costs and develop service plans for:               <ul style="list-style-type: none"> <li>– Adding frequency to core routes</li> <li>– New service areas</li> <li>– More service days</li> <li>– New types of service (FlexZone)</li> </ul> </li> <li>• Continuously seek resources and partnerships to improve service and grow the system</li> <li>• Permanently implement current Automatic Passenger Counter (APC) pilot program.</li> <li>• Analyze the system performance to quantify current conditions relative to targets.</li> <li>• Analyze the system cost effectiveness to quantify current</li> </ul>	<ul style="list-style-type: none"> <li>• Balance revenue hours of service with operating budget.</li> <li>• On-Time Performance: 90% on-time for fixed route and 95% on-time for Access.</li> <li>• Cost per Revenue Hour: \$86.00 per hour for fixed route; \$29.00 per hour for Access.</li> <li>• Farebox Recovery: 11% (From 2019 Budget).</li> <li>• System productivity: 1.02 passenger/revenue mile (Average for peers).</li> <li>• System productivity: 13.89 passengers per revenue hour (Average for peers).</li> <li>• Shelter and Bench Placement: 20-25 riders per day at stops</li> </ul>

Goals	Objectives	Performance Measures
	<p>conditions relative to targets.</p> <ul style="list-style-type: none"> <li>• Identify opportunities that provide acceptable customer access to service using fewer resources.</li> <li>• Improve customer amenities (benches, shelters, information signage).</li> </ul>	
<b>Goal 3: Prioritize community education and outreach initiatives to ensure community support for service provision decisions and improve perceptions of and support for public transportation.</b>		
	<ul style="list-style-type: none"> <li>• Incorporate community input into decisions on service provided.</li> <li>• Provide a range of opportunities for users and non-users to provide input to the decision-making process.</li> <li>• Develop and implement a communication plan to inform and educate the public and business community on Citilink’s value.</li> <li>• Enhance marketing outreach efforts with civic organizations, employers and other community stakeholders.</li> <li>• Actively promote Citilink services by attending community events, fairs, and other relevant activities to engage with existing and potential riders.</li> <li>• Promote Citilink technology investments</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare an active marketing campaign to inform non-users about Citilink services and improve community perceptions of public transportation.</li> <li>• Conduct annual outreach and surveys of riders and the community to understand their needs and impression of Citilink.</li> <li>• Increase choice ridership from previous year (information gathered through monthly Bus Ride Evaluations).</li> <li>• Increase number of funding partners from previous year.</li> <li>• Improve each year perception input from community surveys/outreach.</li> </ul>
<b>Goal 4: Develop a capital program that maintains state of good repair and implements technologies to improve service/effectiveness.</b>		
	<ul style="list-style-type: none"> <li>• Develop an annually updated capital improvement program.</li> <li>• Replace vehicles according to established life cycles.</li> <li>• Seek grant funds to implement an electric bus pilot program.</li> <li>• Maintain vehicles and facilities in a state of good repair.</li> <li>• Coordinate with providers and peers to be current on transit industry technologies.</li> </ul>	<ul style="list-style-type: none"> <li>• Replace vehicles on FTA schedule based on vehicle type.</li> <li>• Annual Major Road Calls: &lt;35/year fixed route; &lt; 10/year Access.</li> <li>• Preventable Accidents: &lt;20/year fixed route; &lt;8/year Access.</li> <li>• Replace capital assets on FTA schedule based on asset type.</li> <li>• Maintain 20% spare ratio.</li> <li>• Implement new information technologies to enhance customer experience.</li> <li>• Implement technologies to enhance information gathering for required reporting and to support service adjustments.</li> </ul>

# Future Service Change Alternatives

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## Overview

Previous chapters document work of detailing current service, evaluating current service relative to a range of benchmarks and peers, and characterizing gaps that exist between services provided and what is need and/or can be sustained. The purpose of this chapter is to introduce alternatives with potential to be part of a coordinated plan to address unmet needs, support growth in the region, and provide a transit system that is sustainable within Citilink's budget constraints. Transit alternatives reviewed reflect a re-allocation of resources to improve system performance, to reduce redundant service, and to support needs identified through the following activities:

- Public Information Meetings and Stakeholder Discussions- The first round of public meetings (June 2018) included gathering information from participants about what is needed within the Citilink network to support travel demand associated with work, school, medical, and social trips. In addition, a series of working sessions were conducted with local planners, transit staff and transit board members in which a wide range of service concepts were discussed and reviewed as to how they can address needs and reflect the financial constraints present.
- Surveys – Current Citilink fixed routes and paratransit users were the focus of initial data gathering, including how they use the systems and their perceptions of the systems relative to travel needs, Additionally, an on-line community survey was conducted to gather input from riders and non-riders in the region.
- Interviews – Interviews were conducted with transit agency personnel, members of the Steering Committee, and community leaders to gather input on current service, unmet needs and opportunities in the future.
- Defining Transit Supportive Areas – Technical analyses conducted as part of the existing system assessment included reviewing development density throughout the region and reviewing network performance (route and segment level) relative to the density analysis. Part of the purpose of the development density analysis is to understand the transit operating environment and its impact on system performance.

As there is a finite budget for service it is critical connect where service is provided to where the customers are or may be located. For Citilink services, characteristics incorporated into service area prioritization include:

- Where development density (residential and employment-based developments) will support transit.
- Where populations most in need of public transportation live.

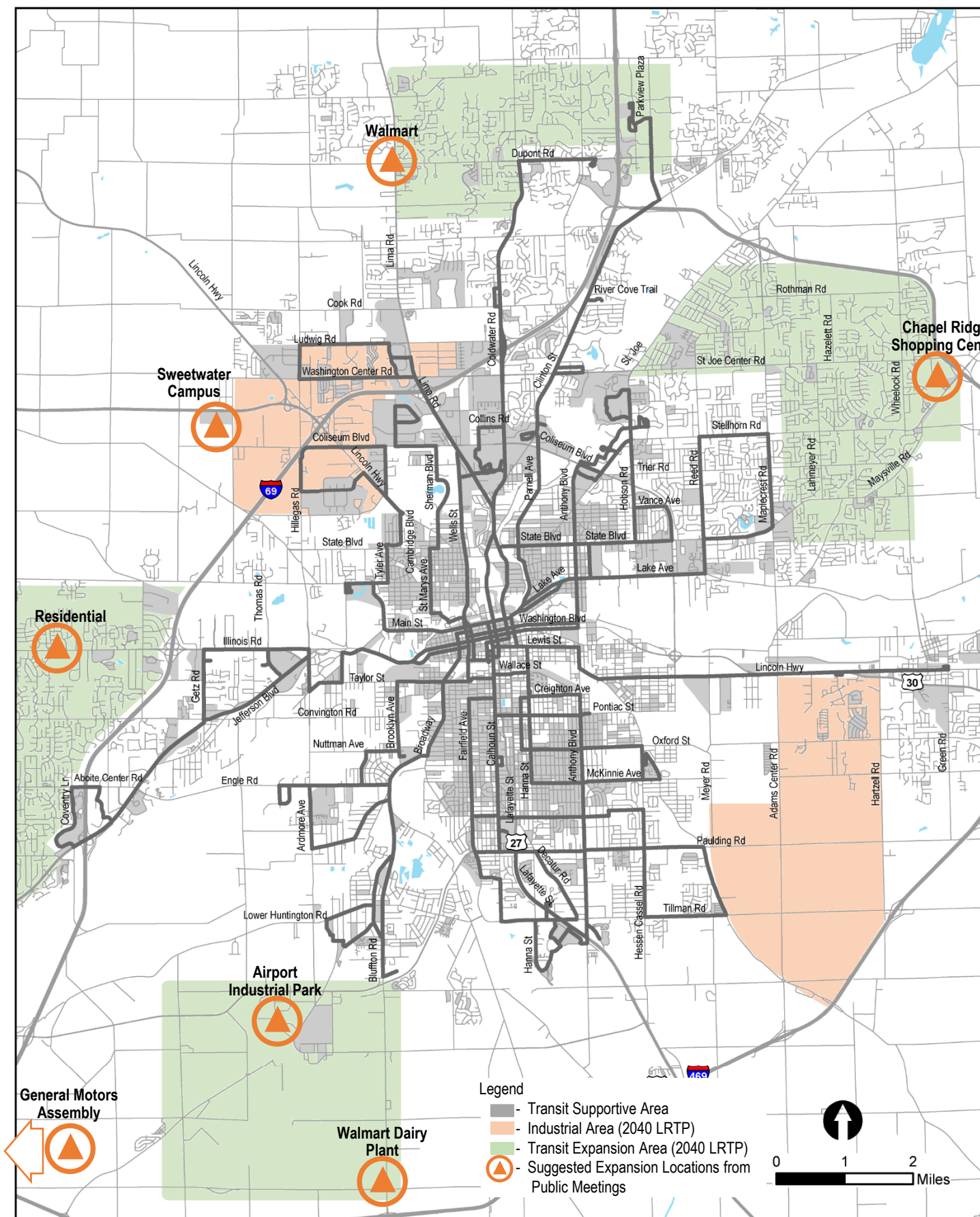
- Where key generators (large employment centers, grocery stores, medical centers) that support transit service are located.
- Path that best connect generators and transit supportive areas and provide the pedestrian infrastructure to connect origins and destinations with transit buses.

Types of proposed service changes include:

- Increases in service span. Increasing the span of service means that bus routes operate for more hours. Increasing the hours means that destinations are accessible to transit users for a longer portion of the day and that transit is a transportation option for more trips in the early morning, evening and late night.
- Enhancing service frequency on routes. Increasing the frequency, or number of buses per hour, improves convenience and increases capacity along a route. Shortening the time between buses makes the route more attractive and useful by reducing wait times at bus stops. Long waits, especially at night or in inclement weather, can be a barrier to using transit.
- Adding Sunday service. Many current riders getting to/from retail jobs also have work hours on Sundays. Not having service on Sundays hinders travel not only for people who desire or need transit to get to/from church, it negatively impacts the ability of transit dependent populations from getting to/from work or other social activities on Sundays.
- Extending routes or adding new routes. Extending a route or adding new routes are generally targeted to increasing the area served to include new residents and destinations. Route extensions also expand the overall area served by the transit network. This means that residents in other parts of the network can reach more places and people by transit. Potential future transit expansion areas were identified in the 2040 NIRCC Long Range Transportation Plan and are displayed in Figure 22.
- Relocating routes or route segments. In portions of the existing service area multiple routes share a similar path or are located in closely spaced parallel corridors. In other areas, routes travel through areas that do not generate ridership needed to defend the service investment. In these areas, current routes/paths were reviewed and where warranted, paths were modified to retain coverage to areas supporting service and relocated unproductive miles to areas likely to generate more use.

Each of the service improvements listed above that add revenue hours or miles of service will require increasing the Citilink operating budget if they are to be added systemwide. Limited changes, such as adding frequency to one existing route, could be made by making a similar scale reduction (measured in hours of service) elsewhere in the system. Benefits from these minor changes are likely to be isolated and were not considered in the alternatives development and review.





Enhancements in the category requiring funding increases are:

- Adding Sunday service
- Increasing service frequency
- Extending current routes or creating new routes
- Increasing service hours on weekdays or Saturday

Understanding that increasing operating and capital budgets for transit is a challenging task and understanding the need to address current service gaps and area productivity issues, two approaches to service modification recommendations were provided:

1. Revenue Neutral: This approach worked within the current revenue hour budget in allocation service. Adding service in the revenue neutral scenario required identifying logical and supported reductions in other routes or hours of service to provide the hours needed for the new service.
2. Revenue Enhancement: As the TDP is a future planning tool/process, developing a program where service should be added to best serve the community is central to the effort. With the plan, community leaders and transit advocates can understand the budget needs and work to identify additional funding for plan identified improvements.

## Revenue Neutral Alternative

Examination of the cost effectiveness of current service resulted in identification of several potential changes to the current service focused on improving performance without adding substantially to revenue miles and/or hours. This alternative was defined as the Revenue Neutral Alternative, which included changes in the following categories:

- Spacing Between Routes: General guidelines for spacing within and outside the central business district, as defined by the boundaries of the downtown core and Downtown Edge Zoning Districts are:
  - CBD: One-quarter mile
  - Outside CBD: one-half to one mile
- Direct Routes: Routes taking the most direct path between desired areas of the community generally provide the greatest convenience for riders, which generally translates to greater use. Establishing more direct, or straight, routes needs to balance potential travel time savings with providing reasonable access to trip generators. The concept was developed using the 3/8<sup>th</sup> mile acceptable walk between the route and trip generators. The result of creating more direct routes is generally a system that looks more intuitive as to which route to use in traveling from a specific origin to a specific destination.

A key benefit of direct routes is a shorter travel time for transit riders and improved on-

time performance, which with the pulsing hub-and-spoke network is critical to making timely transfers.

- **Equity in Access:** Removing service in areas, even if segments of the route are lightly used, should be done sparingly. Thus, in developing the Revenue Neutral Alternative the goal was to retain a similar walk access coverage if reasonable and increase the walk distance only in conditions where current productivity is well below average for the system. Most of these low productivity areas/segments are located at the outer reaches of routes where household and/or employment density is lower.

Changes to the current network associated with the proposed Revenue Neutral Alternative are outlined in Table 33.

**Table 33. Current Network to Cost Neutral Network Changes**

Route Designation		Change	Comments
Current	Proposed		
1	1/11	Eliminate McArthur Drive-Hickory Creek Drive-Lower Huntington Drive Loop	
2	8/16	Time Corners: Eliminate Taylor Street segment – Stay on Jefferson Boulevard-Illinois Road between Freeman Street and Ardmore Avenue.  Georgetown: Relocate Central Station access from Washington Boulevard-Wayne Street to Lewis Street.	
3	3	Relocate from Fairfield Avenue to Anthony Boulevard.	Pettit Avenue and Paulding Road from Fairfield Avenue to Anthony Boulevard would use New Route 4 or New Route 5.
4	8/9/14	Parkview: Access to Central Station via State Boulevard and Clinton Street and eliminate State Boulevard-Coliseum-Vance Avenue loop.  Lugwig: Relocate Central Station route from Wells Street to Sherman Boulevard-Saint Mary’s Street.  Extend to Cook Road and use Innovation Boulevard to return to Lugwig Road. Remove service to Huguenard Road.	

Route Designation		Change	Comments
Current	Proposed		
5	2/4	<p>Convert from Local (not accessing Central Station) to include hourly access.</p> <p>Relocate from Calhoun Street to Hanna Street and Anthony Street.</p> <p>Replace Lafayette Street-Tillman Road-Calhoun Street-Fairfield Avenue loop with New Route 4 and New Route 2 service.</p>	
6	3/5	<p>Eliminate Route 6 and replace coverage with a combination of New Routes 3, 5.</p> <p>Service to McKinnie Avenue-Hessen Cassel Road/Wayne Terrace-Oxford Street loop eliminated.</p>	Service area coverage (with exception of east of Anthony Boulevard segments) is similar with New Route 3 and New Route 5.
7	3/5	<p>Eliminate Route 7 current alignment and replace with combination of New Route 3 and New Route 5.</p>	Service area coverage is similar with New Route 3 and New Route 5.
8	4/5/7	<p>Glenbrook/Northrup: Relocate from Spy Run Avenue-Clinton Street to Wells Street.</p> <p>Calhoun/Tillman Road: Replace with New Route 4. Decatur Avenue segment replaced with New Route 5.</p>	Service area coverage is similar.
9	15	<p>Brooklyn/Taylor: Route removed and replaced with New Route 1. Ardmore Avenue-Sandpoint Road loop eliminated.</p> <p>St. Francis/Gateway: Little change.</p>	Relocated New Route 1 from Broadway Avenue to Brooklyn Avenue provides access to most active Route 9 stop locations.
10	10	No change.	
15	7/11/12	<p>Relocate from Clinton Street to Coldwater Road.</p> <p>Connect with Central Station from both Parkview Hospital (via New Routes 7 and 9) and Parkview Regional Medical Center (via New Route 7).</p> <p>No direct connection between Parkview Hospital and Parkview Regional Medical Center.</p>	Expectation is both medical facilities would benefit from improved access with connections to Central Station.

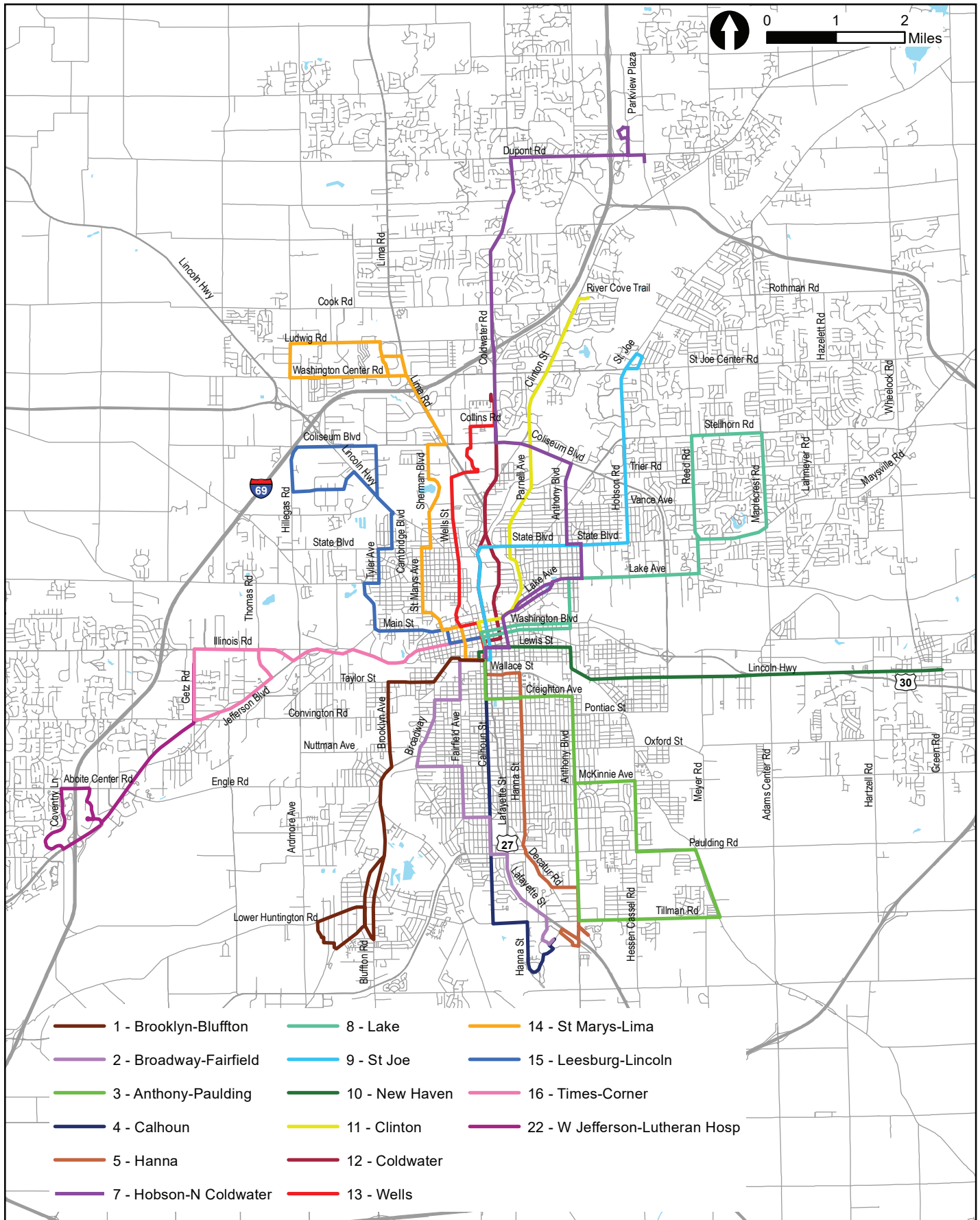
Route Designation		Change	Comments
Current	Proposed		
21	12	Replace with New Route 12 providing connections to Central Station and Parkview Regional Medical Center.	Current service area benefits by a direct connection to Central Station and all other routes as well as a one-seat trip to Parkview Regional Medical Center.
22	22	No change.	

Figure 23 displays the proposed Revenue Neutral/Short term route concept. A goal of the route refinement was to retain higher frequency service in the core of the community. Figure 24 displays the proposed service frequency of the revenue neutral alternatives.

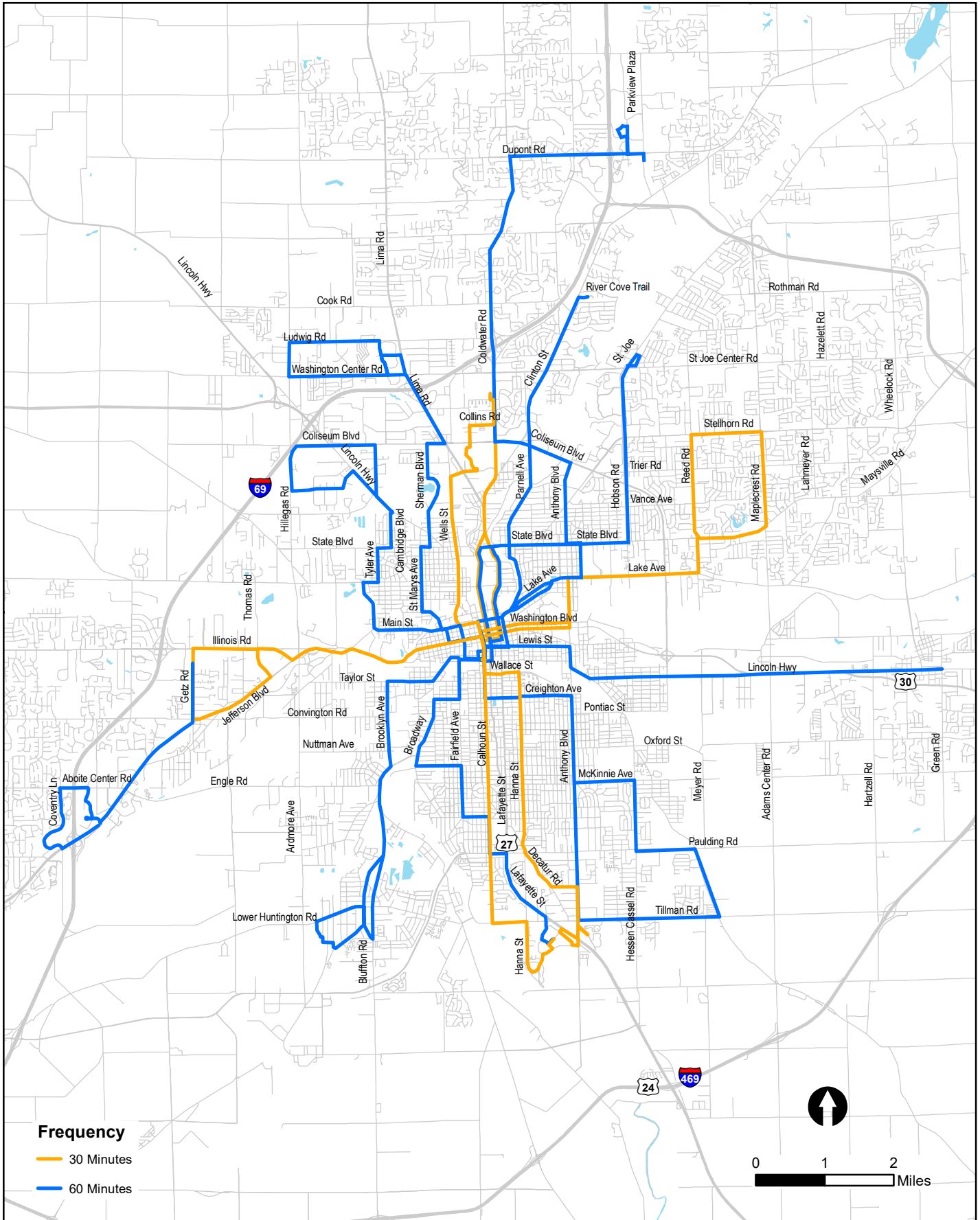
It is important in reviewing the concept to understand where significant changes to current service are located. Figure 25 documents areas that currently have walk access to service that would not if the Revenue Neutral Alternative is implemented. Most of these areas, while presently having reasonable walk access to service, represent low productivity segments of the system. The low return on the public investment is, in part, reason for eliminating service in these areas and re-allocating service hours/miles to areas with greater utilization potential.

Using boarding and alighting information from counts collected in March 2018 an analysis of the ridership from areas where service would be removed was completed. The results by route for the proposed Revenue Neutral Alternative are documented in Table 34. From this analysis the following were concluded:

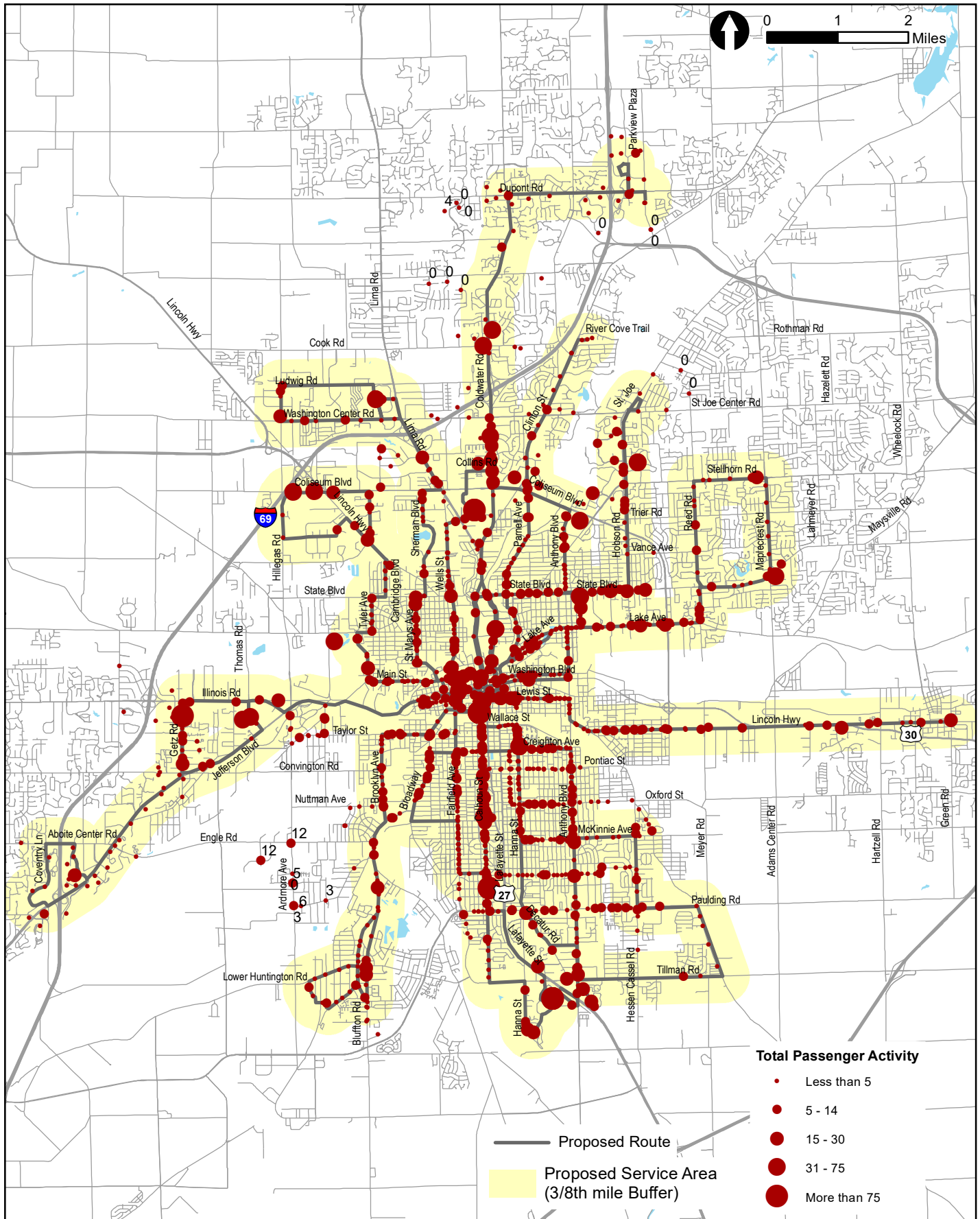
- Across the system: Approximately 45 weekday and nine Saturday boardings per day would no longer be within acceptable walk distance (3/8 mile) of a daily route, which represents less than one percent of daily ridership.
- Area of impact are:
  - Dupont Road-Coldwater Road: Approximately five stops are located in the area outside the 3/8 mile acceptable walk distance, however, most stops are not used on a daily basis. During the survey period, four boardings were observed at the highest activity stop and no boardings were observed at the other four stops.
  - Engle Road-Ardmore Avenue: Approximately 41 weekday and nine Saturday boarding on the current system would be outside the walk distance for the proposed Revenue Neutral Alternative.
- Relative to the entire affected route, areas outside the walk access area sum from 4.1 percent to 11.6 percent of the route total daily (weekday or Saturday) boardings.







**Figure 24**





**Table 34. Current Daily Ridership of Reduced Walk Access Service Areas**

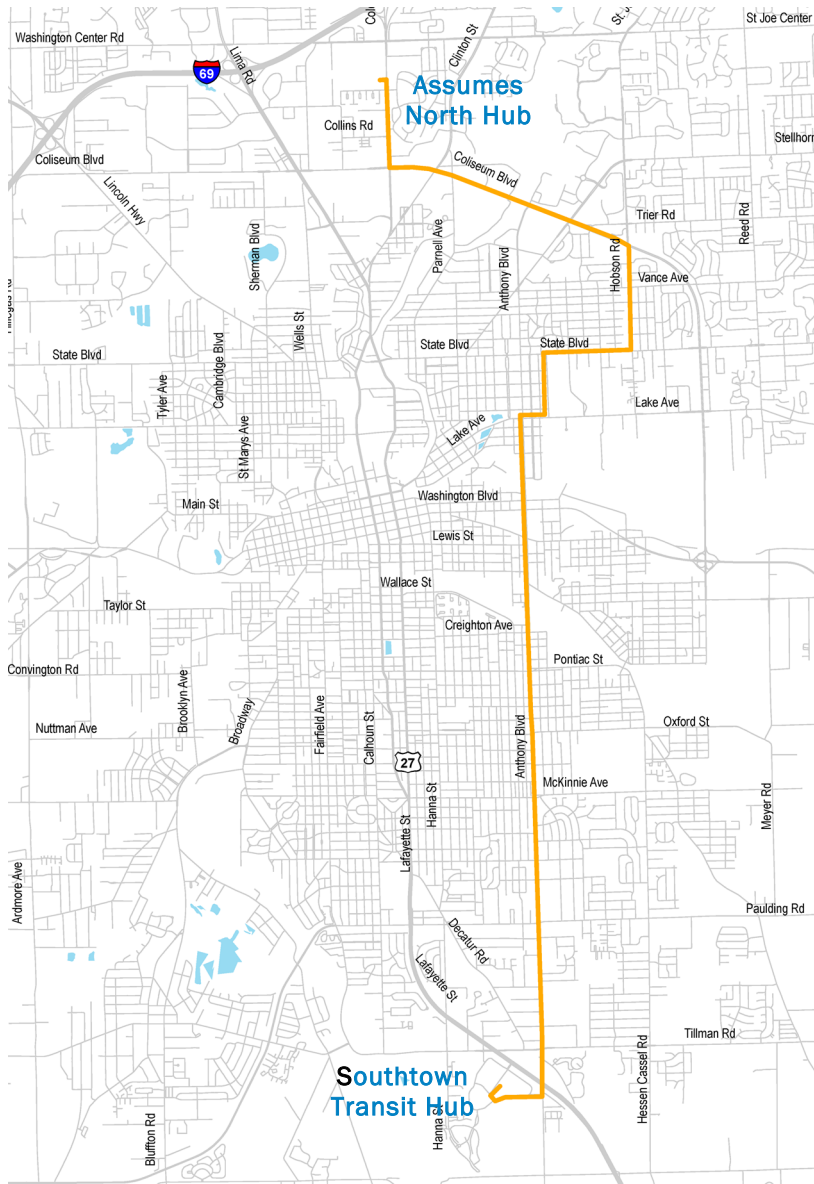
Current Route Number Area	Impact Area	Number of Daily Trips	
		Weekdays	Saturday
21	Dupont Road/Coldwater Road (Note – Rider current origin-destination is outside the 3/8 mile acceptable walk distance)	4	0
9	Engle Road-Ardmore Avenue	41	9

### Options for Revenue Neutral Hours Surplus

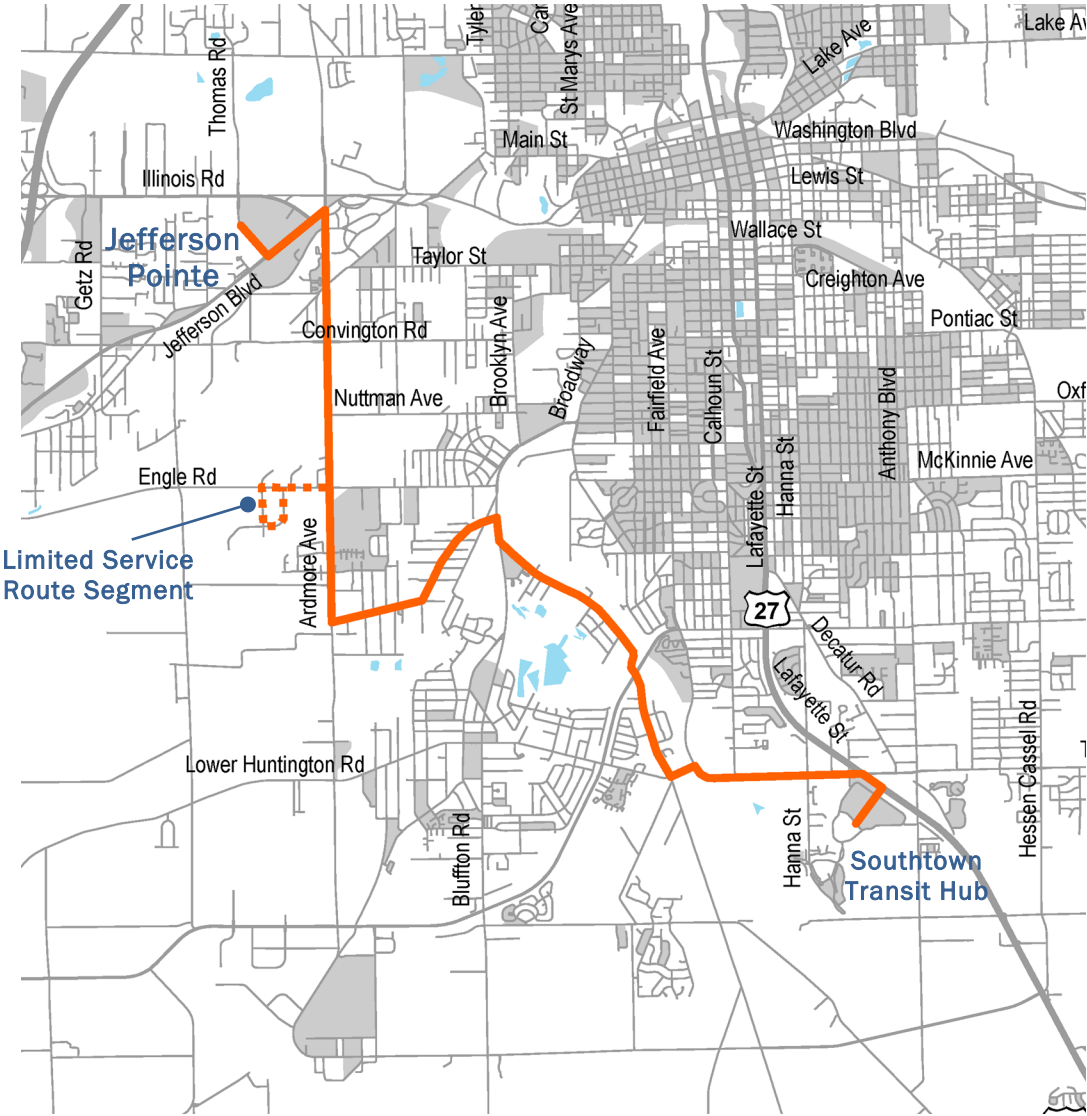
Implementation of the route changes associated with the Revenue Neutral Alternative results in an overall savings of approximately 25 daily revenue hours of service. Listed below are a range of options for use of the increment saved:

- Retain the hours as a reserve: Utilize the hours identified to address anticipated future cost increases that exceed the anticipated increase in transit funding. Over the last five to six years transit operating funding has stagnated while the cost of each revenue hour and/or revenue mile of service has increased. The budget has been balanced through making smaller incremental adjustments to service, however this process is not sustainable into the future. By placing the small increment of hours or miles into an operating reserve, Citilink will have bank to draw from as hourly and per mile costs likely continue to escalate on in the future.
- Develop a new route: The increment of revenue hours and miles saved through implementation of the Revenue Neutral Alternative is adequate to allow Citilink to create ONE 60-minute frequency new route. As part of the analysis, two route concepts were developed:
  - Anthony Crosstown: Figure 26 displays the conceptual Anthony Crosstown route, which would operate from Southtown Centre to Coliseum Boulevard/Coldwater Road primarily along a spine of Anthony Boulevard. The route is characterized as a crosstown as it does not travel through Central Station. A complementary element of this route was development of a new North Transit Hub along Coldwater Road between Coliseum Boulevard and Washington Center Road.
  - Jefferson Pointe to Southtown Centre: The proposed Revenue Neutral concept results in a reduction in service to customers in the vicinity of Ardmore Avenue and Engle Road. Using the reserve of hours identified through implementation of the Revenue Neutral concept would allow an additional 60-minute route between Jefferson Pointe Shopping Center and Southtown Centre through the the Ardmore Avenue and Engle Road corridors. Figure 27 displays the route alignment.

**Figure 26. Conceptual Anthony Crosstown Route**



**Figure 27. Conceptual Jefferson Pointe Shopping Center to Southtown Centre Route**



- Establish flexible zone: A new service type, flex zone service, could be provided in areas that presently do not have service or in an area that could have service removed as part of the Revenue Neutral concept. More information regarding the flexible zone concept is provided in the next section.
- Convert one 60-minute route to 30-minute service. The anticipated cost reduction of the Revenue Neutral Alternative yields the revenue hours and vehicle required to allow one additional route to operate on a 30-minute frequency.
- Expand daily service hours: The increment of revenue hours saved through the Revenue Neutral concept would support adding three hours of service Monday through Friday to

up to six routes. It is recommended that if this option is selected, routes serving retail areas be targeted for the added hours.

## Flex Route Service Concept

Currently in the Citilink service area there are two operating concepts:

- Fixed route service arranged around a group of core routes connecting at Central Station and FlexLink routes that extend service from a core route.
- Paratransit (Access) service providing curb-to-curb service to persons that cannot use fixed route service.

Early in the process of completing the Comprehensive Operations Analysis, fixed route transit supportive areas of the region were identified based on development density. Development density estimates for Fort Wayne characterized as being able to support fixed route service are:

- Residential development with more than four dwelling per acre.
- Employment areas with more than five persons per acre.

These densities were measured at the census block level and are identified in Figure 11. Critical to assessing service, particularly, service expansion is not only specific developments that meet the threshold of transit supportive, but also the percent coverage in areas of transit supportive densities. Small pockets of higher density development in fringe areas provide opportunity for discussing fixed route service, but without coverage of more than 50 percent of the area with transit supportive density development, fixed route productivity will be low.

Missing the threshold for being supportive for fixed route service should not preclude the opportunity for some level of transit service. An option many metros have implemented to serve lower density areas that include nodes of higher density development is referred to as flex service. Flex service (flexible service) is characterized as:

1. More demand-responsive than conventional fixed-route, fixed-stop services.
2. May not provide the kind of door-to-door service associated with taxis and paratransit.

Flex route service is able to take into account local factors of acceptable density, demand and locally acceptable cost factors that are balanced to meet passenger needs, operational requirements, and cost-effectiveness. This diversity in local preference in service inputs and desires, a number of different types of flex service, each with its own characteristics, have evolved. The range is documented below:

- Deviated fixed route: The bus operates along a predefined route (fixed route) with a regular schedule, but can also deviate from the route to accommodate requests for “off-route” drop-offs or pick-ups. Typically, the number of deviations per run is limited and

advance reservations for deviation service are required. Some services allow deviations anywhere within the city limits or other defined zone, while others permit deviations only with a given distance of the route (often  $\frac{3}{4}$  mile).

- Flexible-route segments: The route is designed as a fixed route, but allows “flex” capability for limited portions of the route.
- Demand-responsive connector: The bus serves as a feeder to/from the fixed route network. It accommodates service requests within its service area, but only going to/from a predefined transfer point. There are no other defined stops within the flex zone area. In a typical situation, the service is designed to connect a residential neighborhood with a nearby transit stop in situations where conventional service is not cost-effective or practical.
- Point deviation: The bus operates within a defined geographic zone and accommodates requests for service within the zone, while also making a limited number of fixed stops. However, there is no defined route between the stops.
- Request stops: The bus operates as a conventional service, but also stops at a certain number of predefined off-route locations upon request. A more common variant is “flag” or “hail” stops, where passengers can ask to be dropped off or picked up at any safe point along a fixed route.
- Zone route: The bus accommodates service requests through a defined zone or corridor (with a one-day prior reservation), but also has fixed arrival and departure times at specific time points in zone. Typically, the zone also has located within or directly adjacent to it a transfer point/stop to provide connectivity to the regional fixed route network.

### **Future Citilink Flex Zone Service Option**

Primary determinants for assessing flex service as an option in areas where fixed route service is not economically viable include establishing operating costs that reflect lower productivity per trip than fixed route and providing connectivity to the fixed route system. Of the range of options described in the previous section, the Zone Route concept is recommended as a first step option in Fort Wayne. Reasons supporting the recommendation are:

- Those flex service options that include an element of fixed route service assume there is some level of service provided most hours of the service day and most days of the service week. Thus, the hourly annual cost of service may be less than fixed route service, the cost differential may range from 20 to 30 percent less, which is not likely adequate in outlying lower density residential or industrial areas to be cost effective.
- Connectivity to the fixed route network is critical. Most of the areas where current or future development densities could support flex service are more homogeneous in in

land use than areas of the community where fixed route service is provided. Finding logical origins and destinations for trips entirely within a zone will likely be limited. Thus, thinking of the flex zone as a lower cost means of extending a fixed route service area is likely the most viable in Fort Wayne.

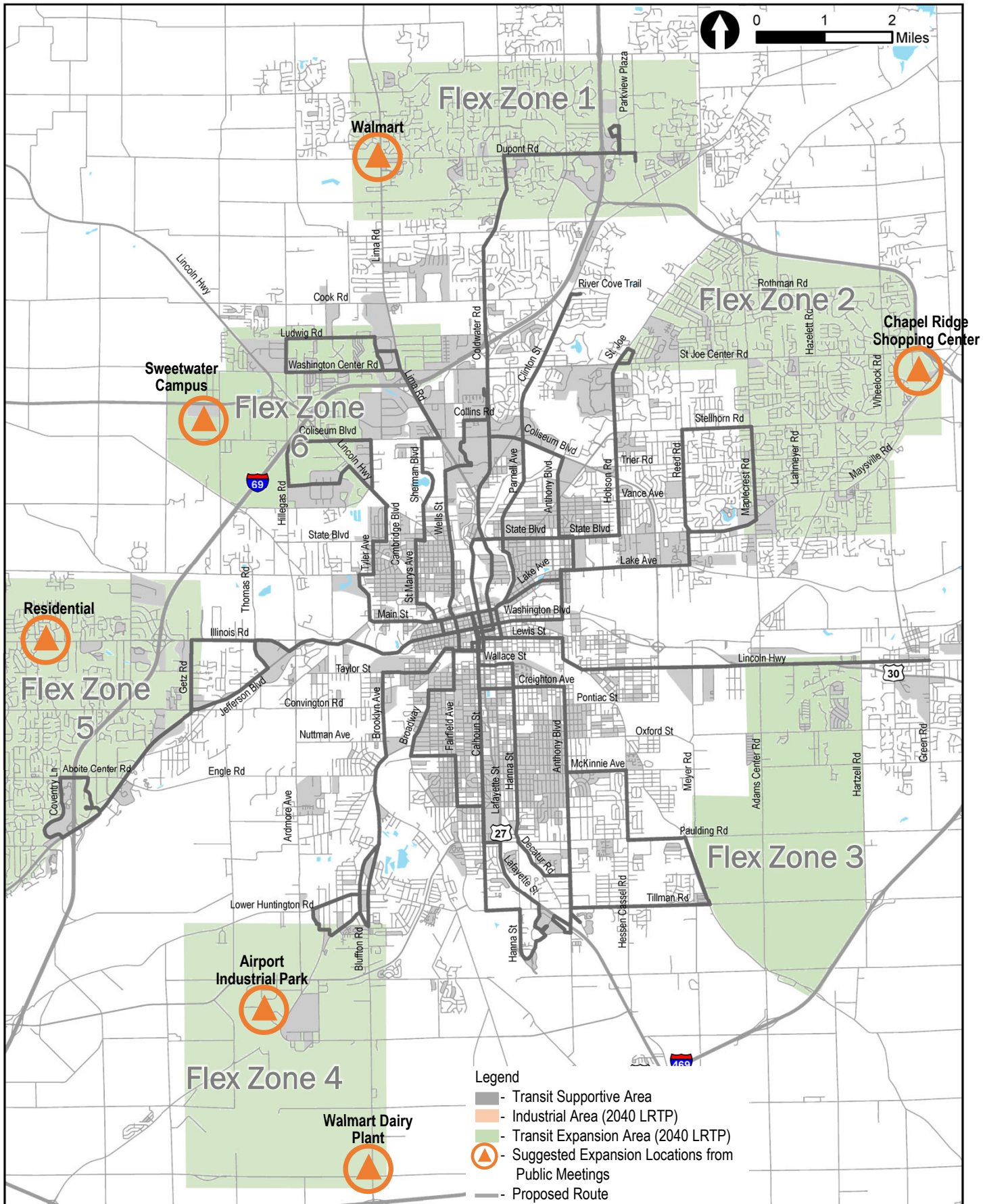
- Building from the anticipated expansion areas documented in Figure 22, potential priority areas to consider for flex service in the future are highlighted in Figure 28. A general concept for consideration in advancing the concept is listed below:

- Define the Flex Zone boundaries. A recommended zone coverage is approximately five to six square miles with one vehicle operating in demand-response service.

Determine the feasibility of the current reservation and dispatching staff to accommodate an additional 65 to 75 requests per day. A single vehicle should have the capacity to accommodate four to five passengers per hour of service. Assuming a 16-hour service day (6:00 AM to 10:00 PM), there is the expectation daily ridership would be approximately 70 people.

- Implement Zone Route service in Area 2 (Northeast-Chapel Ridge). This area is proposed as an initial option because:
  - There is opportunity to connect with Route 2, which is a 30-minute service route. Thus, more connectivity to the remainder of the region is provided relative to other identified zones.
  - There is a primary generator. Chapel Ridge Shopping Center was identified through the public involvement process as a desirable service destination, if Citilink was to expand. As a regional shopping destination, serving Chapel Ridge with transit would draw from areas within the service zone and other part of the metro that would connect with the flex zone using Route 2.
  - There are a number of other development nodes in the zone that currently could support fixed route service, however, the nodes are disconnected from each other by low density residential areas. Relative to most other potential service areas, this one is likely the readiest to support some level of service today.
- Observe travel patterns and passenger counts within the flex zone with the demand-response format. Flexible services can be used to gauge demand for transit in areas that have been more automobile-oriented. In many cases, agencies have switched over to fixed-route service once demand grows to a level that is better served by conventional service. When hourly volume exceeds eight to nine riders per hour, consider migrating the service to a higher level of flex service (point deviation, flexible route segments, or deviated fixed route).





## Flex Service Costs

As the service is flexible in the number of hours per day it is provided, it is difficult to identify a specific annual cost for service. A logical proposal for estimating cost is to estimate the cost of fixed route service and apply a factor representing the relative percent of fixed route hours that service would be in demand. Presently, fixed route service with a 60-minute frequency is approximately \$500,000 per year. Initial flex zone service operating approximately 50 percent of the time is a logical first step into the concept. Thus, an annual operating cost of approximately \$250,000 is a reasonable initial operating cost assumption.

## North Transit Hub

As Fort Wayne continues to grow out from the center city it will be more difficult to provide transit service that connects directly with Central Station and transfer opportunities as the travel times will exceed what can be provided with one bus on a 60-minute frequency. Additional vehicles could be considered to provide service, however, the cost effectiveness (cost relative to ridership) will likely be low relative to other routes. Thus, alternatives that support some level of service in more suburban areas were reviewed.



Southtown Centre Transit Hub

Southern development areas of the metro can be served by the Southtown Centre Transit Hub if routes extend to adjacent areas. The north area of the metro does not have similar facility and opportunities for future expansion are more limited because a transfer point does not exist.

## Elements of a Transfer Hub

The concept of a suburban transfer hub likely will not warrant the building and infrastructure included at Central Station, however, enhancements not included at Southtown Centre to support customer convenience may be considered. Listed below are facility considerations for a transfer hub:

- Vehicle stop/layover: Space for three to four vehicles to park at the same time would likely be adequate.
- Passenger waiting: The Southtown Centre hub consists of two shelters with bench seating. While the facility provides the for the basic customer needs (seating, cover from rain/snow and some windbreak), attracting passengers that choose transit over driving



on a regular basis requires more comfortable facilities. These may include full-enclosed, climate controlled waiting areas, bus location and/or arrival information and possibly restroom facilities.

- **Driver amenities:** Aside from everyday riders, drivers are the most frequent visitor/users of the transit hubs. As service areas extend further from Central Station and its driver amenities such as restrooms and other support facilities, consideration of these facilities in hubs will be more important.
- **Park-and-ride:** As future hubs will likely be located along primary commute routes and closer to the fringe of the city, including parking spaces will add the opportunity to capture park-and-ride customers. Based on current hourly Citilink ridership, parking for 25 to 30 vehicles would likely provide adequate capacity.

### **Potential North Hub Locations**

Figure 29 displays two potential north hub locations near Coldwater Road and Washington. The general location was selected as it represents the northern limit of areas of the city that can be reached from Central Station with a single bus operating on a 30-minute local service route. The area also provides opportunities for park-and-ride from both the parking space availability and convenience for commuters as areas of recurring congestion occur south of Washington Center Road.

Table 35 documents pros and cons of the two sites. As Citilink continues to consider additional transit hubs either of these sites provide opportunities.

### **Regional Connectivity**

As the regional hub for medical, shopping, education and employment opportunities, identifying and assessing opportunities for connections to outlying communities and Fort Wayne using transit is warranted as part of the Transit Development Plan. Opportunities that exist include:

- Intercepting commuters traveling into Fort Wayne for work and providing the urban part of their trip using Citilink fixed route service.
- Coordinating with regional providers coming into Fort Wayne for medical service, shopping, education or work opportunities from outlying communities.
- Coordinating with intercity bus providers to provide interstate connections throughout the country. Presently, Greyhound/Miller Trailways and Barron Bus have bays at Central Station. The Central Station location provides access to more than 75 percent of Fort Wayne with a one seat Citilink trip.



**Table 35. North Transit Hub Review**

Location	Pros	Cons
#1 – Adjacent to Washington Center Road	<p>Convenient to Washington Center Road.</p> <p>Signalized access for buses to/ from Washington Center Road.</p> <p>Convenient walk (sidewalk along Washington Center Road) access to higher density residential.</p> <p>Sidewalk access to Coldwater Road</p> <p>Park and Ride Potential (If can negotiate space).</p>	<p>Cost – In private ownership. Options to acquire access for use:</p> <ul style="list-style-type: none"> <li>• Lease</li> <li>• Purchase (Not likely)</li> </ul> <p>Congestion during peak movie times (Do not conflict with peak bus travel).</p>
#2 – Northwest of Hobby Lobby	<p>Signalized Access for Buses To/From Washington Center Road.</p> <p>Park and Ride Potential (If can negotiate space).</p>	<p>Cost – In private ownership. Options to acquire access for use:</p> <ul style="list-style-type: none"> <li>• Lease</li> <li>• Purchase (Not likely)</li> </ul> <p>Walk access to either Washington Center Road or Coldwater Road – Has conflicts with vehicle traffic in parking area.</p>

### Park and Ride Opportunities

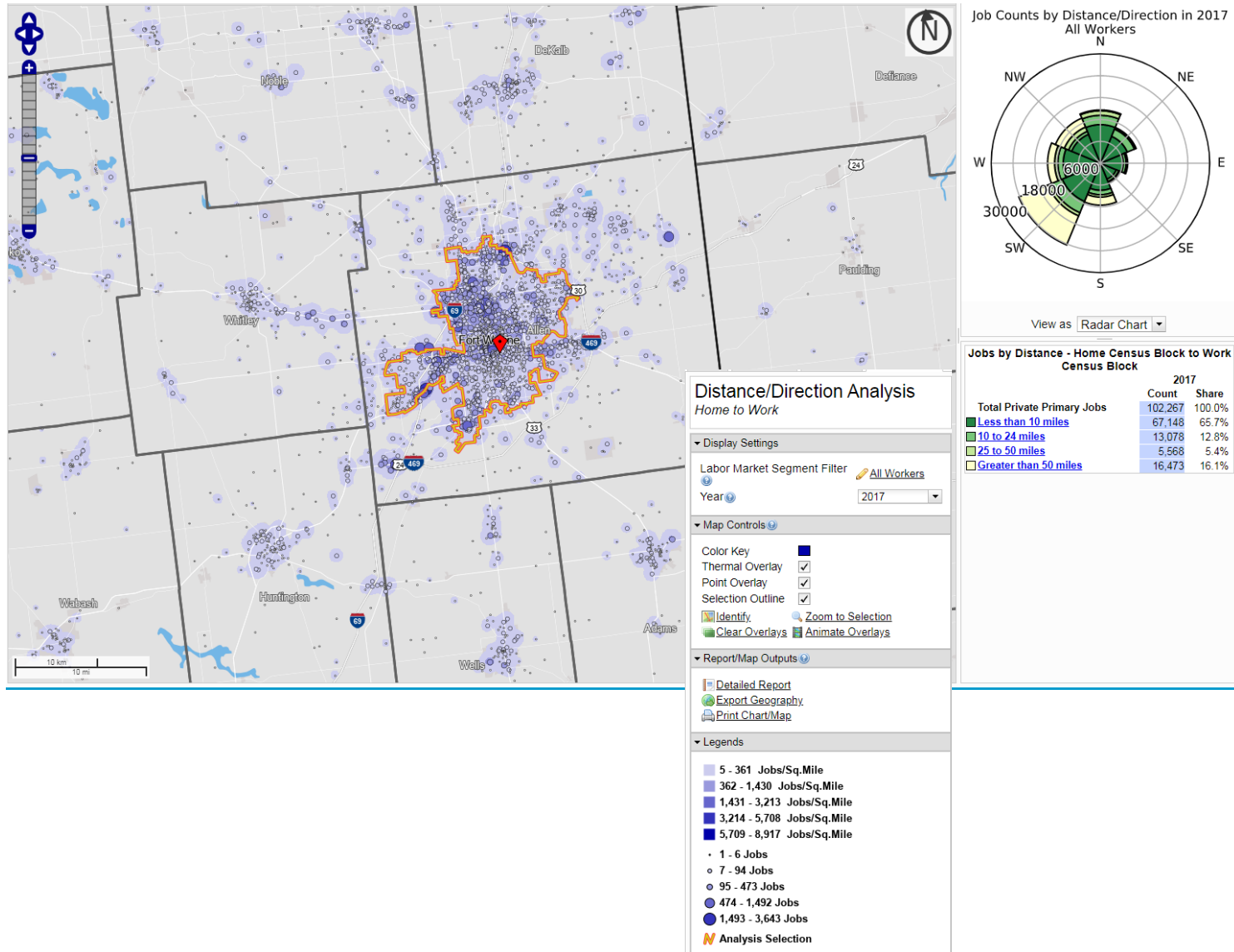
The current hub and spoke format for Citilink fixed route service provides many opportunities for commuters traveling from outlying areas of the region for work. Benefits of the current system are especially applicable to people working in downtown or between a commuter’s entry point and downtown in transit corridors. The key to providing utility to commuters is identifying park and ride lot locations outside congested areas of commute routes. Intercepting commuters before they experience recurring congestion provides the benefit of allowing them to do other things (read the paper, converse with friends also using the bus, work, etc.) while ignoring the frustration of congestion. Figure 30 displays the general orientation and distance workers in Fort Wayne travel from their home place to work. Findings from review of the information are:

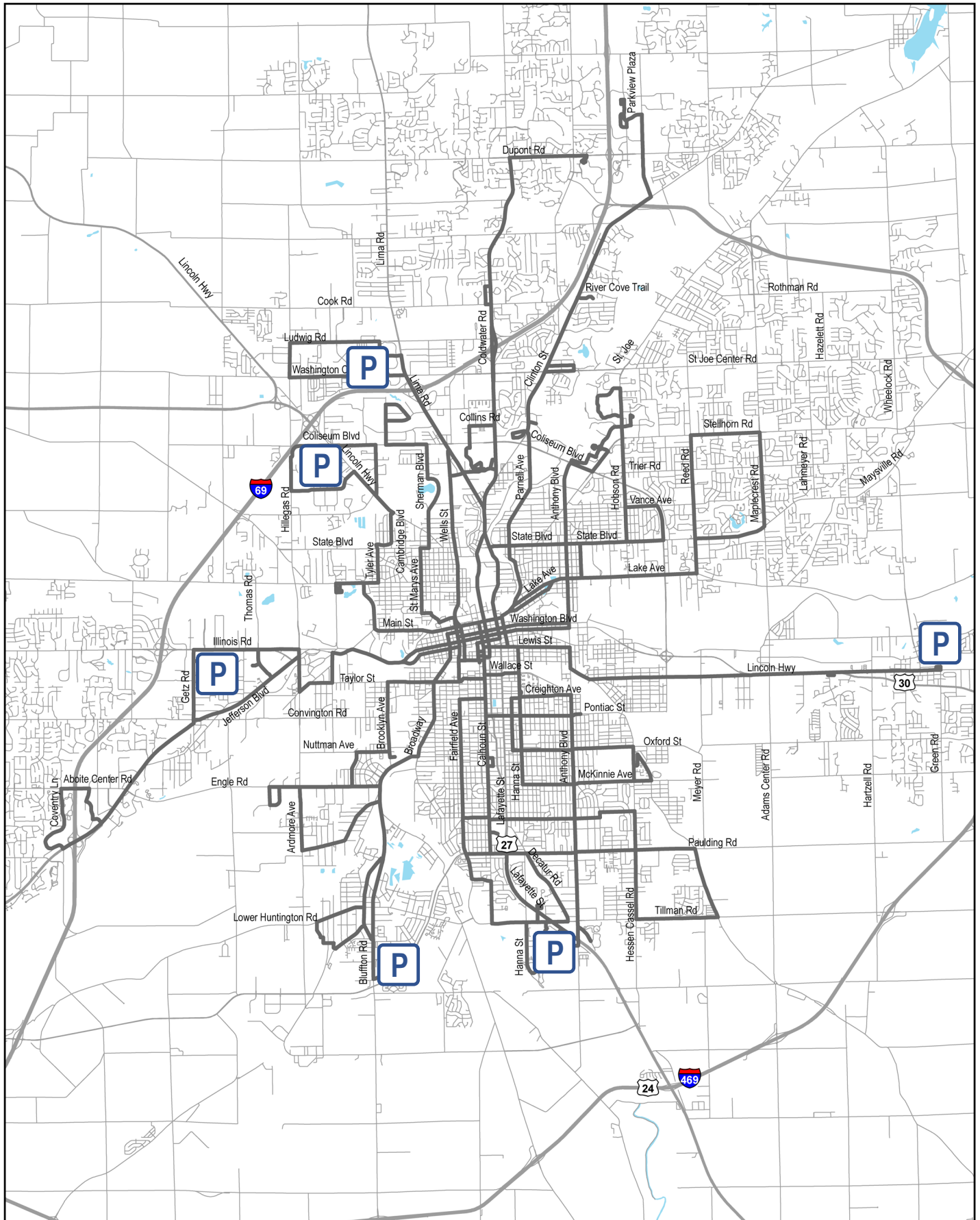
- Primary commute corridors are US 24 and I-69 from southwest of Fort Wayne. Approximately 30 percent of the 102,000 private sector primary jobs are from home locations along these routes.
- US 24 from the north is the second most used commuter corridor, supporting approximately 10 to 15 percent of the commuters from outside Fort Wayne.
- US 30 from Columbia City is the third key route connecting commuters to Fort Wayne.

- Few commuters travel into Fort Wayne from areas southeast of the metro. Most commute trips from the southeast are less than 10 miles, with the majority of them being within the city limits of Fort Wayne.
- Figure 31 displays general locations where park and ride lots would provide benefits to commuters traveling in on primary routes with direct transit connections to downtown Ft Wayne and Central Station. Locations are attached to routes connecting directly to Central Station, which will provide one seat access to more of the metro area than park and ride lots along Flexlink routes such as Route 21 or Route 22.
- Sizing park and ride lots is generally reflective of transit use in the region as a percent of travel. In Fort Wayne transit represents approximately one to two percent of daily traffic.
- Applying this factor to hourly volume in commuter corridors, results in estimates of approximately 20 to 30 spaces in the typical park and ride lot.



**Figure 30. Orientation and Distance of Work Trips Destined for Fort Wayne**





## Coordinating with Regional Providers

The Coordinated Transit Plan (2017) focuses on the travel needs of seniors, persons with disabilities and low-income persons and the current providers supporting their travel. Many of the challenges of coordinating service between these providers and Citilink are mirrored for regional providers. Within each of the counties surrounding Fort Wayne, demand response transportation is available. While scheduled service to Fort Wayne is not advertised by the providers, most make periodic trips to Fort Wayne. Traveling to Fort Wayne creates opportunity to coordinate with Citilink services, however, there are challenges to effectively share responsibility for local travel, including:

- 30 to 60 minute frequency on Citilink. Regional service travelers coming to Fort Wayne for medical trips or shopping trips have a limited amount of time to conduct their business before needing to connect back with the regional provider. The 60-minute period between buses on most routes make using Citilink routes more difficult because missing one bus likely results in the regional provider being off schedule for the return home trip. While 30-minute frequency routes reduce the impact, the risk of regional service schedule disruption is still high.
- Number of transfers required. Typically, travelers on regional routes have several stops arranged as part of their trip. While coordinating regional service with local service at Central Station minimizes the number of buses required to complete trips of multiple purposes, it will remain difficult to accommodate more than one or two local trips over the day.

While there are challenges to Citilink being a primary participant in coordinating with regional service providers, understanding key destinations, travel routes and travel schedules of regional providers is a key initial step to enhancing Citilink's participation. Citilink will continue efforts to coordinate with regional providers and look for opportunities to expand sharing travel within the local service area.

## Coordinating with Intercity Carriers

Greyhound, Miller Trailways and Barons Bus use the intercity parking space outside Central Station as their local Fort Wayne depot stop. Additionally, the providers serve Fort Wayne during Citilink service hours, which makes using Citilink to get to and from the depot practical for intercity travelers.

Coordination between Citilink and Greyhound is enhanced by Citilink being the local ticket agent. Added coordination opportunities with intercity providers include:

- Provide carriers information about Citilink's use of Google Transit, which gives regional travelers the ability to map their local travel before getting to Fort Wayne.
- Provide carriers information on Citilink's use of RouteShout and RouteWatch to give out of town travelers real time information on local routes.

- Provide carriers information on Citilink’s use of Token Transit to allow regional travelers an option of buying their local fares online.

## System Improvements with Revenue Enhancement

As the transit development plan is intended to be as much a future planning document as it is a review of current service relative to needs, the recent revenue stagnation observed should be a cautionary marker not a given for the future. As such, ideas for service improvements associated with a range of increased budget assumptions were developed. As there is not a structured program for appropriate future cost assumptions, a range of service assumptions associated with adding the following amounts to the operating budget were reviewed:

- Five percent increase: This increment reflects a modest increase in the real dollar operating budget and is approximately the minimum amount that would allow Citilink to implement a measurable change in service. Adding an amount to the budget lower than five percent would allow some incremental change in service, however, not enough to be noticeable to the typical everyday user.
- 10 percent increase: This increment represents an amount needed to add a route to weekday/Saturday service or add Sunday service, which would be moderate improvements to the system.
- 15 percent increase: An incremental change of 15 percent from current service is assumed to be a stretch goal for service enhancement. It adds enough revenue hours/miles to the budget to allow multiple types of improvements to be implemented, while the five and 10 percent increase in the budget supports a single enhancement.

Table 36 displays general service improvements that could be implemented with revenue increases ranging from five percent to 15 percent. Improvements support a range of enhancement opportunities from:

- Providing service to/from currently unserved areas: The five percent increase option would support one additional weekday plus Saturday route operating at a 60 minute frequency, consistent with most current routes. Assessing potential areas for service expansion needs to include information obtained through the on-board surveys, public engagement, as well as the analysis of transit supportive areas as displayed in Figure 11 in the Existing Conditions chapter.



**Table 36. Service Enhancement Opportunities by Increment of Revenue Hours**

Service Change	Options			
	Add Local Route <sup>1</sup>	Add Hours to Weekday	Upgrade Route Frequency <sup>2</sup>	Other
Add 5% to Operating Budget (+\$500,000 – 5,000 Revenue Hours)	Add 1 Route	6 Routes – 3 Added Hours Each	To 1 Route	
Add 10% to Operating Budget (+\$1,000,000 – 10,000 Revenue Hours)	Add 2 Routes	12 Routes – 3 Added Hours Each	To 2 Routes	Add Sunday Service
Add 15% to Operating Budget (+\$1,500,000 – 15,000 Revenue Hours)	Add 3 Routes	All Routes – 3 Added Hours Each	To 3 Routes	Add Sunday Service and ONE of Other Options

Notes:

1 - New route assumes 60 minute headway and service 6 days a week

2 - Upgrade frequency assumes route operates every 30 minutes on weekday for 14 hour span

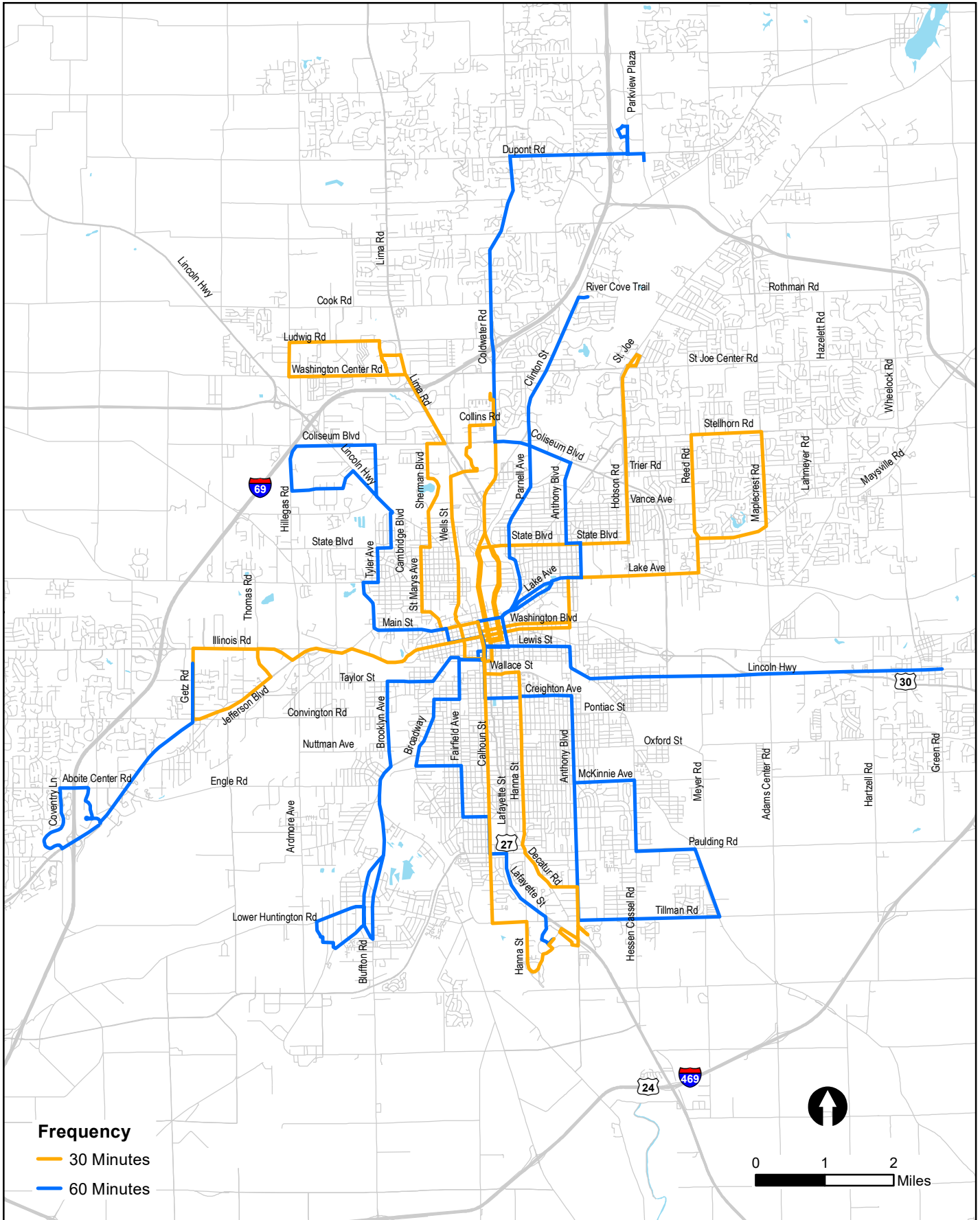
- Strengthening the system core: The level of benefit (utility) derived from transit service is directly related to service convenience, which is measured by:
  - How often one can travel from one point to another (service frequency).
  - How long it takes to get from a traveler’s origin to their destination once on a bus.
  - The days of the week and the span of the day that travel can be made using transit.

Focusing added resources on the core of the system where service exists today and where the greatest development density is found generally provides the best opportunity for a good return on the investment. Adding vehicles to routes serving the core (those routes traveling through Central Station) of the system to increase the frequency from 60-minute service to 30-minute service supports the strengthen the system core concept. Included in the possible focus routes are Routes 1, 2, 3, 7, 9, 11, 13, 14, 15, 16). With an understanding of current route use and locations where density provides the greatest opportunity for transit use, priority routes for adding frequency are:

- Route 9 – St. Joe
- Route 14 – St Mary’s - Lima

Figure 32 displays a possible 30-minute and 60-minute frequency service concept if revenue could be increased. A summary of enhanced service characteristics, including frequency, are documented in Table 37.

- Adding Hours of Service: Currently, the service day begins at approximately 5:30 AM and ends at approximately 8:00 PM on weekdays and approximately 7:30 AM to 6:00 PM on Saturdays. By adding hours at the end of the current service day the system will provide more benefit to persons ending their work day (or school day or just want to make a trip) after 8:00 PM on weekdays and/or after 6:00 PM on Saturdays.



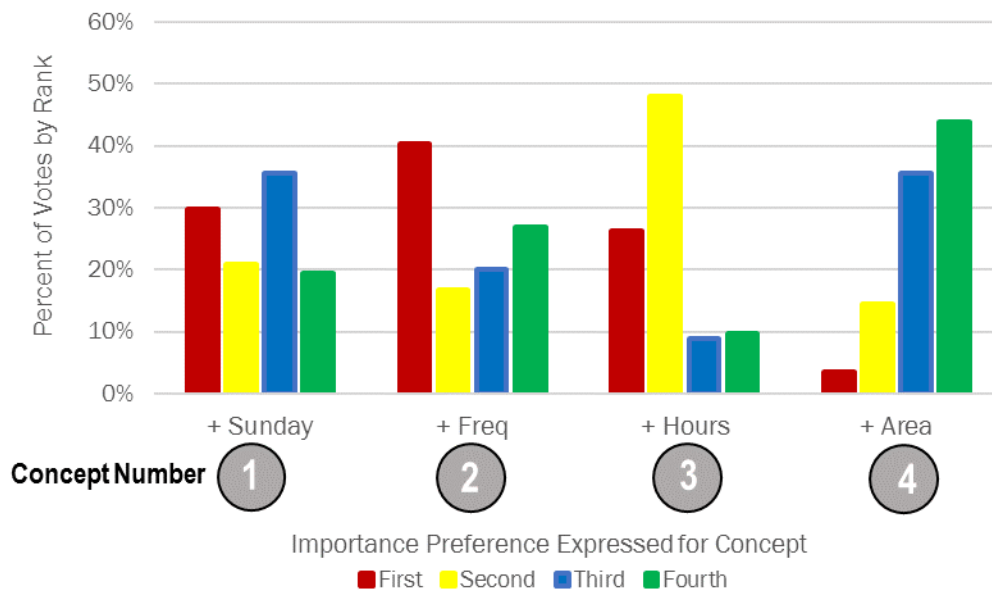
**Table 37. Frequency and Span Improvements under Additional Funding Scenario**

Route Number	Route Name	Frequency Improvement				Span Improvement				
		Weekday		Saturday		Weekday			Saturday	
		Headway	Span	Headway	Span	Daytime	Night	Span	Headway	Span
1	Brooklyn-Bluffton	60 min	14 hrs	60 min	11 hrs	60 min	-	14 hrs	60 min	11 hrs
2	Broadway-Fairfield	60 min	14 hrs	60 min	11 hrs	60 min	60 min	17 hrs	60 min	11 hrs
3	Fairfield-Rudisill	60 min	14 hrs	60 min	11 hrs	60 min	60 min	17 hrs	60 min	11 hrs
4	Calhoun	30 min	14 hrs	60 min	11 hrs	30 min	60 min	17 hrs	60 min	11 hrs
5	Hannah	30 min	14 hrs	60 min	11 hrs	30 min	60 min	17 hrs	60 min	11 hrs
6	Anthony Crosstown	60 min	14 hrs	60 min	11 hrs	60 min	-	14 hrs	60 min	11 hrs
7	Hobson-North Coldwater	60 min	14 hrs	60 min	11 hrs	60 min	-	14 hrs	60 min	11 hrs
8	Lake	30 min	14 hrs	60 min	11 hrs	30 min	60 min	17 hrs	60 min	11 hrs
9	St Joe	30 min	14 hrs	60 min	11 hrs	30 min	60 min	17 hrs	60 min	11 hrs
10	New Haven	60 min	14 hrs	60 min	11 hrs	60 min	-	14 hrs	60 min	11 hrs
11	Clinton	60 min	14 hrs	60 min	11 hrs	60 min	60 min	17 hrs	60 min	11 hrs
12	Coldwater	30 min	14 hrs	60 min	11 hrs	30 min	60 min	17 hrs	60 min	11 hrs
13	Wells	30 min	14 hrs	60 min	11 hrs	30 min	60 min	17 hrs	60 min	11 hrs
14	St Marys-Lima	30 min	14 hrs	60 min	11 hrs	30 min	60 min	17 hrs	60 min	11 hrs
15	Leesburg-Lincoln	60 min	14 hrs	60 min	11 hrs	60 min	60 min	17 hrs	60 min	11 hrs
16	W Jefferson	30 min	14 hrs	60 min	11 hrs	30 min	60 min	17 hrs	60 min	11 hrs
22	West Jefferson/Lutheran Hosp.	60 min	14 hrs			60 min	-	14 hrs		
97	Cougar Express	30 min	10 hrs			30 min	-	10 hrs		

- Adding Sunday Service: Throughout the public engagement process users have stated adding Sunday service would improve their lives by supporting trips to work, church, shopping or any other trip purpose. Generally, transit agencies experience Sunday ridership that is lower than weekday and/or Saturday service. The concept evaluated for Fort Wayne was adding Sunday service consistent with the Saturday level of service (7:30 AM to 6:00 PM), except Route 22-West Jefferson/Lutheran Hospital.

The range of service enhancements were presented at public meetings in November 2018 and people attending the meetings were invited to vote their preference as to which of the alternatives were most important to them. The preference voting exercise provided people the opportunity to rank each of the general expansion proposals from first (most important) to fourth. Please note, placing an alternative fourth on the list does not mean there is not a need for the concept. Figure 33 displays the results of the preference voting completed at each of the public meetings and a range of public events following the transit plan public meetings.

**Figure 33. Results of November 2018 Public Meeting and Community Meetings Expansion Alternatives Preference Voting**



Results of the preference voting were:

- Adding frequency to the core routes (providing 30-minute service to two more routes) was most frequently identified as the highest priority.
- Adding service on Sundays was the second most identified top priority.
- Combining the highest and second highest priorities results in adding hours being the most supported of the alternatives.

- Adding new service areas received the fewest Highest Priority and Second Priority votes.

## Potential Impacts of Continued Funding Stagnation

Operating funding for fixed route and paratransit service has stagnated over the last four plus years as the cost per revenue hour for service has continued to increase. If the recent trend continues, it is possible a time will come when making minor changes to routes to reduce revenue hours no longer can be used to balance, in the short term, revenue with expenditures. Thus, Citilink through the transit plan has considered, along with potential growth opportunities, a range of actions that could be needed to address reductions in funding.

Consistent with the process of looking at actions supported by incremental increases in operating funding, Citilink has prepared a general list of potential service cuts associated with a five, ten, and 15 percent reduction in funding. These scenarios do not require absolute reductions from current funding, but also represent potential conditions if funding increases continue to lag behind inflationary cost increases to labor, fuel, maintenance, etc.

Table 38 documents potential negative actions, consistent to the possible funding increase process outlined in Table 36, that could result if more significant service reduction alternatives are needed to address decreases in operating funding. Outlined in the table are more generalized actions reflective of service reductions needed to balance service to budgets between five and 15 percent lower than the current. These conditions are not being identified as likely, however, it is prudent to understand the significance of not being proactive in advocating for sustained funding for transit at all levels and seeking out local funding partners and new funding sources.

**Table 38. Potential Service Reductions Associated with Funding Cuts**

Service Change	Options			
	Route Cuts <sup>1</sup>	Reduce Service Span/Hours	Reduce Route Frequency <sup>2</sup>	Other
Reduce Operating Budget by 5% (-\$500,000 / -5,000 Revenue Hours)	Cut 1 Route	Reduce all Routes by One Hour Weekdays	-2 Route	
Reduce Operating Budget by 10% (-\$1,000,000 / -10,000 Revenue Hours)	Cut 2 Routes	Reduce all Routes by Two Hours Weekdays	- 4 Routes	Cut Saturday Service
Reduce Operating Budget by 15% (-\$1,500,000 / -15,000 Revenue Hours)	Cut 3 Routes	Reduce all Routes by Three Hours Weekdays	-6 Routes	Cut Saturday Service and ONE of Other Options

Notes:

1 - Cut route assumes on 60 minute route weekdays and Saturday

2 - Reduce frequency assumes route operates every 60 minutes (from 30) on weekdays for 14 hour span

# Title VI Major Service Change and Service Equity Analysis

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For smaller changes to the network, Citilink as part of its Title VI obligations, conducts an equity analysis using actual passenger data reflective of the route or route segment being adjusted with the service change. The proposed network concept of the 2019 COA/TDP reflects many service changes, including route alignments, frequency and segment deletions, use of actual passenger data is not feasible. The Service Equity Analysis for the identified Revenue Neutral network was conducted using GIS and census data to assess the potential for disparate impacts to fragile populations of seniors, persons with disabilities, minority, and low-income populations. Both the existing network and the proposed network were included in the analysis. Information at the census block or block group aggregations were used in the comparison. Census blocks were the basis for minority and senior populations, while low-income and persons with a disability reflect the block group level as census block data is not available.

**Title VI of the Civil Rights Act of 1964, Section 601**

“No persons in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.”

In the analysis the goal was to determine the percentage difference in impact (experiencing a significant impact of being outside the 3/8th mile walk area of a route) between all people and groups of fragile population. Conditions where fragile populations experienced an impact greater than that of the all persons impacted suggest that the service change would result in Disparate Impacts, or burden, on identified fragile populations.

Implementation of the Revenue Neutral network would result in an approximately 0.8 percent drop in the Fort Wayne population with acceptable walk access (a route within 3/8 mile) to transit service. Listed below are the results for each critical population groups:

- Minority population: A reduction of 0.82 percent, which is consistent with the overall population decline.
- Low-income population: No change between the current and Revenue Neutral networks.
- Disabled population: No change between the current and Revenue Neutral networks.
- Senior population: A reduction of 2.75 percent. While the increment of service reduction to the current senior population is greater than the population as a whole, the differential is marginally greater than the impact to the overall population. The incremental difference is not considered significant.

With implementation of the Revenue Neutral alternative there are two areas of the current service area that would fall outside the 3/8-mile walk distance of a route. Boarding information from the March 2018 survey showed the two areas included approximately 50 daily boardings. Consistent with the regional equity analysis the demographic makeup of the census block and/or block groups in these areas were reviewed to determine whether there is potential for disproportionate impacts to fragile populations. The results are outlined below:

- The approximately 50 persons losing reasonable walk access to transit represent less than one percent of Citilink’s average daily ridership.
- The social and demographic composition of census blocks and/or block groups that include areas losing acceptable walk access to transit are relatively consistent with the composition of the cumulated census blocks and census block groups with the current service area. Differences observed are:
  - South area (Ardmore Avenue/Engle Road area): The disabled population is consistent with the percentage for Fort Wayne. The median income for the area is greater than the median for Fort Wayne. The senior population of Fort Wayne is approximately 10 percent of the total, while in the affected areas senior represent approximately 20 percent of the population of the census blocks. The percent minority population of the affected area is lower than the percent minority population in Fort Wayne.
  - North area (Dupont Road/Coldwater Road area): The disabled population is lower than the percentage for Fort Wayne. The median income for the area is greater than the median for Fort Wayne. The senior population of Fort Wayne is approximately 10 percent of the total, while in the affected areas senior represent approximately 14 percent of the population of the census blocks. The percent minority population of the affected area is lower than the percent minority population in Fort Wayne.

Based on the analysis, the changes proposed as part of the Revenue Neutral network would not reflect a disparate impact on low-income, minority, elderly or disabled populations.

# Implementation of Recommended Network

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Following adoption of the 2019 Transit Development Plan and recommendations for route modifications included in the plan, Citilink and the City of Fort Wayne will need to prepare a transition plan through which an orderly migration to the proposed concept is completed. While the recommended network is not a huge departure from the current, there are streets that today are a part of one or more routes that would not have a route on them in the recommended plan. Similarly, route segments will be added to streets not presently carrying a transit route. At first blush, adding or removing a transit route to a street may seem like a simple task of revising a schedule, updating a set of maps and advertising the change to current and potential customers. Citilink service includes considerable infrastructure in signage and shelters that greatly influence a schedule and steps in the transition. A route cannot be substantially redesigned without establishing designated stops and installing bus stop signs and adding/relocating shelters. The current Citilink network includes approximately 1,100 bus stop signs that include the following components:

- Bus Stop: This is the main notification of the stop location.
- Bus Route Badge: Each stop includes a numbered badge noting the route which the stop is associated.
- Supplemental signage: Select routes, (for example the Cougar Express) are noted through additional signage of the route brand.

## Steps to Implementation

Listed below are the critical steps to transition from the current network to the recommended and the anticipated time frame for each step:

- Step 1: Update inventory of Bus Stop signs by route and the location of each shelter.  
Time frame: 6 months.
- Step 2: Establish a plan for updating bus stop signage, including:
  - Locations where signs are removed.
  - Locations where shelters are removed.
  - Locations where route badges only are changed.
  - Locations where new complete signage is installed.

Time frame: 4 – 8 months

- Step 3: Identify other infrastructure changes to support the recommended route network. Bus service is supported by the pedestrian infrastructure that allows people to move allow safe, paved sidewalks/walkways between their actual origin/destination and



their bus. For streets where transit service would be an addition, an inventory of the sidewalk/walkway network is recommended, and identification of capital improvements needed to support the change. Time frame: 8-12 months.

- Step 4: Develop an updated schedule, including time points, layovers, etc. Time frame: 4 months after finalizing the route structure that could be influenced by conditions observed in Step 3.
- Step 5: Implement signage changes to reflect the recommended plan and document the GPS locations of all signs. Time frame: 12-24 months.

The expectation is that a marketing/outreach plan would be prepared and implemented at every step of the implementation process. Keys to the outreach plan are:

- Organize a communications task force internally: Agencies that successfully implement changes to their network establish internal task forces that include representatives from each department.
- Have a clear message about why it's happening: The reason behind the route changes needs to be simple, clear, understood and communicated by staff at all levels of Citilink.
- Communicate with customers: Citilink has a robust communication network and each element of it should be used to communicate the reasons for change and the recommended network changes.
- Meet with riders where they are: Successful implementation requires understanding customer needs, especially in those areas that will see routes moving off one street and on to another. While it requires a commitment, a program of street-level outreach (at bus stops, Central Station and other transit centers, and major public events) in the months and weeks leading up to the change will reduce anxiety and enhance acceptance of changes.

Table 39 documents a capital cost estimate associated with changing the route structure.

While the current funding environment does not support expanding the system by adding routes, adding transit centers or park-and-ride lots, the TDP covers the next 10-year period. In this period there are opportunities for Citilink to work with local and state partners to increase funding. Thus, including estimates of general costs associated with key expansion support investments will provide Citilink with information to use in their work with current and potential funding partners. Table 38 includes planning level cost estimates for key expansion elements.

**Table 39. Cost Estimates of Revenue Neutral and Expansion Facilities**

Capital Item	Unit Cost	Units	Cost
<b>Revenue Neutral Alternative</b>			
Remove Signs	\$50	200	\$10,000
Replace Route Badges	\$25	800	\$20,000
New Bus Stop Signs (Street with Existing Route)	\$155	200	\$31,000
New Bus Stop Signs (Street without Existing Route)	\$205	300	\$61,500
Relocate Shelters	\$1500	15	\$22,500
Update Maps			\$5,000
Implementation Marketing			\$30,000
<b>Total – Revenue Neutral Alternative</b>			<b>\$180,000</b>
<b>Future Expansion</b>			
Develop North Hub			\$500,000 to \$600,000 (Plus Cost of Land)
Park-and-Ride Lot (each)			\$425,000 (Assumes 50 spaces at \$8500/space)

## Funding Going Forward

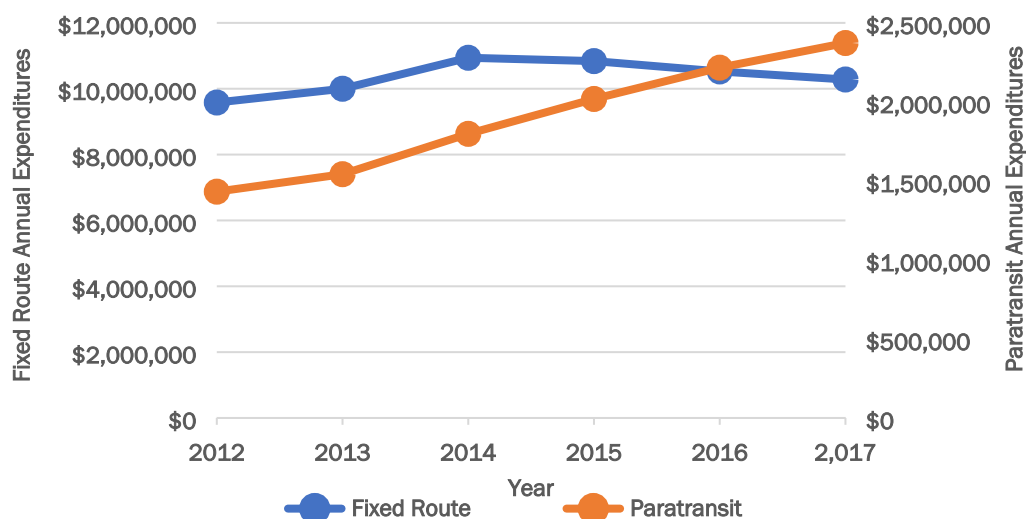
Financial analysis for the transit system is divided into two areas:

- **Operating Costs:** Encompasses the day-to-day cost of providing fixed route and paratransit service including labor costs for all personnel, benefits for personnel, utilities, insurance, and non-capitalized assets (which are essentially smaller purchases).
- **Capital Costs:** Capital costs include replacing buses and other vehicles, shelters, transfer hubs, building rehabilitation, and expansion that may be undertaken.

A central theme incorporated into the future service plan element and highlighted in the Existing Conditions section is while overall investment into transit service is increasing by small increments year-to-year, annual funding for fixed route service has been declining since 2014. Thus, most of the increase observed in this period has been invested into Access service. Between 2012 and 2014, dollars invested in both fixed route and paratransit service were increased. However, since 2014 dollars allocated to fixed route service have declined. In the same period, funding for Access/paratransit service has continued to increase. While Access service supports the mobility needs of the most fragile groups in the region, it is also an expensive service carrying less than five percent of total transit ridership. It should be noted Access ridership has grown each year in absolute terms and as a percentage of total ridership.

Table 40 highlights past annual operations expenditures for fixed route and Access services. Figure 34 displays the annual expenditures for fixed route service and paratransit service from 2012 through 2017.

**Figure 34. Annual Operating Expenditures (2012 – 2017)**



**Table 40. Annual Operating Expenditures – 2012-2017**

Service Area	Year					
	2012	2013	2014	2015	2016	2017
<b>Combined Fixed Route and Paratransit</b>						
Expenditures	\$11,013,527	\$11,542,175	\$12,738,337	\$12,858,017	\$12,741,667	\$12,652,936
Fares	\$1,595,667	\$1,818,249	\$1,783,853	\$1,715,926	\$1,657,650	\$1,707,869
Operating Expense per Passenger Trip	\$5.22	\$5.67	\$6.21	\$6.53	\$6.82	\$7.11
Operating Expense per Revenue Hour	\$89.76	\$91.18	\$100.34	\$101.01	\$94.32	\$90.12
<b>Fixed Route</b>						
Expenditures	\$9,581,432	\$9,999,583	\$10,940,405	\$10,839,411	\$10,525,057	\$10,280,316
Fares	\$1,482,067	\$1,688,416	\$1,658,945	\$1,569,722	\$1,501,735	\$1,521,133
Operating Expense per Passenger Trip	\$4.65	\$5.05	\$5.48	\$5.70	\$5.86	\$6.06
Operating Expense per Revenue Hour	\$92.18	\$94.15	\$103.37	\$103.85	\$102.10	\$99.61
<b>Paratransit</b>						
Expenditures	\$1,432,095	\$1,542,592	\$1,797,932	\$2,018,606	\$2,216,610	\$2,372,620
Fares	\$113,600	\$129,833	\$124,908	\$146,204	\$155,915	\$186,736
Operating Expense per Passenger Trip	\$30.23	\$27.31	\$33.31	\$30.00	\$30.68	\$28.30
Operating Expense per Revenue Hour	\$76.33	\$75.67	\$85.13	\$88.07	\$69.27	\$63.80

## **Future Transit Operating Investment**

As funding for fixed route service has not increased in the last five years, the look forward must include the question of “are there signals that suggest the foreseeable future will be any different than the current or past conditions?” At the state and local levels there are no indications that support the expectation of growing future funding for operations. Thus, the assumption for the horizon of the 10-year TDP is relatively consistent funding as currently observed. This assumption is applied to both fixed route and paratransit/Access service.

## **Future Capital Investment**

Annually, Citilink and NIRCC coordinate anticipated capital expenditures for transit and include the information in the Transportation Improvement Program (TIP). Service assumptions incorporated into the TIP updating process are the current level of service is the expected level in the future. This assumption is consistent with the Revenue Neutral future service concept presented in the TDP. Thus, capital purchases included in the TIP are incorporated into this section of the transit plan. 0 documents the transit capital investments included in the TIP and represent the following from the TIP:

- Citilink has several federal discretionary grants to complete future capital projects.
- Management continues to explore alternative financing options to ensure financial stability.
- Citilink has bonding authority but has not issued bonds since 1981. There is no expectation Citilink will access their bonding capacity for future capital projects.
- The transit agency has no long-term debt and has completed major capital projects without outside financing.

**Table 41. Citilink Capital Capacity from 2020 – 2024 Transportation Improvement Program (TIP)**

Year	Federal Capital Carryover	Federal Capital	Federal Capital Available	Local Capital Carryover	Local Cumulative Capital Fund	Local Capital Available	Total Capital Available
2020	\$4,608,737	\$4,067,223	\$8,675,960	\$0	\$1,000,000	\$1,000,000	\$9,675,960
2021	\$3,468,224	\$4,229,912	\$7,698,136	\$805,000	\$0	\$805,000	\$8,503,136
2022	\$3,217,290	\$4,399,108	\$7,616,398	\$591,000	\$0	\$591,000	\$8,207,398
2023	\$3,086,558	\$4,575,072	\$7,661,630	\$415,000	\$0	\$415,000	\$8,008,832
2024	\$2,994,757	\$4,758,075	\$7,752,832	\$265,000	\$0	\$265,000	\$8,003,832
Year	Federal Capital Available	Deduct Cap/ MTC Comp Paratransit	Federal Capital (5307) Programmed	Federal Capital Carryover	Local Capital Available	Local Capital Programmed	Local Capital Carryover
2020	\$8,675,960	\$4,427,736	\$780,000	\$3,469,224	\$1,000,000	\$195,000	\$805,000
2021	\$7,698,136	\$3,624,846	\$856,000	\$3,217,290	\$0	\$214,000	\$591,000
2022	\$7,616,398	\$3,812,840	\$704,000	\$3,086,558	\$0	\$176,000	\$415,000
2023	\$7,661,630	\$4,030,873	\$636,000	\$2,994,757	\$0	\$159,000	\$256,000
2024	\$7,752,832	\$4,140,106	\$632,000	\$2,980,724	\$0	\$158,000	\$98,000

# Technology

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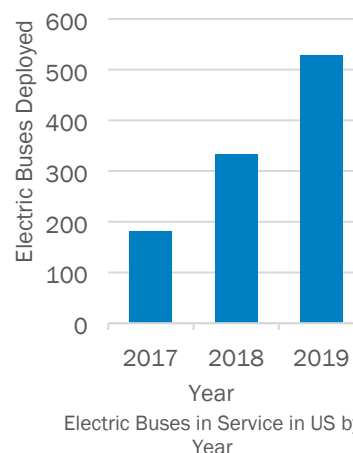
In the past few years, Citilink has been working with the new-age technologies to make transit riding experience pleasant and satisfying. An updated Citilink website and technologies like RouteShout and RouteWatch make it easier for riders to find out schedule information and get real-time bus location to avoid the fear of missing the bus or being at the stop too early. Token Transit Mobile Application adds another method of fare payment making it easier for riders to pay for their own or someone else’s transit ride. Each of the current technologies employed by Citilink are summarized in the Existing Transit Services and Operations section.

With the adoption of more technology, Citilink is likely to attract more of the younger population. As smart phone and devices get more and more prevalent among all age groups, fare payment using smart devices and real-time bus location applications makes riding Citilink easier for existing riders and is likely to attract potential riders. Additional vehicle and service technologies to be monitored for future use in Fort Wayne are outlined in the following section.

## Electric Bus Technology

Transit agencies around the United States are purchasing battery-powered electric buses (BEBs) at increasing rates and these trends are expected to accelerate in the coming years. BEBs are powered by battery packs that run an electric motor to turn the wheels, similar to battery-powered electric cars. The batteries are recharged by plug-in chargers using electricity from the transmission grid. Since they do not use gasoline or diesel, BEBs do not produce tailpipe pollution. Thus, BEBs offer a better option than other bus technologies for reducing our greenhouse gas emissions, as well as other harmful pollutants in urban areas.

Modest expansion of BEB deployment has been associated with cost and performance concerns, however, influences of each of these has been shifting. In 2015, a typical 40-foot diesel bus cost about \$450,000, while a similar BEB cost approximately \$770,000. In 2019, the price differential between diesel and electric buses has narrowed somewhat but remains significant. Lower operating costs of BEBs, however, may make them more economical in the long run than diesel, compressed natural gas (CNG) or hybrid engine buses. Annually, it is about 2.5 times cheaper to power vehicles with electricity rather than diesel, and electricity prices are generally much more stable than diesel prices. The U.S. National Renewable Energy



Laboratory has found that the fuel economy of BEBs is five times higher than that of diesel buses operated on equivalent routes. In addition, maintenance costs for an electric motor is much lower because there are far fewer moving parts than conventional motors and are far more efficient.

The current predominant battery technology for electric buses is lithium-ion. The price of these batteries has dropped 80 percent since 2010 and is projected to drop another 50 percent by 2025. A limiting factor with lithium-ion battery technology is the energy provided per charge is about 150 miles (in most conditions). Using air conditioning and heating reduces the range significantly, which is a substantial influencing condition. Thus, while the fuel economy in dollars is higher for electric vehicles, there are limits to the flexibility as to routes they can reasonably be assigned. Circulator or peak period routes (which are not presently operated in Fort Wayne) are the most practical.

Charging can be done in a few different ways: slowly overnight (which causes the least wear to the battery and other components), by using an overhead charging system, or by using a system that is embedded under the pavement. The latter two methods are much quicker than the first method but tend to degrade the bus components more quickly.

It is estimated that there are currently just over 500 electric buses deployed around country. A report by Bloomberg New Energy Finance estimated that by 2025, half of the world's municipal bus fleet will be electric, and by 2030, 84 percent of new municipal buses sold will be electric<sup>4</sup>. By 2040, 80 percent of the world's city bus fleet will be electric, along with 33 percent of the world's cars. City buses can be well-suited to electric power because they are regularly returned to a central depot where they can be recharged, and they don't operate over long ranges.

## **Fort Wayne Electric Bus Opportunities**

The 2016 Fort Wayne Downtown Blueprint updated the riverfront redevelopment Conceptual Plan included discussion of a possible downtown circulator connecting the recreation and entertainment activities of the riverfront with office uses, entertainment areas and parking opportunities in downtown. Conceptually, a 2.5 mile route would connect Headwaters Park with many of the restaurants and entertainment venues in downtown, including the Grand Wayne Center and Promenade Park. A circulator operating on a 20-minute frequency would log approximately 100 miles in a 12 hour service day. This distance plus travel to/from the Citilink garage is within the single charge daily service distance of an electric bus. As such, if a riverfront-to-downtown circulator is pursued as part of the continued implementation of downtown planning efforts, use of electric bus technology is likely applicable.

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<sup>4</sup> Electric Buses in Cities Driving Towards Cleaner Air and Lower CO2 March 29, 2018, Bloomberg New Energy Finance.



## Steps to Transitioning to Electric Buses in Fleet

The steps listed below are recommended by the US Public Interest Research Group (October 2019) for agencies interested in including electric buses as a complementary element of the fleet for regular route service:

1. Establish a partnership with the electric utility from an early stage and open a dialogue about goals and interests. Agencies should work with public officials and local utilities to enact a transportation rate for electricity and use rate modeling in the planning process for launching electric bus service.
2. Ensure contracts with the bus manufacturers include provisions to guarantee protection in the event that the vehicles delivered do not perform as promised.
3. Be realistic about the capabilities of electric buses for particular routes and conditions, and study route modeling data to determine the appropriate type of bus for the route.
4. Before going to bid, shadow existing diesel buses with electric vehicles from different vendors and ensure that the bid includes the needs identified in the route study.
5. Invest in as large a fleet as possible as soon as proof of concept can be established. Ensure the availability of additional electrical capacity and build the infrastructure to be able to add more chargers, including on-route charging infrastructure where necessary. The larger the fleet, the greater the potential economies of scale, and the greater the opportunity to demonstrate the vehicles' functionality and desirability.
6. Acquire as much data as possible from agencies already using the technology. Ask agencies where they've been successful, where they've failed, and where they've worked with manufacturers and utilities to find solutions to issues that have arisen.
7. Include environmental and health benefits (for example, the "social cost of carbon") in any evaluation of the costs and benefits of electric buses. Calculations of return on investment should include the total societal cost for the life cycle of an electric bus versus a diesel bus.

## Federal Funding for Battery-Electric Powered Buses

Federal grants are being made to rehabilitate and purchase buses to support the transition of the nation's transit fleet to the lowest polluting and most energy efficient transit vehicles. For the last two years, FTA has provided discretionary grant funding to states and direct recipients for the purchase or lease of low- or no-emissions vehicles and related equipment and facilities under FTA's "Low-No" Vehicle Program. This grant program is part of the Bus and Bus Facilities Infrastructure Investment Program. Low- or no-emissions vehicles include electric vehicles as well as vehicles powered by hydrogen fuel cells and hybrids of internal combustion engine and electric powered vehicles. Table 42 outlines key federal funding grants many agencies have used to fund initiating or expanding their electric vehicle fleet.

**Table 42. Discretionary Federal Transit Funding**

<b>Program</b>	<b>FTA Bus and Bus Facilities</b>	<b>FTA Low or No Emission Vehicle Program</b>	<b>USDOT BUILD Grants</b>
Eligible Applicants	Designated recipients operating fixed route service or that allocate funding to fixed route service; state or local government entities; federally recognized Indian Tribes operating fixed route service eligible to receive direct grants under 5307 and 5311	Designated recipients operating fixed route service or that allocate funding to fixed route service; state or local government entities; federally recognized Indian Tribes operating fixed route service eligible to receive direct grants under 5307 and 5311	State, local and tribal governments, including US territories, transit agencies, port authorities, MPOs, and other political subdivisions of state or local governments
FY 2018 Applicant Success Rate	32%	40%	10%
Federal Funding Forecast	\$267 million FAST Act funds plus \$300 million (House Bill) or \$161 million (Senate Bill)	\$55 million in FAST Act plus \$29 million (House Bill) or \$50 million (Senate)	\$750 million (House) or \$1 billion (Senate)

## Transit Signal Priority

Where the combination of traffic and/or intersection signal density are a major source of delay for transit, and particularly when signal delay is a significant portion of that delay, implementation of transit signal priority (TSP) can substantially delay and improve on-time performance.

Corridors with relatively long signal cycles, or relatively long distances between signals, are good candidates for active TSP. Specific intersections with long signal cycles or that favor the cross street and operate off of the progression of the rest of the corridor provide strong benefits. TSP can reduce transit delay significantly. In some cases, bus travel times have been reduced around 10%, and delay was reduced up to 50% at target intersections.

Transit signal priority (TSP) includes a range of techniques to reduce bus delay at signalized intersections. TSP techniques can generally be classified as active or passive. Passive TSP techniques typically involve optimizing signal timing or coordinating successive signals to create a “green band” along a transit route that buses can take advantage. Passive techniques require no specialized hardware (such as bus detectors and specialized traffic signal controllers) and rely on improving traffic for all vehicles along a bus’s route. Active TSP techniques rely on vehicle detection as they approach an intersection and signal intelligence that supports adjusting signal timing dynamically to improve service for the

transit vehicle. Unlike passive techniques, active TSP requires specialized hardware, including:

- A detection with a transmitter on the transit vehicle and one or more receivers (detectors).
- A signal controller that is sophisticated enough to incorporate real-time adjustments.
- Active strategies include:
  - Green Extension: This strategy is used to extend the green interval by up to a preset maximum value if a transit vehicle is approaching. Detectors are located so that any transit vehicle that would just miss the green light ("just" meaning by no more than the specified maximum green extension time) extends the green and is able to clear the intersection rather than waiting through an entire red interval.
  - Early Green (or Red Truncation): This strategy focuses on returning the green to the bus corridor quicker when a bus arrives on red. Conflicting phases are not ended immediately like they are for emergency vehicle preemption systems but are shortened by a predetermined amount.
  - Early Red: If a transit vehicle is approaching during a green interval but is far enough away that the light would change to red by the time it arrives, the green interval is ended early and the conflicting phases are served. The signal can then return to the transit vehicle's phase sooner than it otherwise would. Early red is largely theoretical and is not commonly used in practice.
  - Phase Rotation: The order of phases at the intersection can be shuffled so that transit vehicles arrive during the phase they need.
  - Actuated Transit Phase(s): These are phases that are only called if a transit vehicle is present. These might be seen along streetcar lines or on dedicated bus lanes.
  - Phase Insertion: This strategy allows a signal controller to return to a critical phase more than once in the same cycle if transit vehicles that use that phase are detected.

Candidate corridors in Fort Wayne (signalized, transit route, experience recurring congestion) include:

- Coldwater Road
- Clinton Street
- Jefferson Boulevard
- Hanna Street
- Calhoun Street
- Fairfield Avenue

- IN 930/Lincoln Highway from Fort Wayne to New Haven
- Lima Road
- State Boulevard

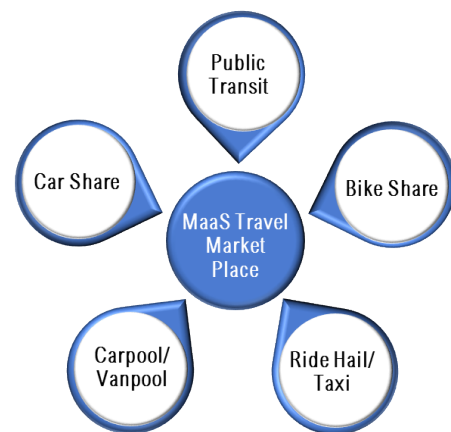
With the current or proposed route density and bus frequency, implementing active TSP in a Fort Wayne as a standalone transit project is not likely warranted. As signal systems are being replaced or upgraded or as corridor rehabilitation is implemented in any of the corridors listed in the provided list, TSP should be evaluated as a transit option. Evaluation criteria for the assessment should include:

- Traffic volume and level of congestion on the transit corridor and cross routes. It is important to understand the relationship with cross route conditions as implementing TSP to support transit will increase wait times on cross routes.
- On-time performance of buses or relationship of bus route length relative to maximum that can be accommodated within the desired frequency and buses assigned.
- Improvement cost.
- Passive versus active concepts. In high transit vehicle corridors (such as near Central Station) consider pre-timed (passive) strategies such as transit signal progressions. On streets with short distances between signals, a low-speed fixed signal timing strategy may confer more benefits to transit and multimodal traffic than active TSP.

## Mobility as a Service (MaaS)

The current thinking of how transportation of persons and goods is completed is through models where transportation consists of either scheduled fleets (public transit, taxis, ride hailing) or individually owned vehicles. These widely divergent models may adequately address the needs of most people, there remains a segment of the population that desires the comfort and convenience private ownership provides, but do not want, or cannot afford, to own and/or operate their own vehicle. Over the last five or so years the concept of mobility as a service (MaaS) has begun to emerge in larger cities.

MaaS can essentially be described as a subscription service for transportation that draws from current trip planning methods and integrates the range of modes available in an area. The concept uses an application-based trip planning process similar to ride hailing services such as Uber and Lyft, with the big difference



Mobility as a Service integrates a range of travel options into one location (marketplace)

being all modes of transportation in an area are reviewed in setting up the trip. Modes integrated could be Citilink fixed route or Access service, taxis, and ride hailing service, all accessed through a single application. MaaS is managed as a subscription service that allows customers to choose from different transportation options (only ride hailing, combinations of bus and ride hailing, combinations of rail and bus, etc.) and pay through a monthly or yearly fee or they can be pay-as-you-go.

As decision-makers in Fort Wayne continue to look for opportunities to connect people that cannot or prefer not to use current conventional trip making options, understanding MaaS implementation requirements is critical. These requirements include:

- Need for widespread penetration and availability of smartphones on advanced cellular networks.
- Public and private transportation service providers committed to integrating their services.
- Secure, dynamic, up-to-date information on travel options, fares, schedules.
- Cashless payment systems.

A service that involves a range of providers, both public and private, can be complex from a management perspective. A primary challenge will be developing an integrated fare schedule for trips that involve multiple modes that compensates each provider appropriately for its portion. Future MaaS programs are likely to need an integrated complete trip version of pay-as-you-go, where users pay for the entire trip with pricing integration across modes.

Presently, MaaS has been implemented in a relatively small number of cities in Europe and in the US and is in the very early stages of development. Thus, is not likely an option for near-term implementation in Fort Wayne. However, the concept is new and maturing through deployments in US cities. The opportunities and benefits of MaaS are expected to grow as concepts of autonomous and connected vehicle ideas mature and are implemented. With MaaS, a family can pay monthly subscription to access large vans for college move-in day, bicycles for short daily trips, electric scooters for hot days, and autonomous shuttles to connect to the airport.

## Autonomous Vehicles in Public Transit<sup>5</sup>

### Technology Overview

“Autonomous vehicles are vehicles that are capable of intelligent motion and action without requiring either a guide to follow or teleporter control.”<sup>6</sup> Although AVs can be used for undersea, space, air, water and land transportation, this section<sup>7</sup> is focused on land-based autonomous vehicles specifically used for public transportation purposes.

In recent times, autonomous vehicles (AVs) are considered one of the major technological advancement in the transportation sector. Advanced safety features in automobiles significantly evolved between 2000 and 2010. These safety features include electronic stability control, blind spot detection, forward collision warning and lane departure warning. Since 2010, auto manufacturers have added several advanced driver assistance features to automobiles like rearview video systems, automatic emergency braking, rear cross traffic alert and lane centering assist.

Driverless vehicle technology awareness and public interest has increased since 2016 but there are some shifts in consumer sentiments based on crashes involving autonomous vehicles<sup>7</sup>. However, the partial automation safety features like lane keeping assist, adaptive cruise control, traffic jam assist and self-park have been popular among the consumers with the consideration that such features help create better drivers. By a combination of software and hardware (sensors, cameras and radar) support, auto manufacturers are able to help drivers identify safety risks and provide warnings to avoid potential crashes. Hence, these smart technologies are helping to save lives and prevent injuries<sup>8</sup>.

There are six levels of autonomous driving<sup>9</sup> as defined by the Society of Automotive Engineers (as shown in Figure 35).

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<sup>5</sup> Majority of the content of this section is created using various online sources and the detailed literature review included in the Autonomous Vehicle Policy Guide for Public Transportation in Florida MPO's, Fall 2017 Studio Team, Florida State University. Available through APA, Florida Chapter.

<sup>6</sup> Lozano-Perez, T. (2012). *Autonomous robot vehicles*. Springer Science & Business Media.

<sup>7</sup> [https://www.researchgate.net/publication/299745930\\_Societal\\_and\\_Individual\\_Acceptance\\_of\\_Autonomous\\_Driving](https://www.researchgate.net/publication/299745930_Societal_and_Individual_Acceptance_of_Autonomous_Driving) & <https://electronics360.globalspec.com/article/12572/consumer-acceptance-of-self-driving-cars-declining-report>

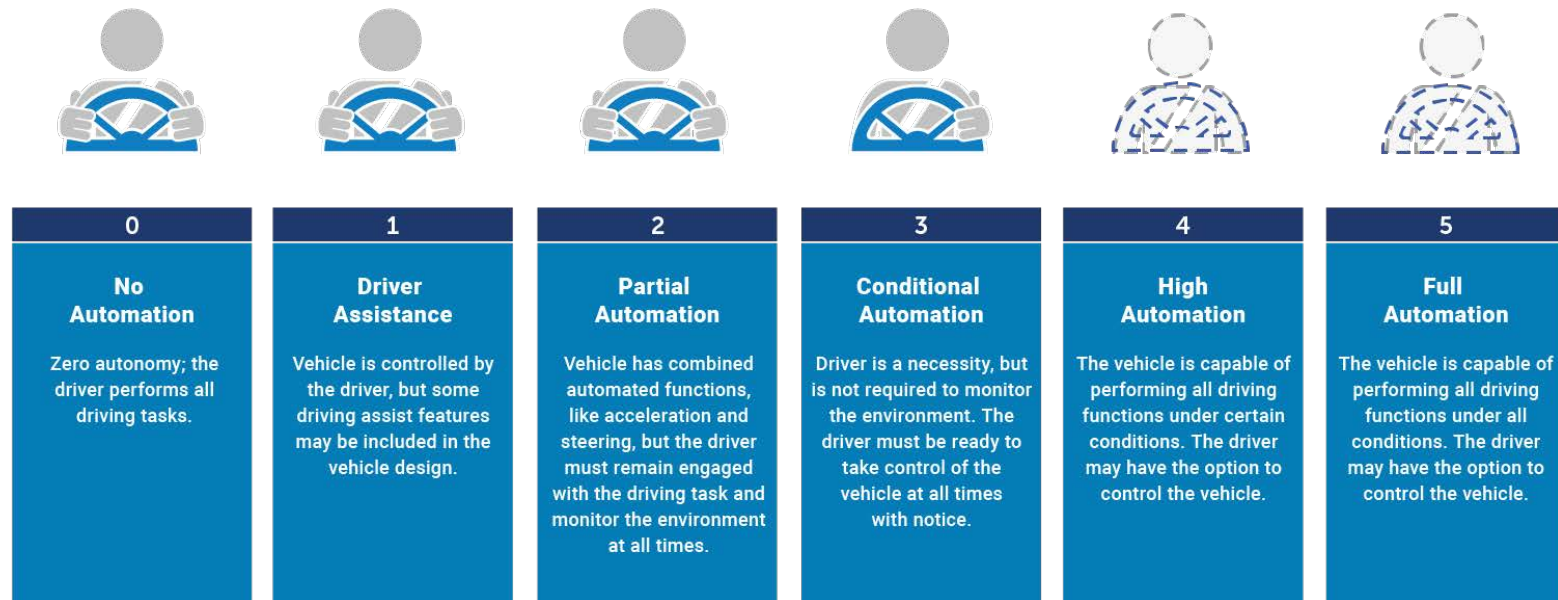
<sup>8</sup> <https://www.ucsusa.org/clean-vehicles/how-self-driving-cars-work#.XCos6TBKipo>

<sup>9</sup> <https://www.nhtsa.gov/technology-innovation/automated-vehicles-safety#issue-road-self-driving>

**Figure 35. AV Automation Levels**

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE) AUTOMATION LEVELS

Full Automation





## Benefits<sup>10</sup>

Potential benefits associated with AV technology include:

- **Safety:** Since 94 percent of all crashes are due to human error, the safety benefits of AVs are paramount.
- **Economic and societal benefits:** Eliminating human error crashes will get rid of the lost workplace productivity, loss of life and decreased quality of life due to injury.
- **Efficiency and Convenience:** Smooth traffic flow and reduced traffic congestion
- **Mobility:** for people who cannot drive due to disability or age-related factors, AVs can significantly improve their mobility allowing people to age-in-place and improving livability of communities.

## Challenges<sup>12</sup>

Other than the most common challenge of societal acceptance and perception associated with any new technology, challenges associated with AVs include costs, safety (AV and human driver), system failures, ethics, liability and legal considerations, security, data privacy and travel and infrastructure issues. Moreover, the regulatory and policy challenges need to account for fully autonomous, partially autonomous and human driven cars co-existing on the highways for at least the next 30 years. Since the AVs use machine learning and artificial intelligence as their learning methods while functioning, they are continuously collecting data from their surroundings. There are challenges associated with algorithm robustness, data privacy and security.

## AVs in Public Transit

The previous section covered the general benefits and challenges of AVs, however it is also important to assess the benefits and challenges associated with AVs in public transit. Wilmot and Greenword (2016)<sup>11</sup> state that public transit, dedicated freeway lanes and parking are ways to introduce the AV technology in a fixed setting. The following sub-sections explain the various factors associated with AVs in public transit.

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<sup>10</sup> <https://www.nhtsa.gov/technology-innovation/automated-vehicles-safety#issue-road-self-driving>

<sup>11</sup> Wilmot, C. Greensword, M. (2016) Louisiana Transportation Research Center – Investigation into legislative action needed to accommodate the future safe operation of autonomous vehicles in the state of Louisiana. Louisiana Transportation Research Center. Url: <https://www.ltrc.lsu.edu/pdf/2016/FR%20571.pdf>

## **Mobility**

AVs in public transportation is likely to significantly improve the mobility of people who can't drive due to income, age or disability issues.

## **Workforce Considerations and Labor Agreements**

The adoption of AVs in public transportation vehicles at partial, conditional or high automation levels is likely to require the drivers to possess a wide-ranging skill-set than traditional drivers. The driver duties could include supervising passenger transfer; operating the vehicle to and from storage locations or maintenance depot; and the detection and management of emergency situations. However, to make transition to AVs, labor unions will need to be involved for updated roles and reduced hours to account for autonomous technology. To some extent, the public transit employee federal protection laws provide for the preservation of jobs and will be critically important to review before AV technology adoption (Gettman et al., 2017)<sup>12</sup>.

## **Land-use**

Heinrichs (2016)<sup>13</sup> states that autonomous transit systems may change the urban fabric differently than autonomous private cars. Anderson et al (2016)<sup>14</sup> suggests that the adoption of autonomous vehicles for public transit could lead to urban centers being denser, thus decreasing the amount of space used to park vehicles. Fully autonomous vehicles could potentially drop off passengers into urban cores and then drive to satellite parking areas.

## **ADA Compliance**

ADA compliance is usually taken care of by bus operators, and the current design for AVs is accommodating but cannot guarantee smooth working if the rider is unable to understand the instructions. However, other than fully autonomous vehicles with no likely presence of human, human driver on-board the vehicle can assist with ADA compliance.

## **Funding Constraints and Liability**

Major challenges include funding constraints, liability of transit agencies, and the general acceptance of the new technology by industry professionals, system operator and the public.

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<sup>12</sup> Gettman, D. Lott, J.S. Goodwin, G. Harrington, T. (2017) Impacts of Laws and Regulations on CV and AV Technology Introduction in Transit Operations. National Cooperative Highway Research Program; Transportation Research Board; National Academies of Sciences, Engineering, and Medicine

<sup>13</sup> Heinrichs, Dirk (2015). *Autonomous Driving: Technical, Legal and Social Aspects*. Ladenburg, Germany: SpringerOpen. 213-231. Available from <https://link.springer.com/book/10.1007/978-3-662-48847-8>

<sup>14</sup> Anderson, J. Karla, N. Stanley, K.D. Sorenson, P. Samaras, C. Oluwatola, O. (2016) *Autonomous Vehicle Technology: A Guide for Policymakers*. Rand Corporation. Available from: [https://www.rand.org/pubs/research\\_reports/RR443-2.html](https://www.rand.org/pubs/research_reports/RR443-2.html)

## Planning and Partnerships

Long range transit planning and regional planning/coordination must consider future AV technology deployment and favorable infrastructure and land-use decisions for the same. Moreover, due to the many challenges facing local transit authorities within their respective MPOs from decreasing ridership to funding, it will be imperative to have P3s, or public-private partnerships for adopting the AV technology. Partnerships can start with addressing first mile – last mile connectivity and fixed route gap coverage issues. The NCHRP report created the following suggestions for transit agencies (Gettman et al., 2017)<sup>15</sup>:

- Develop or revise long range plans to consider changes in definitions and language.
- Identify opportunities and threats posed by AV.
- Identify potential strategies for managing the changes.
- High frequency BRT.
- First/last mile applications.
- Conventional fixed route system.
- Public input.
- Explore partnership options.

## Safety and Compliance

The National Highway Traffic Safety Administration (NHTSA) has been given the responsibility to address the following concerns regarding the safe and agreeable adoption of AVs<sup>16</sup>:

- Setting Federal Motor Vehicle Safety Standards (FMVSSs) for new motor vehicles and motor vehicle equipment (with which manufacturers must certify compliance before they sell their vehicles)
- Enforcing compliance with FMVSSs
- Investigating and managing the recall and remedy of noncompliance and safety- related motor vehicle defects nationwide
- Communicating with and educating the public about motor vehicle safety issues

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<sup>15</sup> Gettman, D. Lott, J.S. Goodwin, G. Harrington, T. (2017) Impacts of Laws and Regulations on CV and AV Technology Introduction in Transit Operations. National Cooperative Highway Research Program; Transportation Research Board; National Academies of Sciences, Engineering, and Medicine

<sup>16</sup> NHTSA, Automated Driving Systems 2.0: A Vision for Safety

- State governments are responsible for addressing the following concerns:
- Licensing human drivers and registering motor vehicles in their jurisdictions
- Enacting and enforcing traffic laws and regulations
- Conducting safety inspections, where States choose to do so
- Regulating motor vehicle insurance and liability

Below are key findings for transit agencies looking to add AVs to their fleet:

- Retrofitting is a financially viable option compared to buying new a new autonomous bus or shuttle.
- An electric bus will be necessary for compatibility and economic efficiency to transition to an autonomous bus.
- Retrofitting is done mainly for freight semi-trucks, but bus manufacturing companies are applying this to buses.
- Fully automated buses are nearing the end of real world testing and will be on the market soon.
- Autonomous buses will be very expensive to buy or lease.
- Shuttles have about a 12 person capacity with an average max speed of 25 MPH and have undergone more extensive testing than buses.
- Shuttles are currently estimated at \$250,000 to lease.

### **Initial and Longer-term Strategies for Adopting AVs and Implementing Programs**

Most leading car manufacturers plan on releasing self-driving car models by 2021<sup>17</sup> and Transportation Network Companies (TNCs) like Uber, Lyft, Via, Chariot and Waymo are already testing driverless vehicles in their fleet (just with drivers in them). As the concept of autonomous vehicles is still in the initial stages, it is recommended agencies take an incremental approach to considering the option. Initial stage activities should focus on outreach and actions that do not require a large capital investment in rolling stock and personnel. Thus, the concept of turnkey options in which the vendor provides management, marketing, maintenance and on-street service provides opportunities to test the concept without a large infrastructure and personnel investment. Additionally, as the concept will grow and change, consideration of future concept modification of the concept is warranted.

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<sup>17</sup> [https://www.just-auto.com/analysis/all-those-in-favour-of-avs-say-ai\\_id182611.aspx](https://www.just-auto.com/analysis/all-those-in-favour-of-avs-say-ai_id182611.aspx)

Table 43 documents key considerations for both an initial step and longer-term commitment to autonomous vehicles.

**Table 43. Short-Term and Long-Term Strategies for Adoption of AV Technology**

Initial Considerations	Long-term Considerations
<ul style="list-style-type: none"> <li>• Establish an AV testing bed within jurisdiction</li> <li>• Choose the type of transit to be deployed</li> <li>• Decide the level of automation that should be tested</li> <li>• Select a vendor</li> <li>• Decide whether to buy or lease vehicles</li> <li>• Secure funding</li> <li>• Conduct public participation initiative to establish buy-in and educate the public</li> <li>• Set up a system of payment</li> <li>• Ensure that state and federal safety regulations are met</li> <li>• Designate an agency to license vehicles and establish this procedure</li> </ul>	<ul style="list-style-type: none"> <li>• Update infrastructure</li> <li>• Make sure that all vehicles/ stations/ operators/ etc. are ADA compliant</li> <li>• Have a workforce development plan for loss of bus driver jobs</li> <li>• Designate a lead agency/ stakeholder group to handle questions and decisions that arise</li> <li>• Develop an emergency action plan for potential cyber security breach</li> <li>• Incentivize development around AV service area</li> </ul>

# Transit Asset Management (TAM) Plan Summary

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In 2016, Citilink developed and maintains a Transit Asset Management System (TAMS) to fulfill the requirement of being eligible FTA financial assistance recipient as well as to support efficient and fiscally responsible management of assets. The purpose of the plan is to support effective performance management and TAM can be defined as a “strategic and systematic practice of procuring, operating, inspecting and maintaining, rehabilitating, and replacing transit capital assets to manage their performance, risks, and costs over their life cycles, for the purpose of providing safe, cost-effective, and reliable public transportation.”<sup>18</sup>

Citilink conducted an inventory of all of its facilities, furniture, fixtures and equipment (FFE) and rolling stock and assigned present-day values (2016) to each item. The TAM for the Fort Wayne Public Transportation Corporation (Citilink) also includes a schedule of replacement of assets. The facility, FFE and rolling stock inventory included both Leesburg Road and Baker Street facilities. As shown in Table 44 and Table 45, four functional (for facilities and FFE) and four physical condition ratings (for rolling stock) were used for assessment of current assets.

**Table 44. Functional Condition Ratings<sup>19</sup>**

<b>Rating Description</b>	<b>Working Definition</b>
Excellent	The asset exceeds the reasonable requirement based on its intended function
Good	Asset meets most reasonable requirements, but may have some less than optimum characteristics
Adequate	Asset has shortcomings in its ability to support its intended function, but these do not significantly impact the transit performance
Substandard	Asset has shortcomings in its ability to support its intended function that are deemed by the operator to be below the industry standards. These deficiencies impact the efficiency and/or effectiveness of the operation.

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<sup>18</sup> FTA, Department of Transportation, 49 CFR Section 625.5,

<sup>19</sup> Citilink Transit Asset Management Plan 2016, page 4.

**Table 45. Physical Condition Ratings<sup>20</sup>**

<b>Rating Description</b>	<b>Working Definition</b>
Excellent	Brand new, no major problems exist, only routine preventative maintenance
Good	Elements are in good working order, requiring only nominal or infrequent minor repairs (greater than 6 months between minor repairs)
Fair	Requires frequent minor repairs (less than 6 months between repairs) or infrequent major repairs (greater than 6 months between major repairs)
Poor	Requires frequent major repairs (less than 6 months between major repairs)

Citilink recognizes that there are multiple definitions of State-of-Good-Repair (SGR). The APTA State-of-Good-Repair (SGR) Standards Committee has defined SGR as, “a condition in which assets are fit for the purpose for which they were intended.” Citilink’s strategy for maintaining fleet in a state of good repair is to replace all vehicles when they meet the end of their useful life (measured either in miles or years) with federal and local funds which are allocated for that purpose.

One of Citilink’s goals is to continue the acceptable state of good repair of its fleet, facilities, and programs under the fiscal constraints faced by the organization through responsible planning and allocation of funding. Citilink currently has equipment contracts in place or going out through the RFP process keeping Citilink’s assets in an acceptable state of good repair. Citilink has also dedicated reserves of local funds to match Federal dollars available to us under MAP 21 and its successor ensuring the assets stay in a state of good repair.

The SGR Rating Scale consists of five ratings as follows:

- Excellent: no visible defects, near new condition
- Good: some slightly defective or deteriorated components
- Adequate: moderately defective or deteriorated components
- Marginal: defective or deteriorated components in need of replacement
- Poor: seriously damaged components in need of immediate repair

The SGR benchmark used by Citilink is ‘Good and above’ for rolling stock and ‘Marginal and above’ for facilities including passenger shelters. As an example of efficient use of resources, some rolling stock do not meet or exceed the ‘Useful Life Benchmark (ULB)’ but

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<sup>20</sup> Citilink Transit Asset Management Plan 2016, page 5.

are rated as ‘good or above’ for SGR rating. The SGR and ULB targets for 2017 through 2019 were also published as part of the TAM plan.

Table 46 below shows the 2016 Rolling Stock ULB and SGR inventory which formed the basis for 2017-2019 targets (2017 targets shown in Table 47). The Citilink TAM Plan and 2017-2019 TAM Targets are included as Appendix 8.

**Table 46. Rolling Stock Inventory and Useful Life Benchmark (2016)**

Asset Description	Number	Useful Life Benchmark (ULB)	Number At/Exceeding ULB	Percent At/Exceed ULB
<b>Bus Total</b>	<b>31</b>		<b>3</b>	<b>13%</b>
Large Transit Bus	31	14 Years	3	13%
<b>Cutaway Bus Totals</b>	<b>23</b>		<b>18</b>	<b>78%</b>
Medium Bus	3	7 Years	3	100%
Light Bus	20	5 Years	15	75%
<b>Specialized Van Total</b>	<b>5</b>		<b>0</b>	<b>0%</b>
Small Van (5310)	2	6 Years	0	0%
Medium van (531)	3	6 Years	0	0%
Large Van (5310)	0	6 Years	0	0%
Minivan (5310)	0	6 Years	0	0%

**Table 47. Rolling Stock Inventory with ULB and SGR (2017)**

Asset Description	2017 Percent at/Exceed ULB	2017 Target At/Exceed ULB	Percent in State of Good Repair	Target Percent in State of Good Repair
Buses (Large)	12.5%	12.5%	100%	90%
Cutaway Buses	69.0%	69.0%	100%	90%
Specialized Vans	0.0%	0.0%	100%	90%

As included in the TAMS, an annual evaluation and update of the Transit Asset Management plan will be completed by June 30th of each year resulting in a present-day asset inventory, reflecting any necessary state of good repair strategy adjustments, level of service or performance standard changes, adjustments to any implementation strategies and provide a listing of current available funding. This inventory is necessary to identify assets for replacement early enough to help in budget planning. Each of such assets are then prioritized for specific agency action of replacement, retirement or extension of service in keeping with stated state of good repair strategies. Assets scheduled for extension of service



are given a revised replacement (useful life) date and returned to the year-end asset inventory.

Based on the TAM Plan prioritizing of rolling stock replacement, Allen County’s Transportation Improvement Program (TIP) for Year 2020-2024 includes capital purchases using a combination of FTA section 5339 funds and local funds. Table 48 shows the summary of planned fleet replacement. In addition to the capital investments for Citilink’s fleet, the TIP also includes operating funds of \$192,000 for 2020 with 50 percent local match and capital funds of \$238,800 in 2019 with 20 percent local match for four medium transit vehicles with lift.

**Table 48. Citilink’s Fleet Replacement as Included in Allen County Transportation Improvement Program (TIP) – FY 2020-FY 2024**

Description	Estimated Cost	Year	Federal Funds	Local Funds	Priority
4 Replacement Minibus (Access)	\$414,118	2020	\$352,000	\$62,118	1
1 Heavy Duty Replacement Bus	\$503,529	2020	\$428,000	\$75,529	1
2 Heavy Duty Replacement Bus	\$1,007,059	2021	\$856,000	\$151,059	2
1 Heavy Duty Replacement Hybrid Bus	\$740,000	2022	\$440,000	\$300,000	3
3 Replacement Minibus Access	\$310,588	2022	\$264,000	\$46,588	3
1 Heavy Duty Replacement Bus	\$503,529	2023	\$428,000	\$75,529	4
2 Replacement Minibus FLEX	\$244,706	2023	\$208,000	\$36,706	4
1 Heavy Duty Replacement Bus	\$517,647	2024	\$440,000	\$77,647	5
2 Replacement Minibus Access	\$225,882	2024	\$192,000	\$33,882	

Source: Fort Wayne-New Haven-Allen County TIP (FY20-FY24)

Note: The Indiana Department of Transportation (INDOT) and the Northeastern Indiana Regional Coordinating Council (NIRCC) produce a 5-year State Transportation Improvement Program (STIP) and a TIP. However, the Federal Highway Administration (FHWA) and the FTA approve projects four years (2020-2023). The fifth year (FY 2024) is for informational purposes only.