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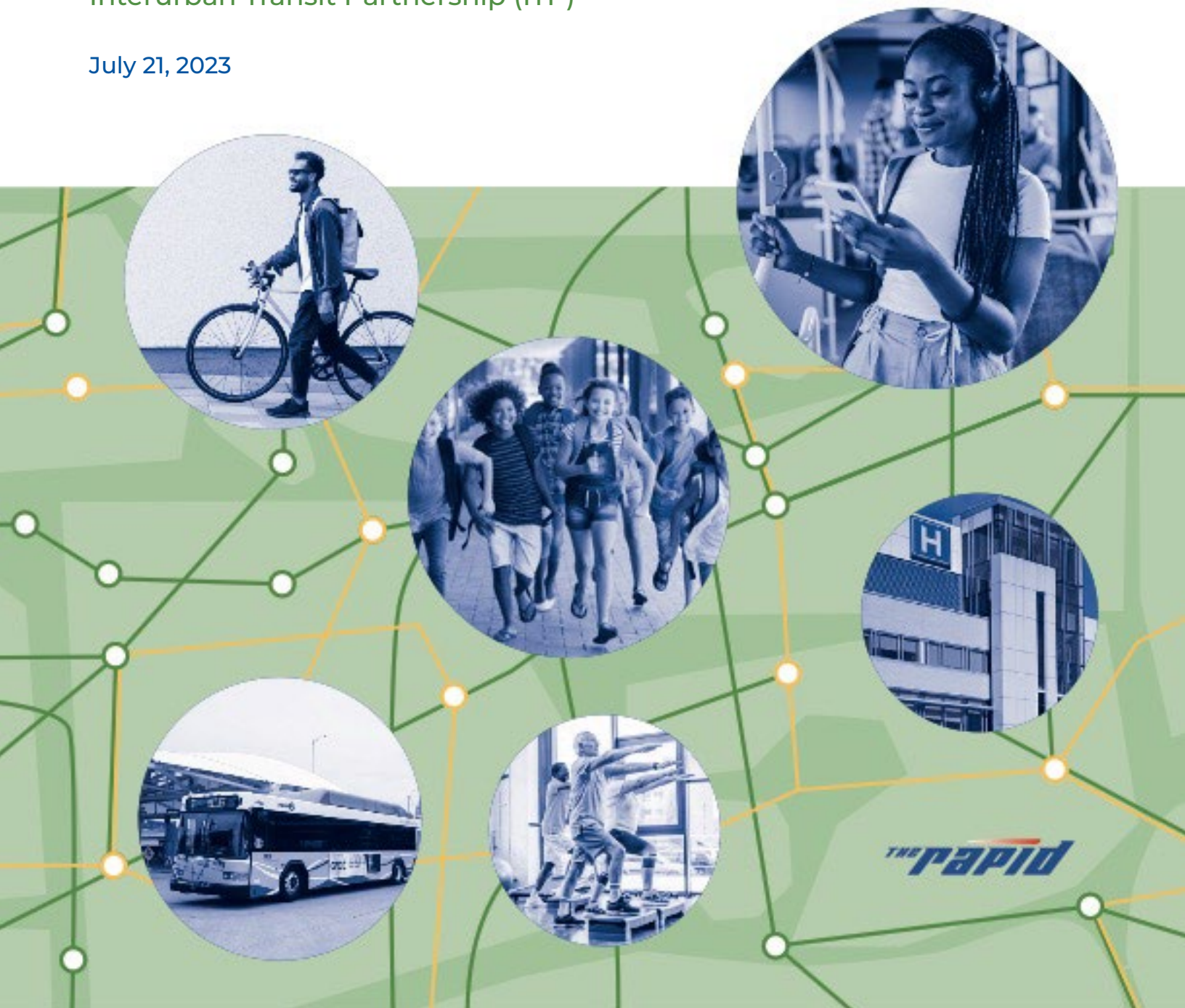
EXISTING AND FUTURE CONDITIONS REPORT

The Rapid Transit Master Plan (TMP)

Interurban Transit Partnership (ITP)

July 21, 2023



Quality information

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Revision	Revision date	Details
01	April 21, 2023	First draft for client review
02	June 15, 2023	Revised draft
03	July 21, 2023	Revised draft

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INTRODUCTION

This *Existing and Future Conditions Report* identifies and evaluates the regional context for providing transit services and summarizes existing service conditions and key factors that will influence The Rapid's delivery of transit services over the next 20 years. These include recent planning efforts and studies as well as current and future demographic, land use, development, and current transit conditions. Building upon this conditions analysis, strengths, weaknesses, opportunities, and threats (SWOT) are identified to provide a guiding framework for the development of recommendations and strategies for the broader Transit Master Plan.

Study Area

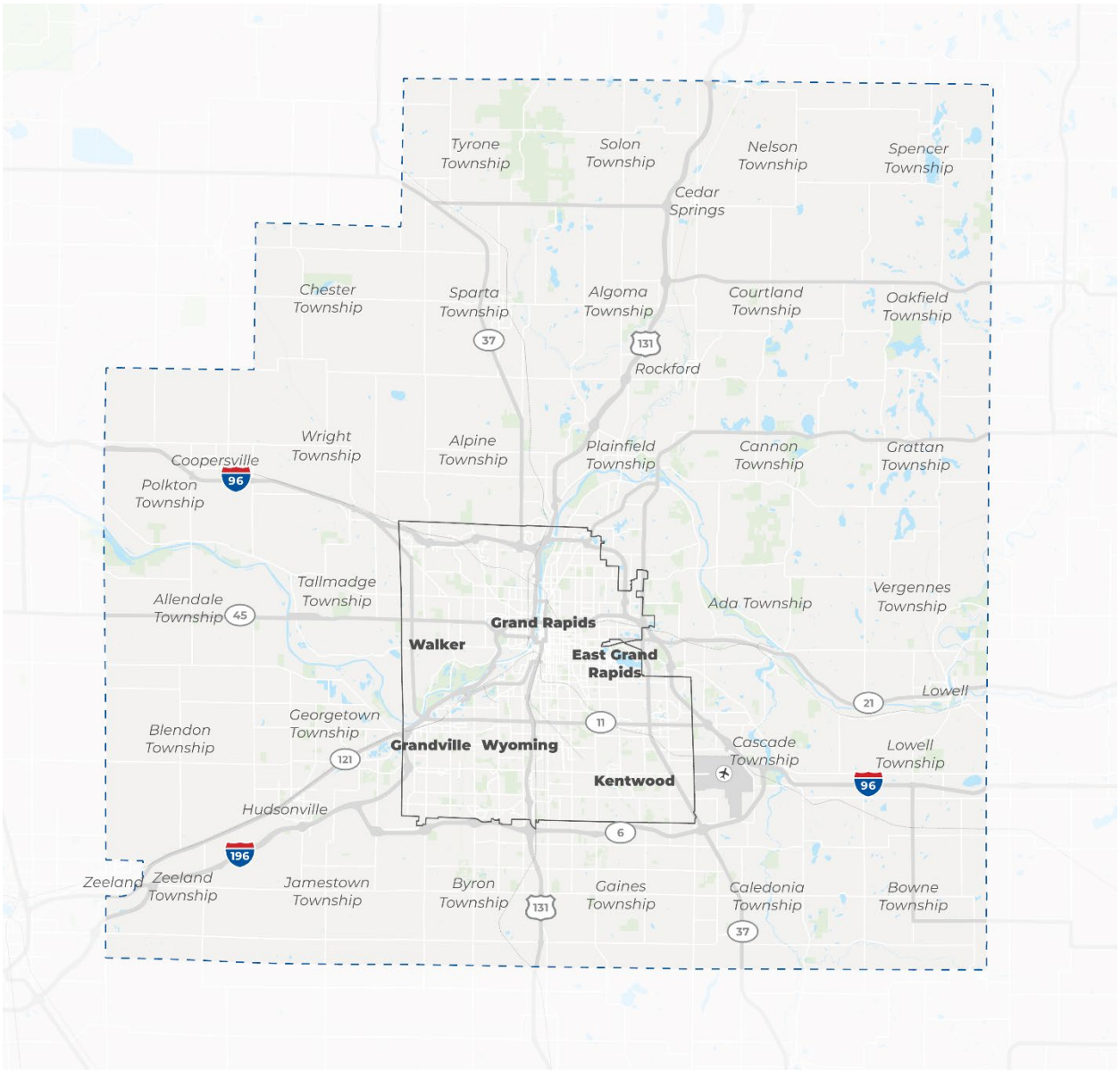
The existing and future conditions study area (defined as Zone 1) includes The Rapid's six member communities (Grand Rapids and the surrounding cities of Walker, East Grand Rapids, Kentwood, Wyoming, and Grandville) as well as the rest of Kent County and parts of Ottawa County that intersect the Grand Rapids urbanized area. Figure 1 depicts the Zone 1 Study Area boundary along with The Rapid's member community boundary.

Report Organization

The remainder of this *Existing and Future Conditions Report* is organized as follows:

- *Agency History, Structure, and Funding*
- *Recent Planning Efforts and Studies*
- *Demographics and Land Use*
- *Transit Network Conditions and Service Quality*
- *Conclusion*

Figure 1: Existing Conditions Study Area



Existing Conditions Study Area

Zone One Boundary

ITP Member Communities

0 2 4 8 Miles

AGENCY HISTORY, STRUCTURE, AND FUNDING

Formation of The Rapid & Governance Structure

In 1963, the City of Grand Rapids formed the Grand Rapids Transit Authority (GRTA).[1] In response to increased regional need for transit services, in 1978, the surrounding cities of East Grand Rapids, Grandville, Kentwood, Walker, and Wyoming voluntarily agreed to join the City of Grand Rapids to support a more regional transit service with general fund revenues. GRTA thus became a regional transit authority and was rebranded as the Grand Rapids Area Transit Authority (GRATA) in July 1978. As GRATA's funding was discretionary in nature, over time the quality of transit service declined when faced with rising expenses.

To provide a more consistent funding source and make meaningful progress towards achieving the five key policies of the 1998 Long Range Transportation Plan, in 2000, the six cities dissolved GRATA and formed the Interurban Transit Partnership (ITP) as a State Act 196 authority with dedicated millage funding from the six member cities.[1] ITP service was rebranded under the name "The Rapid" which continues to be used today. The Rapid is currently supported by directly generated, local, state, and federal funding sources.

The Rapid's service area is primarily comprised of the six member cities, however service also extends into:

- Alpine, Byron, Gaines, and Cascade Townships
- Ottawa County's Allendale Township as part of contracted service with Grand Valley State University; and
- Northern Kent County and Mecosta County to the cities of Cedar Springs and Big Rapids as part of contracted service with Ferris State University.

Funding Sources and Financial Projections

Funding The Rapid's transit system requires a wide variety of sources including directly generated, local, state, and federal funds. These funds fall into two categories: operating funds and capital funds. The following section summarizes The Rapid's current funding sources and financial projections for fiscal year 2023 through 2028, which serve as a snapshot of funding expectations at the time of this analysis

[1] Source: Agency History: GRTA to (ITP)/The Rapid, The Rapid, August 10, 2010

Key Takeaways

- Outside the height of the COVID-19 pandemic, the majority of The Rapid's operating funding is from local property taxes through a transit millage rate, which has not increased since 2012. Other local and directly generated operating funding sources like passenger fares are more reliant on ridership trends with less room for year-over-year growth.
- Approximately 20% of The Rapid's capital expenditures are funded by state funds with the remaining 80% coming from federal funds. In FY2021, 95% of The Rapid's federal operating funding came from the FTA's Urbanized Area Formula Program, Capital Programs and Bus & Bus Facilities Program.

Capital Funds

Capital funds are spent on items that last for several years such as buildings, bus stations, vehicles, fare collection equipment, and communications and information systems. Capital programs are typically focused on the long-term maintenance, improvement, or expansion of the transit system.

State and Federal Funding Sources

The Rapid receives capital funding from both state and federal sources. The state of Michigan's Comprehensive Transportation Fund (CTF), a state-restricted fund to support public transportation purposes created through the Michigan Public Act 51 of 1951,[2] provides the non-federal match for federal transit grants. In general, Federal Transportation Administration (FTA) grants for capital activities typically have an 80% federal share with 20% local match.

This balance is highlighted in the National Transit Database (NTD), which shows that approximately 20% of The Rapid's capital expenditures have historically been funded by state funds with the remaining 80% coming from federal funds. In FY2021, The Rapid received approximately $16.3M in capital funds, $3.1M of which was from the state transportation fund and $13.1M of which was from federal sources. Approximately 54% of the federal funds expended on The Rapid's capital programs in FY2021 were from the FTA's Urbanized Area Formula Program (5307) with a further 24% from the FTA's Capital Investment Grant (CIG) Programs Funds (5309) and 17% from the Bus and Bus Facilities Formula Program (5339). The funds from the FTA's CIG program were used to fund continued capital work associated with the Laker Line BRT project.

Operating Funds

Operating funds are typically shorter-term expenses required to keep The Rapid's system running. Operating funds are spent on items including labor, materials and supplies, utilities, fuel, advertising, and other administrative costs. The Rapid receives operating funding from fares and other directly generated sources as well as local, state, and federal sources. In FY2021, The Rapid received approximately $45.8M in operating funds.

[2] Source: Section 10b of Public Act 51 of 1951 (Act 51)

Directly Generated and Local Funding Sources

The Rapid uses directly generated and local funding sources to fund operating, rather than capital, expenses. Directly generated funds are defined by the National Transit Database as "funds that a transit agency earns from non-governmental sources."[3]

The majority of The Rapid's directly generated and local operating funding is supported by the local property tax/transit millage. Millage represents the rate at which property taxes are levied on property.[4] The initial millage funding established in 2000 to support The Rapid was 0.75 mills. Several rounds of millage rate increases for transit have been approved. Most recently, in November 2017, voters approved a millage renewal which would add more than $15 million to The Rapid's operating budget over 12 years.[5] Although the existing millage rate or 1.47 mills was renewed in 2017, the rate has not increased since 2012. At the current rate, the owner of a $100,000 home with a taxable value of $50,000 would pay roughly $73.50 per year in their local property tax to support public transportation."[6] Without private contributions or increased funding from other sources, The Rapid identified that the millage rate would need to be increased to 2.00 mills to support the *Preferred Scenario* in The Rapid's 2010 Transit Master Plan.

In FY2021, The Rapid earned approximately $27.1M in directly generated and local funds. The majority of these funds ($17.5M, 65%) came from the property tax/millage, with a further $6.0M in from passenger fares. Other local and directly generated funding sources included the sale of transportation services, and advertising/sales. Aside from the property tax/millage, directly generated and local sources are generally lower value, more reliant on ridership trends, and have less room for year-over-year growth compared to the millage.

State and Federal Funding Sources

Unlike directly generated and local funding sources, which are used only to fund operating expenses, state and federal funding sources typically fund a portion of both The Rapid's capital and operating expenses. In FY2021, federal sources expended on operating expenses included funds from the FTA Capital Program (5309), CARES Act Urbanized Area Program, CRRSA Act Organized Area Program, FTA Metropolitan Planning Program (5303), and extraordinary and special item funds for the purchase of personal protective equipment (PPE) and services. In FY2021, approximately $16.7M from the state transportation fund was spent on operations.

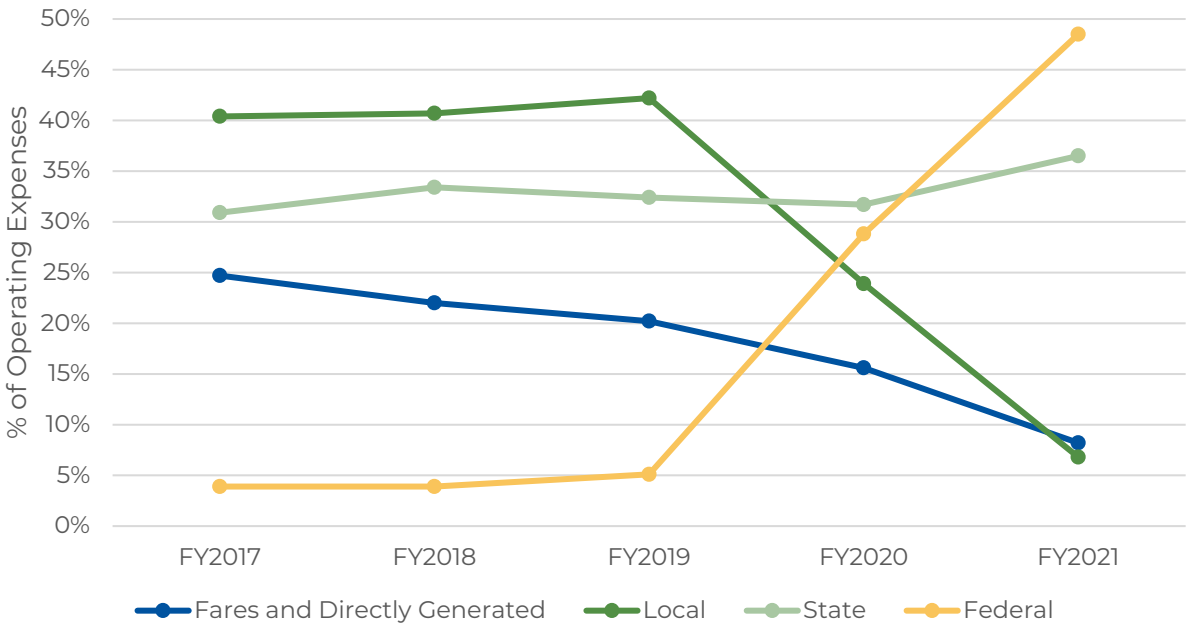
Recent Variability of Expended Operating Funds by Source

Prior to the COVID-19 pandemic, federal sources generally were primarily permitted for use on capital expenses with only limited applicability for operating expenses. In response to the COVID-19 pandemic, however, the USDOT allowed increased flexibility in how federal funds were used in order to help transit agencies respond to the pandemic. In particular, transit providers were allowed to use federal formula funds for operating expenses in addition to capital expenses. This flexibility only remained in place for the extent of the state of emergency. "Given the compelling need, operating expenses were eligible through January 20, 2022."[7] As depicted in Figure 2, prior to the COVID-19 pandemic, federal sources funded approximately five percent of The Rapid's annual operating expenses with state operating assistance (SOA) covering roughly a third of operating costs and directly generated and local

[3] Source: *2022 NTD Reporting Policy Manual*, NTD, March 3, 2023
[4] Source: What is a millage rate and where do I find it?, State of Michigan
[5] Source: Grand Rapids bus millage renewal passes by more than 8,000 votes, Bryce Huffman, Michigan Radio, November 7, 2017
[6] Source: The Rapid's Board Unanimously Approves to Put Public Transportation System's Millage Renewal on November 2017 Ballot, Mass Transit, June 30, 2017
[7] Source: Frequently Asked Questions from FTA Grantees Regarding Coronavirus Disease 2019, FTA, May 18, 2022

sources funding the remaining 60-65 percent. Since the onset of the COVID-19 pandemic, however, federal fundings have comprised a significantly greater share of the funds spent on operating expenses while the portion of operating expenses funded by state resources has varied by less than 6 percent while the relative contribution of local and directly generated sources has steeply declined. This decline, and relative rise in federal contribution, is because fare revenue declined during the COVID-19 Pandemic and federal economic relief funding was used to fund operating expenses rather than revenue from the local property tax.

Figure 2: Sources of Expended Operating Funds

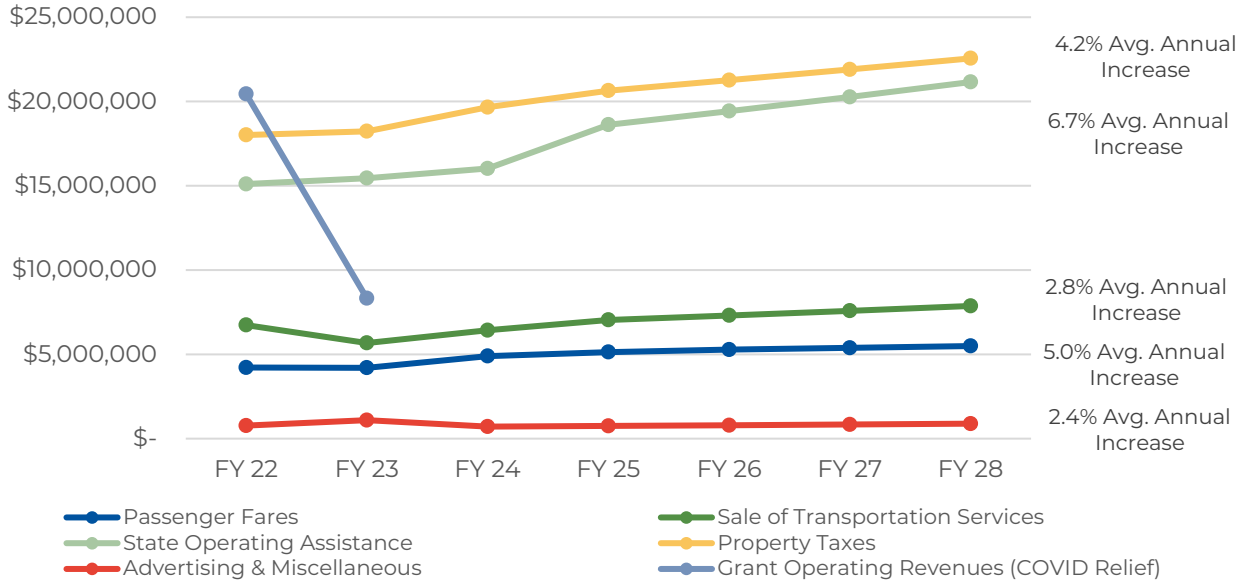


Source: National Transit Database Transit Agency Profiles, FY2017-FY2021

Financial Projections

Figure 3 shows The Rapid's projected changes in operating revenues, by source, over the next several fiscal years. As shown, state operating assistance and millage (property taxes) represent the two largest revenue sources. With its high expected growth rate of an approximately 6.7% increase per year, on average, transit operations have become increasingly reliant on state assistance each year. Property taxes are a steady source of revenue growth, with an expected increase of 4.2% per year, on average. Conversely, the sale of transportation services, which includes The Rapid's contracted services such as the DASH Shuttles, Township Services, and GVSU service, is projected to have a small average growth of 2.8% per year while funds from advertising and other miscellaneous sources are projected to have 2.4% annual growth.

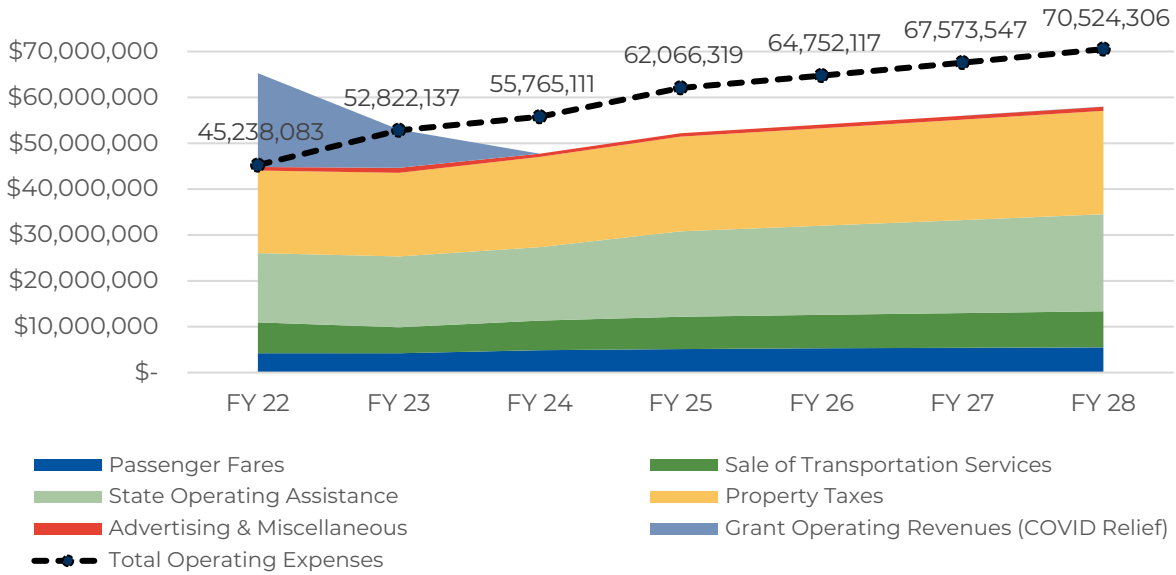
Figure 3: FY 2022 to FY 2027 Operating Budget Projection, by Revenue Source



Source: The Rapid, 2024 Five-Year Financial Projection

Following steady declines in recent years, The Rapid projects that passenger fare revenue will grow by an average of 5.0% per year over the next five fiscal years. This projection is most reliant on the continued growth of system ridership and may not have as much longevity beyond FY 2028 if ridership stabilizes following post-pandemic recovery. However, when comparing revenue from passenger fares to the total cost of service operations (Figure 4), fare revenue projections are relatively conservative, representing only 10% of operating costs (FY 2022) down to 6% (FY 2027). As shown by the gap between the sum of projected revenue sources and total operating expense, The Rapid is currently projecting an approximate $4,639,284 revenue deficit for FY 2028.

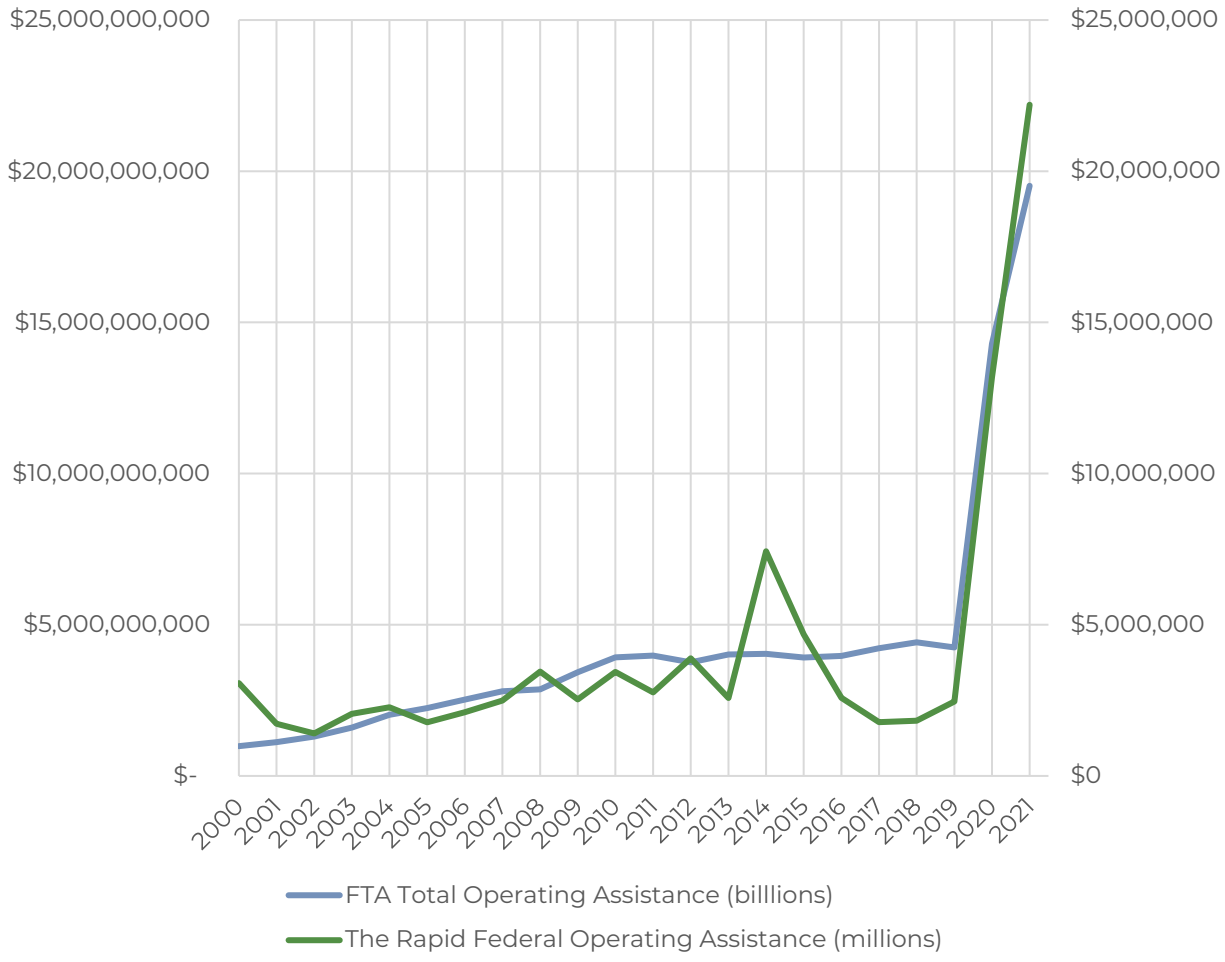
Figure 4: Revenue Composition Relative to System Operating Expense



Source: The Rapid, 2024 Five-Year Financial Projection

The most volatile source of revenue over the next five years is anticipated to be federal operating assistance. As a result of the COVID-19 pandemic and temporary changes to available transit funding, this revenue source increased by roughly 10 times between FY 2019 and FY 2021. This expansion of transit funding allowed The Rapid built a reserve up through FY2022 and may use it to cover the expected deficit as needed through FY2027. As shown in Figure 5, changes to the federal assistance awarded to The Rapid very closely mimic the total award across all FTA reporters and is subject to the federal budget process for FY 2024 and beyond. As federal COVID-19 relief funding was an unprecedented intervention from the federal government to provide operating resources, it is unlikely to be available again in the future although federal funding is likely to continue to be more volatile than other local and state funding sources.

Figure 5: Changes to Federal Operating Assistance (2000-2021)



Source: National Transit Database, 2021 Operating Revenue Time Series Data

RECENT PLANNING EFFORTS AND STUDIES

An important component in developing The Rapid's vision and strategic direction for the next twenty years is learning and building upon recent planning efforts and studies. This section highlights significant recent planning efforts since The Rapid's last Transit Master Plan (TMP) was developed to understand the broader planning context and recent recommendations for the Grand Rapids metro area. Table 1 provides a summary of the plans and studies reviewed, including:

- Regional studies
- Plans developed by The Rapid
- Plans developed by individual jurisdictions.

Key Findings

Key findings and priorities identified from the review of recent planning efforts and studies include:

- **Additional funding is needed to support existing and expanded transit services** as no long-term adequate stable funding source currently exists for existing service as well as service outside The Rapid's member area.
- **Improved transit amenities, facilities, and technology are needed**.
- **Improving regional transit connectivity is a priority for the region**. Multiple plans indicated the need to cross jurisdictional boundaries, and improve connectivity to neighboring cities and counties, other transit agencies, other modes of transportation, and regional destinations.
- **The Rapid is committed to providing new and innovate types of service.** Since the last TMP, two BRT routes, two Rapid Connect on-demand zones, and a variety of fixed route service improvements have been implemented. The Rapid has also evaluated transitioning its fleet towards zero-emission vehicles.
- **Maintaining and expanding The Rapid's transit services is broadly supported**. Many communities including Grand Rapids, East Grand Rapids, Walker, and Kentwood, as well as Alpine and Cascade Townships specifically mention support or a desire to coordinate with The Rapid on future transit development in their official master plans. Desired service expansion priorities include expanded service hours, expanded services for individuals with disabilities and seniors, as well as new service to several corridors/areas including but not limited to:
    - Southeastern Ottawa County
    - Expanded options to the Gerald R. Ford International Airport
    - Upgrades to Route 7 and 9
    - New Wilson Avenue, 3 Mile Road, and 4 Mile Road Crosstown service
    - Walker Avenue/Northridge Drive and West River Drive/Turner Avenue

Table 1: Recent Planning Efforts and Studies

No.	Planning Effort or Study	Published Date	Relevance to The Rapid's TMP
Regional Plans and Studies			
1	West Michigan Transit Linkages Study	2012	• Identifies the feasibility of commuter express transit service throughout West Michigan and route options to link The Rapid with other transit agencies in West Michigan
2	GVMC Non-motorized Transportation Plan	2014	• Promotes transit and non-motorized connections within the Grand Valley Metro Council region
3	GVMC Coordinated Mobility Plan for Prosperity Region 4	2016	• Addresses the importance of increasing transit connectivity and enhancing transit services between cities and counties in Region 4. The Rapid is one of the service providers mentioned in the plan
4	West Michigan Express Study	2018	• Considers the feasibility of a rail or bus system between Grand Rapids and Holland
5	GVMC 2045 Metropolitan Transportation Plan (MTP)	2020	• Supports transit improvement by addressing safety for all users, enhanced conditions and operation, and a mode shift to more forms of transportation
6	GVMC Airport Access Study	2023	• Considers direct shuttle/bus service between downtown Grand Rapids and the airport as well as expanded service in Cascade Township and Caledonia which could be provided by The Rapid
7	GVMC TDM Plan	Ongoing	• Transit services provided by the Rapid are part of the TDM programming. Specific objectives of the TDM plan include using TDM programming to attract 300 new transit riders, increase participation in The Rapid's specialty pass programs by 20% compared to a pre-pandemic baseline, at least three infrastructure construction projects or major transit enhancements coordinate with the regional TDM program on outreach and messaging, Specific strategies and a final report are expected in Spring – Fall 2023
8	GVMC 2050 MTP Update	Ongoing	• Includes goals to develop an efficient multimodal system and to support the State of Good Repair federal performance measures and the priorities established in the ITP Transit Master Plan
9	MDOT US-131 Planning and Environmental Linkages (PEL) Study	Ongoing	• Examines the long-term uses of US-131 operationally and economically in Grand Rapids through the City of Wyoming
The Rapid's Plans and Studies			
10	Grand Rapids Streetcar Feasibility Study	2008, 2014	• Streetcar is part of The Rapid's proposed transit service on Monroe Ave and Market Ave • Potential transit capital and operating funding sources are identified
11	Transit Master Plan	2010	• Identifies current and future transit needs • Preferred scenario includes service hours and frequency improvement; service expansion; regional express bus; and modern streetcar

12	Laker Line BRT	2015	• Improves transit connectivity between downtown Grand Rapids and Grand Valley State University
13	City of Walker: Latent Transit Demand Analysis	2017	• Provides insights on transit demand in Walker (North Walker)
14	Align: The Rapid's Transit Improvement Plan	2018	• Prioritizes a set of transit improvements that can be made to the existing bus system
15	Comprehensive Operational Analysis (COA)	2021	• Serves as a roadmap for continued financial and operational success of The Rapid • Addresses service changes by route, including on-time performance, frequency improvements, more direct service, and service area expansion
16	Division United	2021	• Development plan surrounding Silver Line's stations and along Division Ave
17	Rapid Facilities Master Plan	2021	• Details The Rapid's near-term construction, operation, and street upgrade improvements
18	Climate Action Plan	2022	• Sets 2030 emission reduction goals for The Rapid's transit facilities and operations
19	Zero-Emission Bus (ZEB) Rollout Plan for Clean Transportation	2022	• The Rapid's goal is to prioritize ZEB purchases and transition to zero-emission by 2048
20	Kent County Coordinated Public Transit - Human Services Transportation Plan	2022	• Proposes service improvements for The Rapid to address mobility gaps in Kent County
21	IT Strategic Plan	Ongoing	• Identifies a focus on exploring transit industry and cross-over technologies for The Rapid's transit operations and the budget
Individual Jurisdiction's Plans and Studies			
22	Grand Rapids Charter Township 2007 Comprehensive Plan	2007	• Includes developments around East Beltline and road improvements (widening) on Knapp Street, Leonard Street and Forest Hill Avenue, and additional ramps and lanes of I-96
23	Kent County Transit Needs Assessment	2011	• The service plan proposed GO!Bus and countywide demand response expansion as well as commuter express/route extensions
24	GR Forward Downtown & River Action Plan	2015	• Addresses potential transit reconfigurations by The Rapid as part of the mobility strategy
25	City of Grand Rapids Vital Streets Plan	2016	• Examines the street networks in Grand Rapids and strategies to improve transportation infrastructure to accommodate the needs of all users to create a more connected city • Includes design standards, target metrics, anticipated uses, and priority users, as well as desired bus frequency for street types
26	Plainfield Township Master Plan	2008 *(Amended 2017)*	• While The Rapid's fixed route system currently did not serve Plainfield Township in 2017, the plan mentions that a public transportation need in the Township may develop in the future

27	Byron Township Master Plan	2017 *(Amended 2018)*	• The Northeast subarea recommendation mentions transit proximity for new development
28	East Grand Rapids 2018 Master Plan	2018	• Includes strategies to improve The Rapid's transit systems in the City of East Grand Rapids including transit stop amenities enhancements to encourage ridership of Route 5, Route 6, proposed BRT and streetcar
29	Four Corners Transportation Plan	2019	• Incorporates The Rapid's transit plan to encourage transit use and provide transit amenities • The focus area plans include travel lanes and transit expansion routes.
30	Cascade Township Master Plan	2020	• Work with The Rapid to make the Route 28 (now Route 29) permanent and help increase awareness of the route with local employers and transit dependent populations
31	City of Grandville Master Plan	2020	• Provides land use updates on specific zones, which includes street network updates such as 44th St development. New zoning ordinances will facilitate TOD
32	Kentwood Master Plan Update	2020	• The TOD concepts of new development or redevelopment has potential for bus service • The city will support the BRT federal transit study for Division Avenue • The city will connect transit routes to other modes of transportation
33	Walker 2020 Master Plan	2020	• Add transit service to 3 Mile Road and Walker Avenue • Partner with The Rapid to create a bus route along Wilson Avenue • Determine whether transit service should be added to Northridge Drive
34	Alpine Township Master Plan Update	2015 *(Amended 2021)*	• Plans for complete street, connectivity, future street system and Route 9 frequency improvement and service expansion, and the 3 Mile Road Crosstown route was developed to provide local service to the existing and emerging employment nodes along 3 Mile Road. • Emphasizes that the Rapid usage in Alpine Township is expected to increase, especially with the elderly residents • In 2021, the plan was amended to include an updated future land use map and Subplan A which was developed for the north side of 4 Mile Road from Fruit Ridge Avenue East to Bristol Avenue to help ensure that there wouldn't be development pressure for intensive large-scale land uses that would negatively impact the Township's residential development or farmland preservation goals.
35	Georgetown Township Master Plan 2021	2021	• Includes efforts for roadway improvements on 48th Ave, I-196 ramps, and 8th Ave
36	Ottawa County Housing Needs Assessment Update	2021	• Address gaps in rental and affordable housing, which can potentially induce transit demand
37	Reimagine Plainfield	2021	• Discusses how to diversify land uses and transportation modes

			• Specialized interest in making key corridors less auto-centric, including Plainfield Avenue
38	Wyoming [re]Imagined Master Plan	2021	• Transit system enhancement to improve service coverage and frequency • To encourage and expand TOD opportunities throughout the city
39	Grand Rapids/Kent County Housing Needs Assessment	2022	• Address gaps in rental and affordable housing, which can potentially induce transit demand
40	Allendale Charter Township Master Plan	2023	• Discusses goals, recommendations, and strategies for creating a more logical transportation system in the township, including the connecting future streets to existing major north south roads to provide traffic alternatives
41	Gaines Charter Township Master Plan	2023	• Identifies areas for potential transit service restoration and expansion including along Division Avenue between 60th and 68th Streets, connections to the Amazon fulfillment center, and other major employers in the northeast quadrant of the township • About 14% of surveyed respondents desire some improvements to bus service or carpooling
42	Bridge to Our Future Grand Rapids Community Master Plan	Ongoing	• Address equity, and potential transit update from the 2002 plan
43	Revitalize the Rapids Plan	Ongoing	• Design proposes new recreation opportunities which are potential areas to improve transit accessibility

Regional Plan Review

As the Metropolitan Planning Organization (MPO) for Kent and eastern Ottawa Counties, the Grand Valley Metropolitan Council (GVMC) is responsible for carrying out all transportation-related planning activities for the Grand Rapids Metropolitan Area. Those duties include developing and maintaining both a short-term planning document, the Transportation Improvement Program (TIP), and the development of a multi-modal long-range Metropolitan Transportation Plan (MTP).

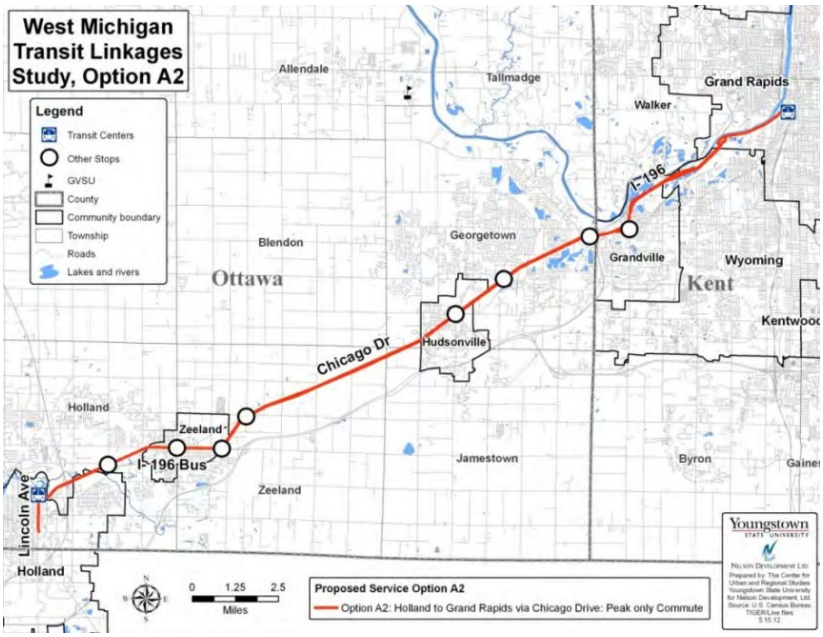
To understand and establish the broader planning context and regional recommendations with transit implications, several recent regional plans were reviewed as well as select studies that are currently in development. These planning efforts are summarized below in chronological order.

Published Plans

West Michigan Transit Linkages Study (2012)

This study, commissioned by Ottawa County, explored peak-only commuter bus service between Holland and Grand Rapids for the stops and alignment shown in Figure 6. Service assumptions included five trips each way on weekdays with two trips in the AM peak period and three trips in the PM peak period, 30-minute frequency, and a commuter bus travel time of about 50 minutes from end to end. About 58 one-way trips per day were estimated for the trip from Holland/Zeeland to Grand Rapids, and about 32 one-way trips per day were estimated for the reverse trip. Based on demand, projected low ridership, and lack of local funding commitment, the study found that commuter express service as defined by the Federal Transit Administration (FTA) was recommended to not be implemented, but to be revisited if fuel prices reach levels that cause people to actively seek alternative transportation, economic development factors such as the creation of a large centralized employment destination occur, unforeseen demographic changes occur, or the ability of local units to provide funding for public transportation improvements changes.

Figure 6: West Michigan Transit Linkages Proposed Stops and Alignment (2012)



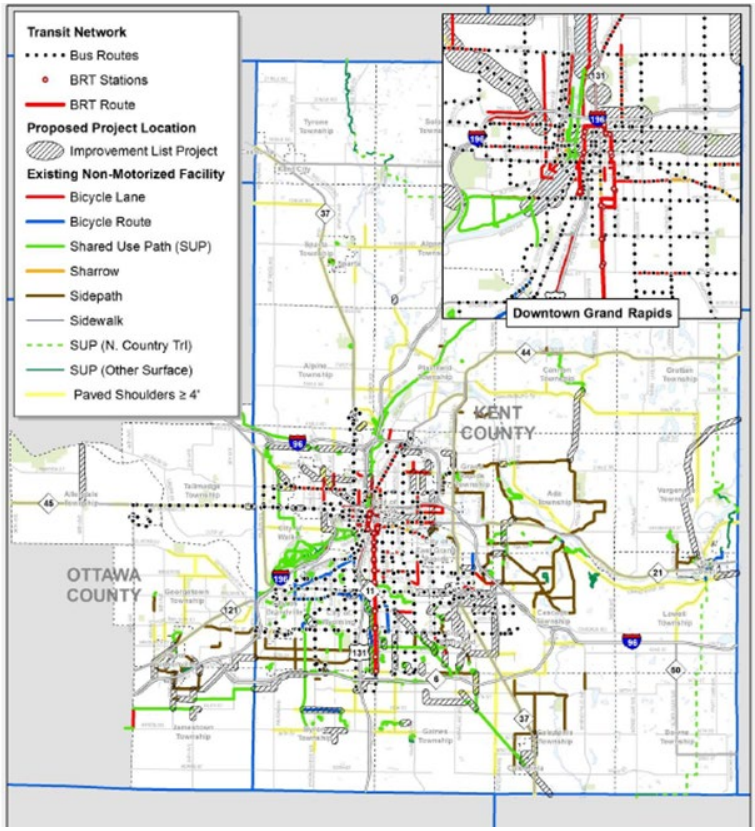
Source: Mp2planning

GVMC Non-motorized Transportation Plan (2014)

The Non-motorized Transportation Plan identifies regional projects to enhance cooperation and coordination between jurisdictions for non-motorized facility development (Figure 7). To meet mobility needs for pedestrians, bicyclists, and individuals with disabilities, the plan promotes transit and non-motorized connections and highlights that tying in walking and biking facilities to the transit network is "critical for optimal efficiency of the transit system."

Specific strategies for consideration when integrating pedestrian and bicycle transportation with transit service include: bicycle racks on buses (all buses are currently equipped with double-loading bike racks), bicycle parking and storage at transit facilities, and pedestrian and bicycle facilities connecting origins with transit stops.

Figure 7: Proposed and Existing Non-Motorized Facilities



Approximately 46% of the proposed bicycle and pedestrian projects are within a quarter mile of an existing transit bus route. Future activities identified in the plan include participating in multi-community pedestrian, bicycle, and transit connectivity efforts and activities.

GVMC Coordinated Mobility Plan: Prosperity Region 4 (2016)

The GVMC Coordinated Mobility Plan for Prosperity Region 4 covers transit connectivity and health and human services in Allegan, Barry, Ionia, Lake, Kent, Mason, Mecosta, Montcalm, Muskegon, Newago, Oceana, Osceola, and Ottawa Counties.

The inability to cross jurisdictional lines and the limited service beyond cities and towns is identified as the primary connectivity problem in the region. With additional funding and support, local transit agencies, including The Rapid, are encouraged to coordinate and link with other transit services in this region to improve connectivity between cities and counties.

Other transportation needs identified in the plan include:

- Connections for southeast Ottawa County residents to and from Grand Rapids
- Transportation from Ludington to Muskegon to Grand Rapids, particularly for commuters and medical trips
- Vanpooling and the promotion of ridesharing
- Addressing gaps in the service area including regional destinations
- Better public education about the benefits of transit
- Greater coordination—Grand Rapids is struggling with client shedding onto their ADA service
- Generating diversity in funding sources and funding interest from the private sector

High Priority goals include regional connectivity, maintaining and expanding existing transportation services, and securing additional funding to support these service expansions.

West Michigan Express Study (2018)

This study was commissioned by the City of Hudsonville to determine whether express bus or rail transit service in the Chicago Drive corridor was feasible and suggested that both options should continue to be considered with commuter express bus being an incremental step toward rail. Out of this study, conversations were initiated in early 2020 with community foundations and other private philanthropic/family foundations to seek capital/support. The study's ridership estimates were almost identical to the previous estimates from the West Michigan Transit Linkages Study in 2012, but included additional ridership to/from Georgetown, adding another 116 one-way trips per day to Grand Rapids for a total of 172, and adding 34 to Holland/Zeeland for a total of 64.

GVMC 2045 Metropolitan Transportation Plan (2020)

The purpose of the Metropolitan Transportation Plan (MTP) is to ensure that regional transportation investments enhance the movement of people and freight efficiently, effectively, and safety. The 2045 MTP is a fiscally constrained, project-specific plan that incorporates public input as well as plans and feedback from stakeholder agencies to balance transportation investments through the year 2045. Without the MTP, federal transportation funding could not be allocated in the region.

Enhancing transit (bus) service was the fourth highest priority identified by respondents surveyed as part of the 2045 MTP development. The top four priorities include:

- Improving roadway pavement conditions (69%)
- Using technology to reduce traffic congestion and delays (43%)
- Widening busy roads and interchanges (37%)
- Enhancing transit (bus) service (35%).

This plan supports transit improvements and addresses transit related needs as well as challenges in the region. Identified transit needs include improving and expanding transit service in the urbanized area and improving transit accessibility. Proposed solutions to address these needs include implementing recommendations from The Rapid's recent studies including the West Michigan Express and continuing collaborating with regional partners. Overarching MTP recommendations include working to:

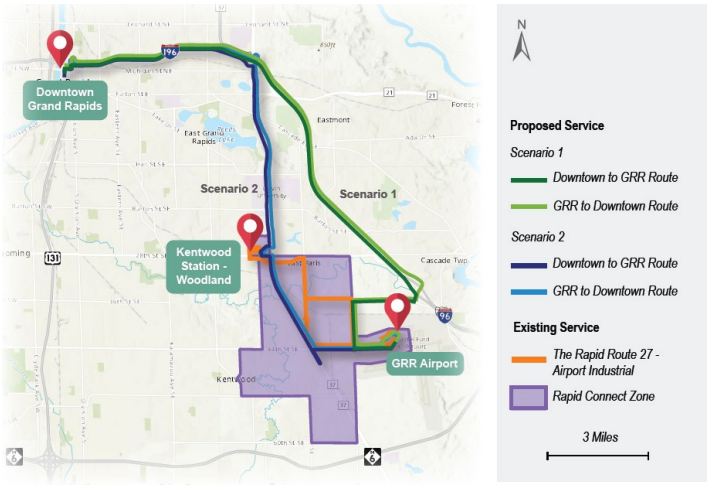
- Increase transportation funding.
- Improve safety for all users of the transportation system.
- Improve the condition and operation of the existing transportation system.
- Create a mode shift from single occupancy vehicles (SOVs) to more active forms of transportation.

Although, enhancing transit service was the public's fourth highest priority for transportation system improvements, the need for transit funding is great as nearly $616 million of unfunded transit projects were identified for The Rapid including vehicle replacement, expansion, and preventative maintenance, facility expansion/maintenance and information technology needs.

GVMC Airport Access Study (2023)

This study's purpose is to expand multi-modal access options to the Gerald R. Ford International Airport and improve the connectivity of the surrounding local road and freeway network to facilitate future airport expansion and accommodate regional growth and development in southeastern Kent County. The preferred multi-modal enhancement around the airport is an express bus/shuttle service between downtown Grand Rapids and the airport for implementation in the next five years. Suggested funding options include The Rapid's ongoing budget or through public or private partnerships such as with the Airport, Convention and Visitor's Bureau, or other business/tourism interests. The Study considers two scenarios for direct shuttle/bus service (Figure 8):

Figure 8: Airport Access Study Proposed Scenarios



- **Proposed Scenario 1:** Direct airport and downtown Grand Rapids shuttle
- **Proposed Scenario 2**: Bus route that stops at the airport, Woodland Mall, and downtown Grand Rapids. The route would serve as part of The Rapid's fixed route service with a connection to the Kentwood Rapid Connect on-demand service zone.

The expansion of The Rapid's transit service in Caledonia and Cascade Charter Township by either adding fixed route bus or Rapid Connect on-demand service is also identified as a long-term consideration for further study.

Plans in Development

GVMC Regional Transportation Demand Management (TDM) Plan

The ongoing development of the Transportation Demand Management (TDM) Plan aims to advance and prioritize TDM strategies that impact travel behavior to mitigate severe congestion and air quality issues while supporting sustainable growth and economic prosperity.

Goals of the study include fostering regional coordination and relationships with employer partners, unifying TDM programming and using this programming to increase transit and vanpool ridership, educating key decision-makers on the benefits of TDM, and integrating TDM into infrastructure investments, land use policy and parking decisions. Although the ongoing study is still in its early phase and strategies have not yet been developed, supporting transit investments and informing The Rapid's Transit Master Plan have been identified as key towards guiding the development of a regional TDM program. Specific targeted results of the TDM plan include using TDM programming to attract 300 new transit riders, increasing participation in The Rapid's specialty pass programs by 20% compared to a pre-pandemic baseline, at least three infrastructure construction projects or major transit enhancements coordinate with the regional TDM program on outreach and messaging, Specific strategies and a final report are expected in Spring – Fall 2023.

GVMC 2050 Metropolitan Transportation Plan (MTP) Update

This ongoing MTP update supports the development of an efficient multimodal system, preservation of the transit system, transportation safety, and equity. The plan's vision, goals, and objectives were established in winter 2023 with the final document approval scheduled spring 2024. As part of the MTP update, the updated Nonmotorized Transportation and Micromobility Plan promotes the development of interconnected, convenient, safe, equitable, and efficient networks that support nonmotorized travel and micromobility as integral components of the regional transportation system. and the regional multimodal connections and access for all road users.

MDOT US-131 Planning and Environmental Linkages (PEL) Study

This ongoing PEL study discusses US-131 mainline and interchange improvement options to maximize the efficiency and safety of the transportation system. This plan reviews each several mainline and interchange improvement options based on several evaluation criteria including transit connectivity. One section of this plan details the feasibility of an at-grade crossing on Wealthy Street, south of the Rapid Central Station which could be a potential joint development opportunity for The Rapid. The plan also explains that The Rapid's Central Station north parking lot could potentially be the main impacted community asset. The draft of this study was completed in March 2023 and will be finalized by the end of 2023.

The Rapid Plan Review

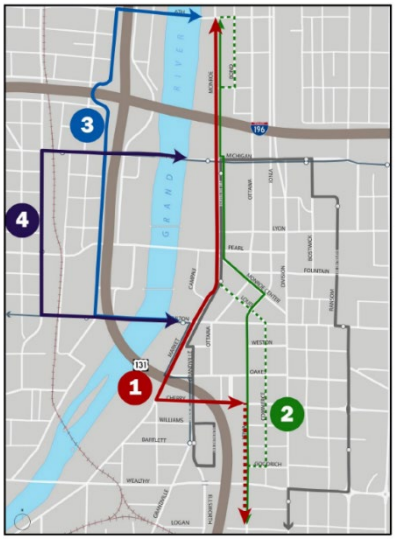
Set within the context of the aforementioned regional plans, The Rapid's recent planning efforts including short- and long-range transit plans, transit improvement plans, and feasibility studies for new services, will influence The Rapid's delivery of transit services over the next 20 years. These planning efforts are summarized in chronological order below.

Published Plans

Streetcar Feasibility and Route Refinement Studies (2008, 2014)

In 2008, The Rapid initiated a Modern Streetcar feasibility study to assess the feasibility of implementing the first leg of a downtown streetcar system in Grand Rapids. This study identified a proposed route along Market and Monroe Avenues for further review and development.

Figure 9: Streetcar Route Refinement Options



As part of the 2014 Route Refinement Study, four potential streetcar alignment options were identified and assessed (Figure 9). Alignment Option 1 along Monroe Avenue was ultimately selected as the preferred route due to its superior development opportunities and its ability to provide a balance between existing and future streetcar markets. The recommended option is approximately 1.8 miles long with proposed stop locations spaced every 1/5 mile. Potential future extensions to Leonard Street, the West Side, Franklin Street, and East Grand Rapids as well as potential capital and operating funding sources were identified as part of the Route Refinement Study.

The next steps identified for implementation of the Grand Rapids Streetcar included proceeding with environmental documentation, preliminary engineering of the alignment, and defining local transit capital and operational funding sources that can attract private and federal support. It was anticipated that these tasks could be completed within a one to two-year timeframe.

The Rapid Transit Master Plan (2010)

The Rapid's most recent Transit Master Plan (TMP) identified current and future transit needs, examined alternate courses of action, and targeted transit improvements to be pursued by The Rapid between 2010 and 2030. Based on public input, the top five priorities for transit improvements were:

- Expanding Service Hours
- More Frequent Service
- More Choices like BRT, Streetcars
- Extending Service to Growth Areas in County
- Improve Service in Under-Served Areas

The TMP's preferred scenario included systemwide span of service expansions, frequency improvements, extending major corridor routes outside The Rapid's service area, as well as added service including regional express bus and modern streetcar (Table 2).

Table 2: Transit Master Plan Preferred Scenario Improvements (2010)

Preferred Scenario Improvements	Details
Systemwide Expanded Span of Service	▪ Weekdays: 5 AM to 12 AM ▪ Saturdays: 6 AM to 12 AM ▪ Sundays/Holidays: 7 AM to 9 PM
Improved Service Frequencies	▪ 15 min peak/off-peak on Eastern, Kalamazoo, Eastown, Alpine & Plainfield ▪ 30 min nights & weekends on most routes
Other Improvements	▪ Extension of Routes outside of ITP service area along major corridors (i.e., Alpine, Plainfield, 28th) ▪ Extension of Routes outside of ITP service area south into Byron & Gaines Townships
GO!Bus Improvements	▪ Expanded GO!Bus for New Local Bus Corridors ▪ Accessibility Improvement Plan ▪ Same Day Booking (Space Available)

New Services	▪ **Bus Rapid Transit**
	  ▪ Silver Line (Division Ave) - Laker Line (Lake Michigan Dr)
	▪ **Express Bus**
	  ▪ Downtown to Gerald R. Ford Int'l Airport
	  ▪ Cedar Springs/Rockford (US 131 North)
	  ▪ Walker (I-96 West)
	  ▪ Georgetown Township/Hudsonville (I-196 West/Chicago Dr)
	  ▪ Byron/Gaines Townships (US 131 South)
	  ▪ Cascade/Caledonia Townships (I-96 East)
	  ▪ Ada Township (East Fulton St - select trips on Route 14)
	▪ **Modern Streetcar**
	  ▪ North/South (Rapid Central Station to North Monroe)
	  ▪ East/West (West Side to Medical Mile via DT Grand Rapids)

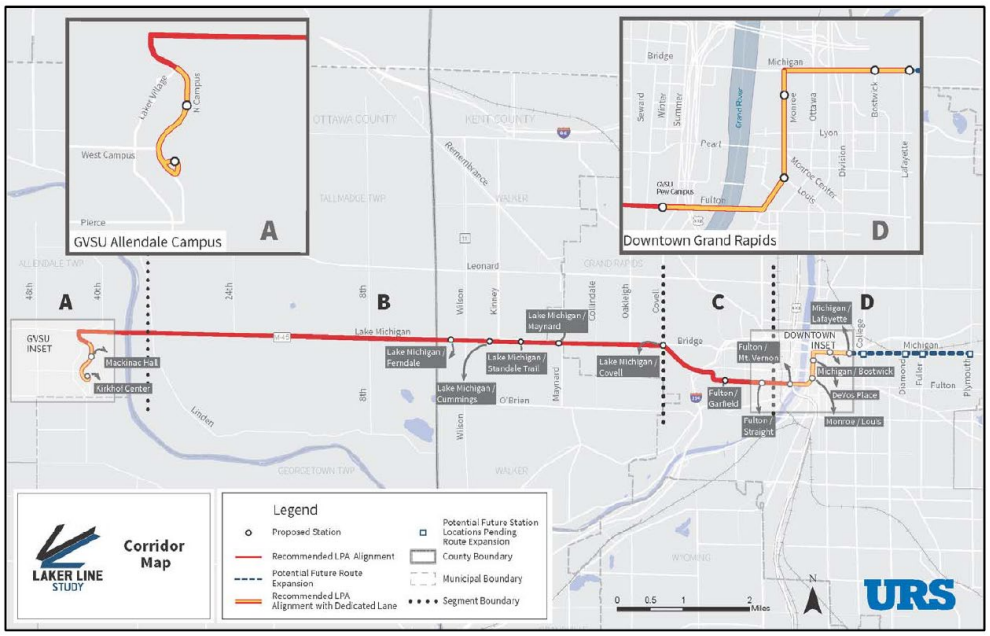
New Routes	▪ **Crosstown Service**
	  ▪ Leonard Ave - 3 Mile Rd
	▪ **Local Service**
	  ▪ Georgetown Township/Hudsonville
	  ▪ Walker Ave/3 Mile Rd
	  ▪ Rockford/Knapp St
	  ▪ Comstock Park/Belmont (W River Dr/Jupiter Ave)

Laker Line Locally Preferred Alternative Report (2015)

The Laker Line study proposed a BRT service to improve connectivity between downtown Grand Rapids and Grand Valley State University and develop a higher quality transit service along one of The Rapid's key corridors.

The Locally Preferred Alternative (LPA) BRT alignment (Figure 10) included a combination of mixed traffic and dedicated lane operation to connect the Grand Valley State University (GVSU) Allendale campus with the GVSU Center for Health Sciences (CHS) campus along Lake Michigan Drive, Fulton Street, and Monroe Street. The Laker Line operates more frequently and for a larger span of service than the existing Route 50 and Route 51 services. Following approximately 18 months of construction, the Laker Line opened for revenue service in 2018. Potential future extensions identified in the LPA for consideration included extending the line westward to downtown Allendale and eastward to Plymouth Avenue.

Figure 10: Laker Line Locally Preferred Alternative



City of Walker: Latent Transit Demand Analysis (2017)

Administered by The Rapid, this analysis explores transit demand in the City of Walker by analyzing population, employment and commuting trends, and public outreach and found likely transit demand in North Walker. Although Routes 7, 9, 12, and 50 provided service in the city, no transit service was available in the Three Mile and Four Mile Road corridor which contains several key employment centers and trip generators. Mobility solutions that were identified to have sufficient capacity and appropriate service type to serve the study area included fixed route service, a localized demand response service, or a hybrid version of the two services. In January 2022, The Rapid launched Rapid Connect on-demand service in the area and later, in January 2023, the Rapid added a new 121-space Park and Ride lot and a new fixed route service—Route 33—to serve the Walker Industrial area along Northridge Drive and Three Mile Road.[8]

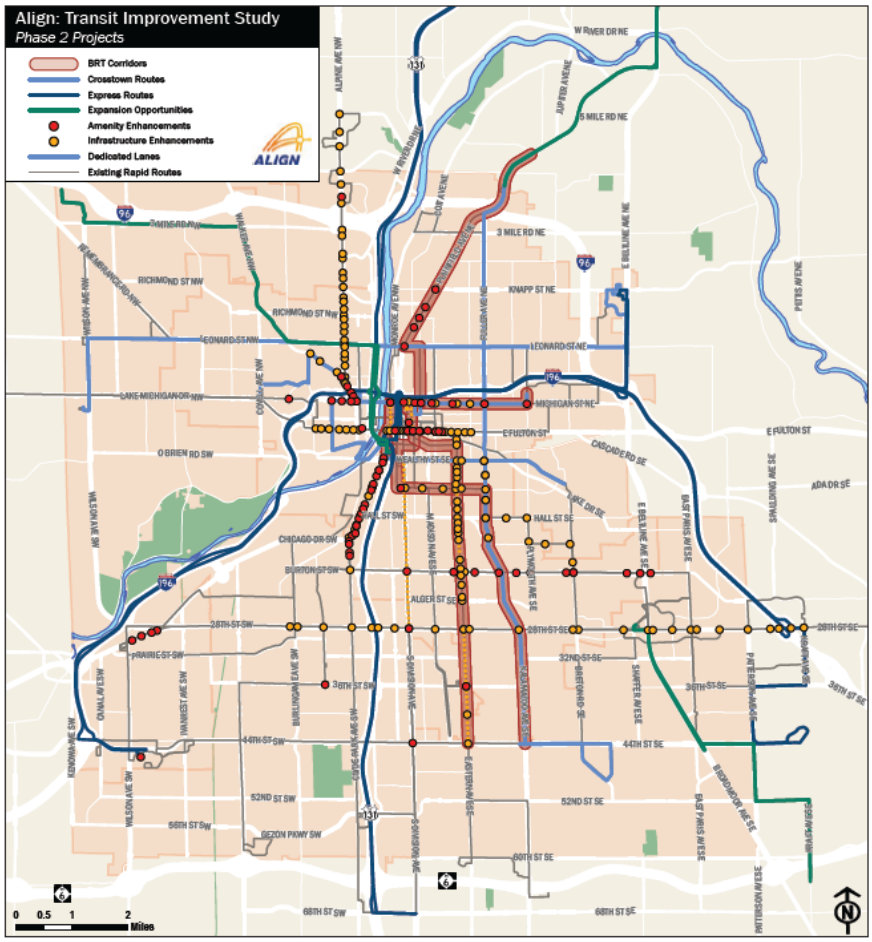
[8] Source: The Rapid Offers New Park and Ride Lot and Bus Route in Walker, The Rapid, December 15, 2022

Align: The Rapid's Transit Improvement Plan (2018)

Building upon The Rapid's previous transit projects, Align identified, analyzed, and prioritized a set of transit improvements that could be made to the existing bus system to improve the transit experience in Grand Rapids and the surrounding communities (Figure 11). To achieve the goals of Align, three types of project types were considered including Potential BRT Corridors, Expansion Opportunities, and Enhancement Projects. Enhancement Projects included improvements such as amenity, infrastructure, and service enhancements. To ensure that recommended projects could be implemented in a timely fashion without breaking The Rapid's capital budget, Align developed a three-phase implementation plan including elements to implement *Now (2018-2020)*, *Next (2021-2023),* and *Future (2024+)*.

The *Next (2021-2023)* phase of the plan focuses on service expansion priorities, which include extending Laker Line BRT service east to Plymouth, implementing service changes based on the results of a Comprehensive Operational Analysis conducted in the *Now (2018-2020)* phase, strengthening high-frequency and high-ridership routes, creating mobility hubs to improve connectivity at key regional destinations, and establishing commuter bus services. The *Future (2024+)* phase of the plan focuses on expanding BRT network based on the evolution of service and ridership as well as exploring mobility on demand services and commuter lines.

Figure 11: Align Transit Improvement Study Recommended Projects



Mobility For All: Comprehensive Operational Analysis (2021)

The Rapid's most recent Comprehensive Operational Analysis (COA) takes an in-depth look at the ridership market, operating characteristics, and growth opportunities to provide practical and sustainable recommendations designed to improve the productivity and reliability of The Rapid's system.

Based on a market and trend analysis as well as public input, three initial service alternatives were distilled into one Preferred Alternative which best matched community needs as well as The Rapid's current fiscal landscape.

Key attributes of the Preferred Alternative are that it:

- Addresses on-time performance
- Improves frequency of service on key corridors
- Provides more direct service to popular destinations
- Includes innovative service to expand the service area.

The fixed route elements of the COA Preferred Alternative were implemented in August 2021 while the two new Rapid Connect on-demand zones began service in January 2022. Major improvements are summarized in Table 3, where communities receiving direct benefit from the improvements are highlighted in green. Additional adjustments include extending Route 11 to the Plainfield Meijer which was the single most requested unserved destination in the region, removing Route 3 – Madison, consolidating Routes 12 and 18, and replacing Route 17 with the combination of a new route (Route 27) and the Kentwood On-Demand Zone.

Table 3: 2021 COA Major Improvements Summary

Improvement	Community Receiving Direct Benefit					
	E. Grand Rapids	Grand Rapids	Grandville	Kentwood	Walker	Wyoming
Route 1 – Realignment onto Madison Avenue		✓				
Route 1 – Realignment onto Gezon Parkway						✓
Route 2 – Frequency enhancements		✓		✓		
Route 2 – Realignment to Gaines Meijer		✓		✓		
Route 4 – Streamlined alignment on Eastern Avenue				✓		
Route 4 – Frequency enhancements		✓		✓		
Route 5 & Route 6 – Offset schedules	✓	✓		✓		
Route 8 – Streamlined alignments			✓			✓
Route 9 – Frequency enhancements		✓			✓	
Route 11 – Frequency enhancements		✓				
Route 15 – Streamlined alignment		✓				
Route 16 – Realignment to Rivertown Mall		✓	✓			✓
Route 24 – Realignment to Ivanrest Ave & Rivertown Mall		✓	✓	✓		✓
Route 28 – Frequency enhancements		✓	✓	✓		✓
Route 44 – Sunday service		✓	✓	✓		✓
Multiple routes – Realignment onto Cherry Street		✓		✓		✓
Multiple routes – Realignment onto Monroe Avenue		✓			✓	
Mobility On-Demand Service				✓	✓	

Division United (2021)

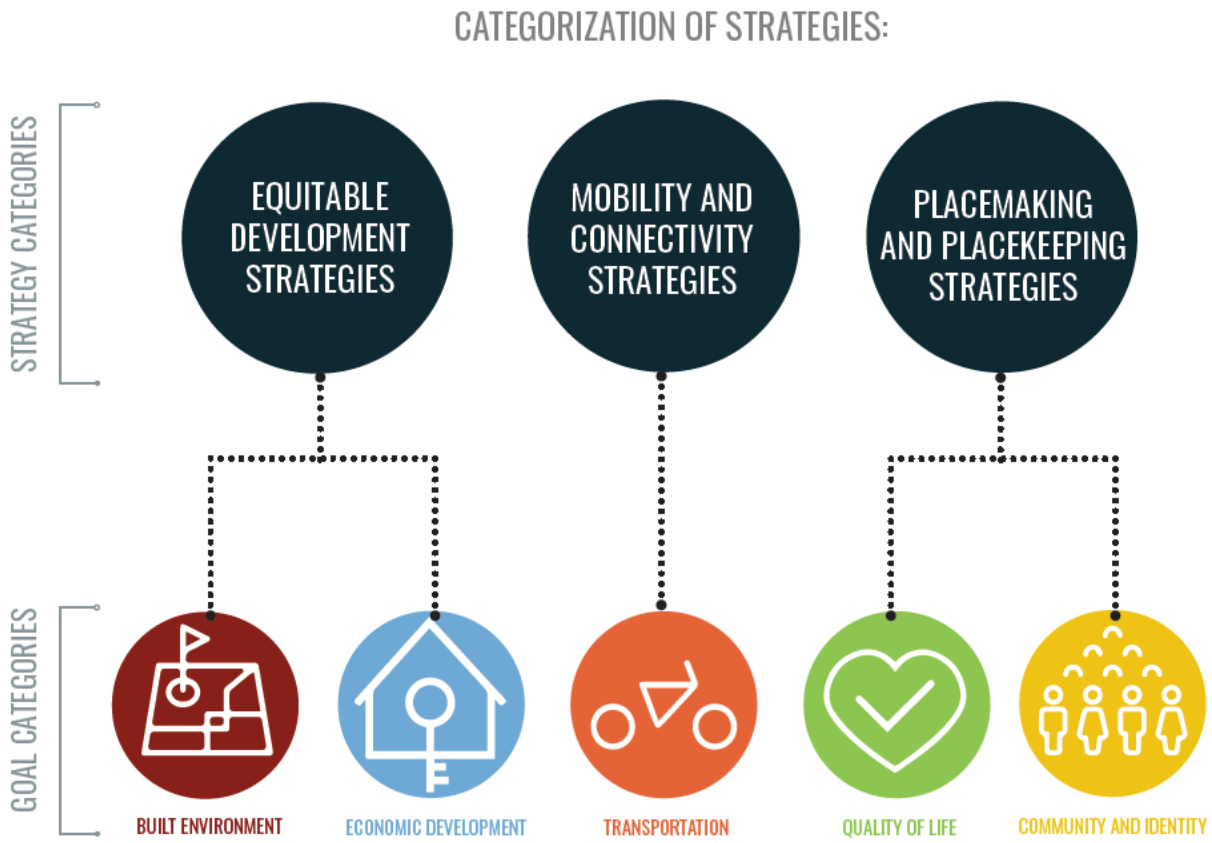
Division United is a long-range framework plan and transit-oriented development (TOD) guide that seeks to identify specific strategies to improve the quality of life, economic vitality, and long-term character of the South Division Avenue corridor by leveraging the Silver Line Bus Rapid Transit service as an agent for catalytic investment.

Mobility and connectivity strategies in the plan include:

- Reallocating road space to increase space for modes other than cars;
- Improving and adding crosswalks;
- Adding infrastructure for nonmotorized users; and
- Establishing mobility hubs.

Combined, these strategies are designed to place greater value and priority on transit service and facilities, maximize the safety of pedestrians while walking along and across South Division, and promote the availability of sustainable transportation options for all ages. The study also addressed equitable development and placemaking strategies for station area development (Figure 12).

Figure 12: Division United Strategies



The Rapid's Facilities Master Plan (2021)

The Facilities Master Plan defines an updated approach to the continuous improvement of facilities that support The Rapid's operations. Recommended improvements prioritized for the period between 2021 and 2025 include transit station and platform construction, office

relocation, bus route relocation, and street upgrades. In addition, as the current Demand Response operations center is in a leased facility, the plan recommends planning for and developing a new campus for Demand Response Operation, Silver Line Operations, and an alternative CNG fueling site with additional room to expand for other undefined needs.

Climate Action Plan (2022)

The Purpose of the Climate Action Plan is to identify a strategy to decrease emissions from The Rapid's transit fleet and facilities and to plan new facilities to accommodate zero-emission technologies. The Rapid aims to achieve 100% renewable natural gas for operations and transit center facilities and a decrease of total transit fleet GHG emissions of 25% by 2030.

Zero-Emission Bus (ZEB) Rollout Plan for Clean Transportation (2022)

The Rapid's ZEB Rollout Plan evaluates the current fleet, service, and facilities to identify the best strategy and estimate the costs associated with converting the fleet to a ZEB operation. The plan addresses 1) Facilities modifications, 2) Disadvantaged communities served, 3) Workforce development and training, and 4) Cost and funding.

By progressively increasing the percentage of ZEB purchases over time, the report's preliminary estimate is that The Rapid's transition to zero-emission vehicles will be complete by the end of 2048. The first anticipated facility modification is anticipated to be a pilot program of up to six battery electric buses (BEBs) at the Busch Drive Demand Response facility which is estimated to occur in the 18-24 months following the release of the plan in spring 2022. Future zero-emission efforts are primarily focused on the implementation of hydrogen buses. However, this strategy relies on the support of funding partners due to substantial initial capital costs.

Kent County Coordinated Public Transit – Human Services Transportation Plan (2022)

The study assesses current transit services provided by The Rapid available in Kent County and identifies transportation needs and gaps. Key mobility needs and barriers to transportation in the county include:

- Options for transportation outside the urbanized area are limited.
- Many transportation services within Kent County have eligibility requirements.
- Outside The Rapid's service area, major employment clusters and recreational destinations and residential areas are without public transportation. However, there is no long-term adequate stable funding source for service outside The Rapid's service area.
- Transportation services are needed to link low-income portions of the county to fresh food options.
- Transportation options to neighboring Counties are very limited.
- Limited accessible non-motorized paths at core service locations.
- Aging population which will significantly increase the number of transportation disabled persons.

Identified strategies that The Rapid could take to address these needs and service gaps include, but are not limited to:

- Maintaining existing transportation services and expanding the availability of fixed route transportation services within the Grand Rapids urbanized area and countywide transportation services to currently unserved areas.

- Increasing funding levels for operating and capital expenditures for transportation service providers/agencies.
- Expanding service for individuals with disabilities and seniors.
- Coordinating Health Maintenance Organizations (HMOs) non-emergency medical transportation with human service transportation providers and educating the public about HMO transportation availability.
- Coordinating publicly funded transportation services with private transportation providers such as AmbuCab, local services and Clocks Mobility.
- Continuing to research and implement new transportation delivery models based on new development in transportation service delivery with a particular focus on solving first mile/last mile trips. This includes looking at Transportation Network Company models and other Mobility on Demand transportation options.
- Promoting an accessible, walkable, and bikeable community that works for all modes of transportation.

Plans in Development

The Rapid's IT Strategic Plan (Ongoing)

The goal of the Rapid's IT Strategic plan is to identify innovative technology solutions that can improve operational efficiency, cost effectiveness, security, safety, marketing, and overall customer experience. It will develop a matrix of technology options and an estimated IT budget for The Rapid's transit operations. This plan is anticipated to be completed by early 2024.

Individual Jurisdiction Plan Review

Master plans and other planning efforts with transportation implications from the communities in and adjacent to The Rapid's six-member community area are reviewed to identify varying levels of supportiveness for transit as well as the unique characteristics of each community and any outstanding regional transportation needs and/or transit development opportunities. Plans listed below are in chronological order.

Published Plans

Grand Rapids Charter Township: 2007 Comprehensive Plan (2007)

Grand Rapids Township has been experiencing growth with increasing population and developments since 1990. The plan mentions developments around East Beltline, road improvements (widening) on Knapp Street, Leonard Street and Forest Hill Avenue, and additional ramps and lanes of I-96, which will likely impact The Rapid's transit routes.

Kent County Transit Needs Assessment (2011)

The Kent County Transit Needs Assessment (KCTNA) was designed to determine the overall demand for transportation service in areas of Kent County with minimal or no public transportation service. Shortcomings of the Current Transportation System included:

- Many of the transportation services in Kent County have program eligibility requirements.
- The variety of program and non-program related transportation services are difficult for the public to understand.
- Development continues to accelerate in areas outside of The Rapid's current service area leaving major destinations and residential areas without public transportation.
- There is no long term, adequate and stable funding source for transit outside The Rapid's service area.

Based on a survey of 1,000 Kent County households located outside The Rapid's service area, 39% indicated they would be very or somewhat likely to use transit. To meet demand for transit outside The Rapid's service area, the plan recommends GO!Bus expansion throughout the county and countywide demand response services as well as commuter express/route extensions. Potential route extensions include extending Routes 9 and 11 to Rockford, Route 28 to the Thornapple River, and Routes 1, 2, 10, and 16 south of Paul B. Henry Freeway (M-6). The top funding priority is to fund all recommended transit services; funding Countywide demand response is the second priority, and Fixed Route Expansion/Commuter Express/GO!Bus ADA are the third priority.

GR Forward Downtown & River Action Plan (2015)

The City of Grand Rapids recognizes the need to promote growth, equity of opportunity, and the overall downtown area in its rapid growth. In support of its goal of "implementing a 21st century mobility strategy", the plan mentions potential transit improvements by The Rapid, including transit investment incentives, transit station improvements, integration of new technology and wayfinding signs for transit riders. The strategy advocates for complete street networks to promote multimodal transportation in downtown Grand Rapids. One method identified to reduce the overall rate of parking demand in the Downtown area is to provide free or reduced fare of transit service for Downtown employees. Paratransit options are also considered in this plan.

City of Grand Rapids Vital Streets Plan (2016)

The City of Grand Rapids created a document outlining their goals and plans to improve the streets within the city with the goal of making the streets "...accessible, attractive, multimodal and safe; serving all people of our community, contributing to the livability of our neighborhoods and business districts, protecting the quality of our river, and increasing economic opportunity for individuals, businesses, and new development." It is a comprehensive and forward-looking initiative aimed at improving the city's transportation infrastructure. It is envisioned as a long-term strategy, so the plan seeks to enhance and maintain the network of streets, sidewalks, and other transportation assets in the city.

The Vital Streets Plan includes definitions for all street types and has summaries of the prioritized user, design standards, target metrics, and anticipated uses. This plan also includes desired bus frequency for each street type. It details accommodations for all users including pedestrians, cyclists, motorists and public transit riders. By addressing issues like congestion, accessibility, and safety, the Vital Streets Plan aims to create a more vibrant, connected, and sustainable city for the future growth and development of Grand Rapids.

Plainfield Township Master Plan (2008 – Amended 2017)

Plainfield Township is a community with natural resources, and a slow-growing and aging population. As of 2017, The Rapid's fixed route system did not serve Plainfield Township residents or businesses but potential future needs of public transit to serve the aging population were identified. Additionally, the plan identifies the importance of building and strengthening existing relationships with The Rapid and exploring options to expand transit service to key destinations in the township.

Byron Township Master Plan (2017 - Amended 2018)

Byron Township is a rural community that has experienced growth since the recession. It aims to maintain a low-impact development pattern and enhance sustainability. As of 2018, there were two fixed route bus stops in Byron Township (both of which are served by Route 1) while the Silver Line provides services just outside the Township with a park-and-ride lot and bus station located on the northeast corner of 60th Street and Division Avenue. A complete street transportation system is mentioned in the plan for better bike, transit, and pedestrian connectivity. Additionally, Byron Township recognizes the need for housing for the entire spectrum of the community arranged in walkable patterns with higher residential densities located closer to infrastructure and transit options.

East Grand Rapids 2018 Master Plan (2018)

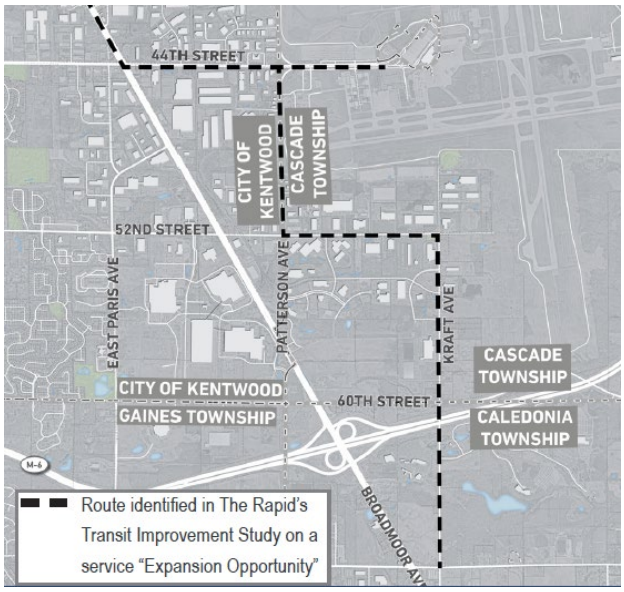
As of 2018, two routes (Route 5 and Route 6) directly served the City of East Grand Rapids. The city is primarily residential in nature and land uses are expected to remain primarily residential in the future. Within Gaslight Village, however, several urban design actions are suggested including the creation of additional mixed-use development and a pedestrian link between Wealthy Street and Reeds Lake. Key goals of the Master Plan include that future land use and zoning decisions should include a focus on additional diverse housing opportunities, that the streets and public spaces should continue to encourage walking and biking, and that Gaslight Village should be positioned to adapt to the changing retail, business, and residential landscape while maintaining its character and walkability.

The Citywide Transportation Plan promotes non-motorized transportation and recommends several walkability best practices including curb extensions, raised crosswalks, and median or pedestrian refuge islands. To reduce parking demand in the long-term, the plan suggests investing in other modes of transportation including building bike lanes, bike parking, pedestrian facilities, and transit amenities. The plan further recommends that The Rapid

review transit stop amenities to encourage ridership and proposes capital improvements on transit stop and transportation demand management to improve the transit system.

Four Corners Transportation Plan (2019)

Figure 13: Four Corners Existing and Planned Transit



The Four Corners consists of four fast-growing communities (City of Kentwood, Cascade Township, Gaines Township and Caledonia Township) located in the southeast Grand Rapids metro area near the Gerald R. Ford International Airport. The Four Corners Transportation Plan focuses on improving multi-modal transportation and mentions that The Rapid can consider transit service as part of the street design and the communities and road agencies can help support improved transit service.

Future transit service identified in the plan included a future route proposed in The Rapid's transit improvement study that adds a connection from the Kentwood Hub Station at Woodland Mall to the airport ending at 68th Street (Figure 13). The plan also highlighted continuing the ongoing development of partnerships between The Rapid and employers and major institutions to provide transit options and the use of Park and Ride lots to generate ridership In the long-term (5+ years), the plan identifies the importance of working with The Rapid to provide systemwide transit supportive amenities (sidewalks to bus stops, shelters, park and ride lots).

Cascade Township Master Plan (2020)

Cascade Township aims to enhance its natural environment and maintain the low-density residential community characteristics. Cascade Township is planning on a comprehensive network of multi-modal transportation, which includes expanded transit services in recognition that "a well-connected and diverse transportation system is the key to community-wide mobility."[9]

Specific transit actions recommended in the plan include:

- Strengthening the Township's relationship with The Rapid.
- Making the Route 28 bus service extension along 28th Street to Cascade Village permanent.
- Expanding The Rapid's service to access 60th and Broadmoor to provide access to employers.
- Establishing a park and ride lot near the 36th Street and I-96 Interchange.

[9] Source: Cascade Township Transportation & Mobility Vision, 2020

City of Grandville Master Plan (2020)

The plan focuses on redevelopment in Grandville, which has experienced recent growth and development of its vacant land. The plan considers The Rapid's route within the city and provides land use updates on specific zones, which includes street network updates such as 44th Street development. New zoning ordinances will also facilitate Transit-oriented development.

Kentwood Master Plan Update (2020)

Kentwood is growing at a slower pace and has an aging population. There is potential to bring mass transit to the community in the near future. The Rapid's fixed route service such as Silver Line and Route 28 serves the city. The plan addresses the following mobility principles: 1) The city will support transit services to provide increased mobility to its citizens. 2) Transit-oriented development concepts should be part of any new development or redevelopment that has potential for bus service. 3) The city will support the BRT federal transit study for Division Avenue. 4) The city will connect transit routes to other modes of transportation.

Walker 2020 Master Plan (2020)

The City of Walker is a multi-centric community comprised of four Neighborhood Clusters: Alpine/Bristol, Northwest, Standale, and South Walker. Rather than trying to develop a single downtown location, the City of Walker aims to preserve and enhance the existing multi-centric nature of the community. The City of Walker recognizes that public transportation is "a crucial part of the transportation system" and identifies several "high priority" corridors as well as a vision for future transit routes (Figure 14).

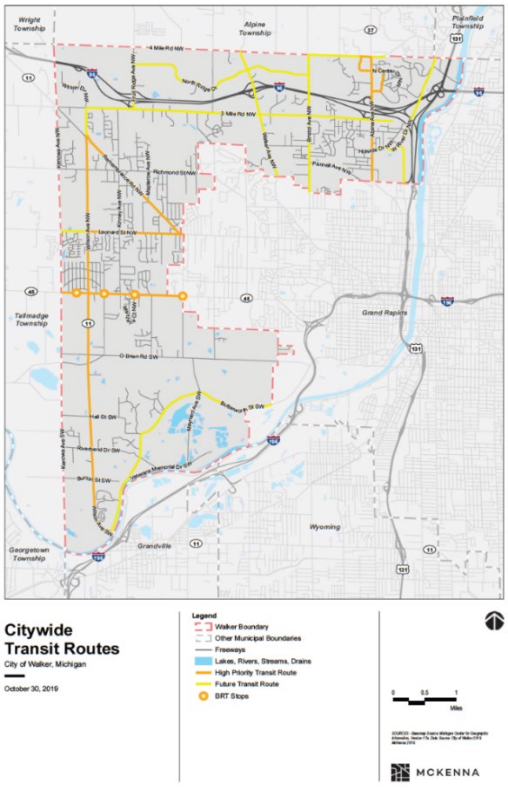
High Priority transit improvements identified for future consideration include:

- Upgrading Route 9 along Alpine Avenue (perhaps to a BRT or LRT route).
- Adding service along West River Drive/Turner Avenue in response to growth in Cornstock Park/Alpine Township.
- Creating a new Wilson Crosstown route.
- Improving the efficiency of Route 7.

Other aspects of the plans' future vision include:

- Crosstown service on 3 Mile and 4 Mile Roads as well as a Bristol Avenue line that could terminate within the redeveloped Greenridge Square.
- A new route along Butterworth Drive once Millennium Park reaches its full build-out.
- Consideration of LRT along Lake Michigan Drive (on a 15-20 year horizon).
- A route along Walker Avenue/Northridge Drive to support the large employment base.

Figure 14: Walker Future Transit Routes Vision



Alpine Township Master Plan Update (2015 – Amended 2021)

Alpine Township is a family-oriented community with agricultural and small-town features. The plan refers to the 2030 preferred scenario of The Rapid 2010 TMP as part of the transit plan component of the Master Plan. It addresses Route 9's frequency improvements and service expansion for complete street design and enhanced connectivity as well as the development of a crosstown route along 3 Mile Road to provide local service to the existing and emerging employment nodes. The Master Plan also notes that "providing a full range of transportation options, especially public transit and pedestrian facilities, will help allow older residents to remain in their homes." As part of the goal to maintain and plan for a safe, efficient and functional transportation system for all users, the plan establishes an objective to require developers to include and build public street improvements, sidewalks, trails, and public transit system components on approved site plans. In 2021, the plan was amended to include an updated future land use map and Subplan A which was developed for the north side of 4 Mile Road from Fruit Ridge Avenue East to Bristol Avenue to help ensure that there wouldn't be development pressure for intensive large-scale land uses that would negatively impact the Township's residential development or farmland preservation goals.

Georgetown Township Master Plan (2021)

Georgetown Township has experienced consistent population and employment growth between 2015 and 2019. The Township is rich in natural resources and the land use is primarily low-density residential. The plan identifies efforts for roadway developments on 48th Avenue, I-196 ramps, and 8th Avenue, which could have impacts on future transit routes should The Rapid expand service into the township. Similar to Byron Township, the Georgetown Township Master Plan notes that higher density residential uses should be placed in proximity to possible future transit and commercial services to lessen impacts on the road system.

Ottawa County Housing Needs Assessment Update (2021)

The housing needs assessment evaluated the housing needs of Ottawa County and provided housing gap estimates to help guide priorities and strategies to address housing needs gaps. Population and household growth rates have significantly outpaced state averages with rapid growth anticipated through 2025. High priority housing needs in Ottawa County include the need for affordable housing, rental housing, and entry-level to high-income for-sale homes. The report notes that a variety of for-sale housing options could be successful in Ottawa County and that one- and two-bedroom condominium units could be particularly successful if located "along or near a public transit corridor."

Reimagine Plainfield (2021)

The Reimagine Plainfield Plan focuses on creating a mixed-use and vibrant community. Plainfield's transportation goals include ensuring there is a diversified use of transit modes, adding greenery to corridors, and creating safer street networks. The plan details possible collaboration with The Rapid to:

- Extend Route 11 service to the Plainfield Meijer/MMU Town Center;
- Explore expanded transit options to serve other key destinations in the Township; and
- Explore future implementation of transit-oriented development at town centers.

The plan also highlights the importance of de-emphasizing the automobile and instead providing mixed-use, dense development that accommodate pedestrians, transit, and bikes to "enhance the corridor's potential for additional growth and development while providing opportunities for increased mobility and livability."

Wyoming [re]Imagined Master Plan (2021)

Wyoming is working towards a walkable, bikeable, and drivable community. Wyoming's mobility and transportation strategies are highly supportive of The Rapid's plans and propose an active partnership with The Rapid to improve transit routes to better connect residents to local destinations and to the larger Grand Rapids region. Specific strategies include promoting transit system enhancement to improve service coverage and frequency through recommendations outlined in The Rapid's COA and encouraging and expanding TOD opportunities throughout the city. During community and stakeholder engagement events, many participants also noted that a transit route linking the Metro Health campus to Rivertown Mall would be desirable as it would improve service and provide better access to jobs and amenities.

Recommended transportation and mobility actions include:

- Actively seek opportunities for regional collaboration to expand and enhance transit services.
- Working with The Rapid to identify and link underserved areas, to explore the feasibility of more crosstown bus lines, and to ensure that transit routes reach neighborhood commercial centers, larger employment areas, and emerging development growth areas.
- Encourage density that would support the transit system through transit originated development.

Grand Rapids/Kent County Housing Needs Assessment (2022)

The report provided an assessment of the housing needs of Grand Rapids and Kent County. Notable increases in housing gaps since 2020 were addressed. Overall, there are gaps in both rental housing and for-sale housing at all income levels. Specifically, rental housing units and affordable housing are needed within Grand Rapids.

Allendale Charter Township Master Plan (2023)

Allendale Charter Township is characterized as a semi-rural community with close proximity to Grand Rapids. The Southeast corner of the Township encompasses the Grand Valley State University campus. One of Allendale Township's transportation goals is to, "Ensure balanced, orderly growth of sidewalks, bike paths, roadways, and other transportation routes to create logical transportation extensions and connections". One strategy to accomplish the transportation goals outlined in the master plan, is a collaboration between the Township and The Rapid to find opportunities to extend service west of 48th Avenue. Approximately 26% of respondents surveyed as part of the Master Plan believed that the availability of public transit is one of the most pressing issues in Allendale Township. Furthermore, 35% of respondents would support a dedicated bus route on Lake Michigan Drive (M-45) to 68th street. The plan highlights that residential, commercial, and industrial development in Allendale Charter Township is reliant on transportation infrastructure improvements.

Gaines Charter Township: Master Plan Update (2023)

Gaines Charter Township is a growing suburban community with subdivisions to the north and northwest and retail and commercial services in the north. Although Gaines Township is not an ITP-member community, "the township contracts for service with The Rapid to provide 15-minute service on Route 4-Eastern through the Woodfield Apartment complex. Route 2 and Route 4 both serve the Celebration Village area while Route 10 provides service into the township with "stops on the campus of Pine Reset and Spectrum Health South Pavilion through a partnership between The Rapid and Disability Advocates of Kent County. As of January 2022, the Rapid Connect Kentwood Zone also abuts the northeastern boundary

of the township along 60th Street. Approximately 14% of respondents surveyed as part of the master plan's public input process indicated a desire for bus service or carpooling improvements. The plan highlights preliminary discussions with The Rapid to restore fixed route service along Division Avenue between 60th and 68th and notes potential future fixed route expansion opportunities to major hubs in Gaines Charter Township in collaboration with The Rapid, including the Amazon facility, and high employment areas in the northeast quadrant of the township.

Plans in Development

Bridge to Our Future Grand Rapids Community Master Plan

The plan will define the vision of Grand Rapids over the next 20 years, and it is currently in the Community Input Phase. The plan discusses topics of equity, housing, environmental justice, and economic development. The past Community Master Plan (2002) recommended transit development to coordinate with future land use, and to improve transit connectivity. While transit is not specifically addressed in the plan yet, the focus on equity can potentially inform transit service development in the future.

Revitalize the Rapids Plan

The ongoing plan focuses on environmental planning for the 2.5 mile stretch of the Grand River from Bridge Street to Fulton Street and from Ann Street to Bridge Street. The proposed design will support new recreation activities, thus creating more demand in accessibility, including transit accessibility to these activities.

DEMOGRAPHICS AND LAND USE

This section details existing and future demographic and land use factors that will influence The Rapid's delivery of transit services over the next 20 years. Understanding these factors will help create a framework within which potential transit investments can be defined and prioritized. Factors are grouped into one of three categories:

- **Transit Demand** – Existing and projected population and employment density
- **Transit Propensity** – Zero-vehicle households, low-income households, people with disabilities, minority populations, transit users, density of rental units, young adults, and seniors
- **Trip Generators** – Land use and activity centers

Primary data sources for this analysis include American Community Survey (ACS) 2017-2021 5-year socioeconomic and demographic estimates, the most recent 2019 US Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) database, and 2015 and 2045 land use and population and employment projections from GVMC's most recent 2045 Metropolitan Transportation Plan.

Key Findings

The analysis of demographics and land use highlights where people who are likely to use transit live and work. Key findings from this analysis include:

Transit Demand:

- Much of the ITP-member community area has existing population or employment densities supportive of 30 minute or better transit service. Downtown Grand Rapids and the West Grand and South East End neighborhoods are supportive of 15 minute or better service
- Unserved communities with sufficient population and/or employment densities to support fixed route transit service outside of the ITP-member communities include further south along Division Avenue S to 76th Street SE, Georgetown Township between Bauer Road and Baldwin Street, and further north along Plainfield Avenue NE to the Grand River
- While future household and employment growth is generally expected within the ITP-member communities, the surrounding communities outside the existing service area are expected to have greater growth.

Transit Propensity:

- Areas with very high transit propensity that are more likely to need and utilize transit services include downtown Grand Rapids, West Grand Rapids, the Burton Street SE Corridor, and the South East End neighborhood. Additional clusters of high propensity include Alpine Township (Comstock Park/Alpine Center), Northern Wyoming, Central Kentwood, and Cutlerville.

Trip Generators:

- Significant concentrations of future mixed-use land use and growth in higher-intensity "multi-family residential" uses in Zone One present opportunities for potential future ridership growth.
- Trip generators are fairly evenly distributed within the ITP-member communities with concentrated pockets along major freeways and arterials.

Transit Demand

Population and employment density are the two primary factors indicating existing demand for transit services. As most people are only willing to walk 5 to 10 minutes (a quarter- to half-mile) to access transit service, these services are generally most effective in areas with high population and/or job densities where increased people/jobs are within a walking distance of streets that transit services can operate along.

Within the literature, the degree of density needed to support transit service varies. For consistency with prior studies conducted by The Rapid, this analysis utilizes the population and employment density thresholds outlined in The Rapid's recent Comprehensive Operational Analysis (COA) published in 2021 and reproduced below in Table 4, to indicate the levels of transit service that may be supported throughout the Zone One Study Area.

Table 4: Transit Supportive Population and Employment Density Thresholds

Service Frequency	Population per Acre	Employment per Acre	Buses Per Hour
Very low demand	Less than 2.5	Less than 2	0
Less than 60 minutes	2.5 – 8	2 – 4	0.5
60 minutes	8 –16	4 –8	1
30 minutes	16 – 31	8 – 16	2
15 minutes or better	More than 31	More than 16	4 or more

Existing Population Density

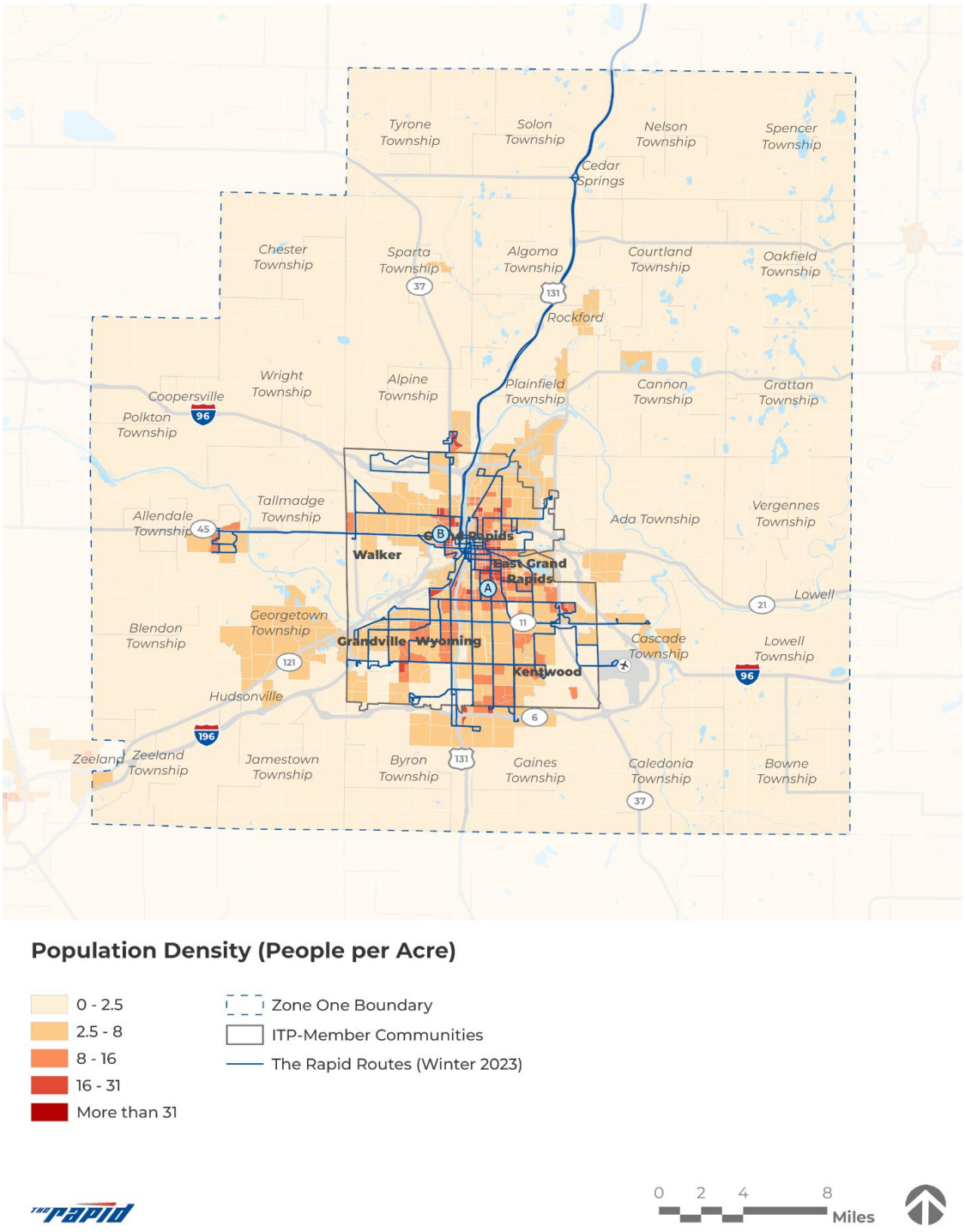
Areas with high population density are typically associated with higher potential transit demand. In such areas, a higher number of people are likely to choose transit as the means of transportation for their daily activities. Figure 15 shows a map of population (residential) density within the Zone 1 area by block group. Darker red areas indicate places supportive of 30-minute service while areas shaded in tan have very low demand. No block groups contain population densities typically supportive of 15 minute or better service (more than 31 persons per acre).

As depicted in Figure 15, Zone 1 areas with the highest population density are primarily located within the Grand Rapids urban core and within or adjacent to the limits of the ITP-member communities. The greatest population densities are found in the neighborhoods to the south and east of Downtown including Southeast End (A), Midtown, Baxter, and Eastown as well as in the West Grand neighborhood to the northwest (B) and portions of Wyoming and Kentwood.

Only a limited number of block groups outside the ITP-member communities contain population densities supportive of 60 minute or better transit service and most Zone 1 areas with elevated population densities are in close proximity to an existing transit route. Notable exceptions with elevated population densities but without fixed route bus service include

portions of Plainfield Township south of the Grand River, southwestern Ada Township, and Georgetown Township along M-121.

Figure 15: Existing Population Density (2021)



Source: 2021 American Community Survey (ACS) 5-Year Block Group Estimates, The Rapid

Existing Employment Density

Workplaces are one of the main destinations for people's daily travels. Areas with higher employment densities suggest that more people need to travel to this area for work, thus generating higher transit demand. Typical places with high employment densities are schools, healthcare facilities, and commercial districts. The top 10 employers within the Zone One Study Area are listed in Table 5, and visualized in Figure 16.[10]

Table 5: Top 10 Zone One Employers (2020)

Zone 1 Rank	Company	Employee Count	Address	Industry
1	**Spectrum Health**	25,000	100 Michigan Street NE, Grand Rapids	Healthcare
2	**Meijer, Inc.**	10,340	2929 Walker NW, Walker	Retail
3	Mercy Health Saint Mary's	8,500	200 Jefferson SE, Grand Rapids	Healthcare
4	**Gordon Food Service Inc**	5,000	1300 Gezon Parkway, Wyoming	Wholesale/Distribution
5	**Amway**	3,791	7575 Fulton Street East, Ada	Manufacturing
6	**Steelcase, Inc.**	3,500	901 – 44th St. SE, Grand Rapids	Manufacturing
7	Farmers Insurance Group	3,500	5600 Beech Tree Lane, Caledonia	Insurance
8	Grand Valley State University	3,306	1 Campus Drive, Allendale	Education
9	**Lacks Enterprises Inc**	3,000	5460 Cascade Road SE, Cascade Township	Manufacturing
10	Grand Rapids Public Schools	2,800	1331 Franklin St. SE, Grand Rapids	Education

Source: West Michigan's Largest Employers, The Right Place, 2020. Bold company name indicates company headquarters.

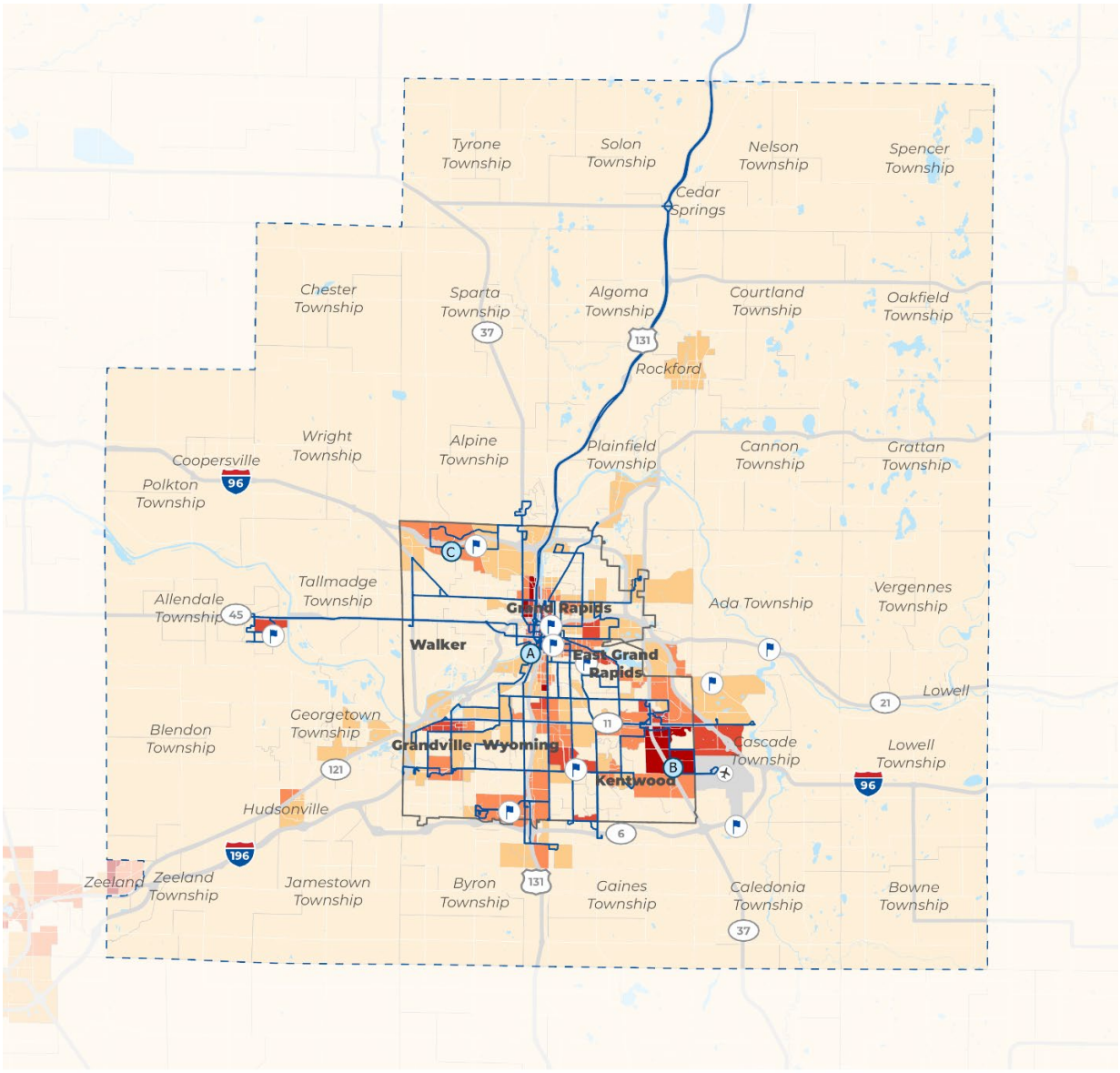
Figure 16 illustrates that most areas with high employment density are within the ITP-member communities. Areas of particularly high employment density are primarily concentrated within downtown Grand Rapids and the Medical Mile as well as within West Grand Ⓐ along the west bank of the Grand River. Additional areas of noteworthy employment density include:

- Grand Rapids Public Schools off of MLK Jr Street near East Grand Rapids
- Spectrum Health Blodgett Hospital in East Grand Rapids
- The industrial area to the north and west of Gerald R. Ford International Airport in Kentwood Ⓑ
- The industrial area surrounding Eastern Avenue between 36th Street and 44th Street including the Steelcase, Inc. headquarters
- The industrial area in Grandville south of 28th Street (M-11).

As of January 2023, The Rapid has added both Rapid Connect on-demand service as well as a new fixed route service (Route 33) to serve the Walker Industrial area Ⓒ along Northridge Drive and Three Mile Road—the primary area of elevated employment density within the ITP-member communities that was not served by the Fall 2022 fixed route network.

[10] Note: Employment densities are based on 2019 LEHD Origin-Destination Employment Statistics (LODES), the most up-to-date data as of this report's writing

Figure 16: Existing Employment Density (2019)



Source: 2019 US Census Bureau Longitudinal Employer-Household Dynamics (LEHD) dataset, The Rapid

Existing Transit Demand Index

As introduced in Table 4, population and employment densities have been shown to be capable of supporting varying levels of transit service. Figure 17 synthesizes these two metrics into one transit demand index, where the level of transit service that could be supported in each block group is calculated as the most frequent service supported by its existing population or employment density.

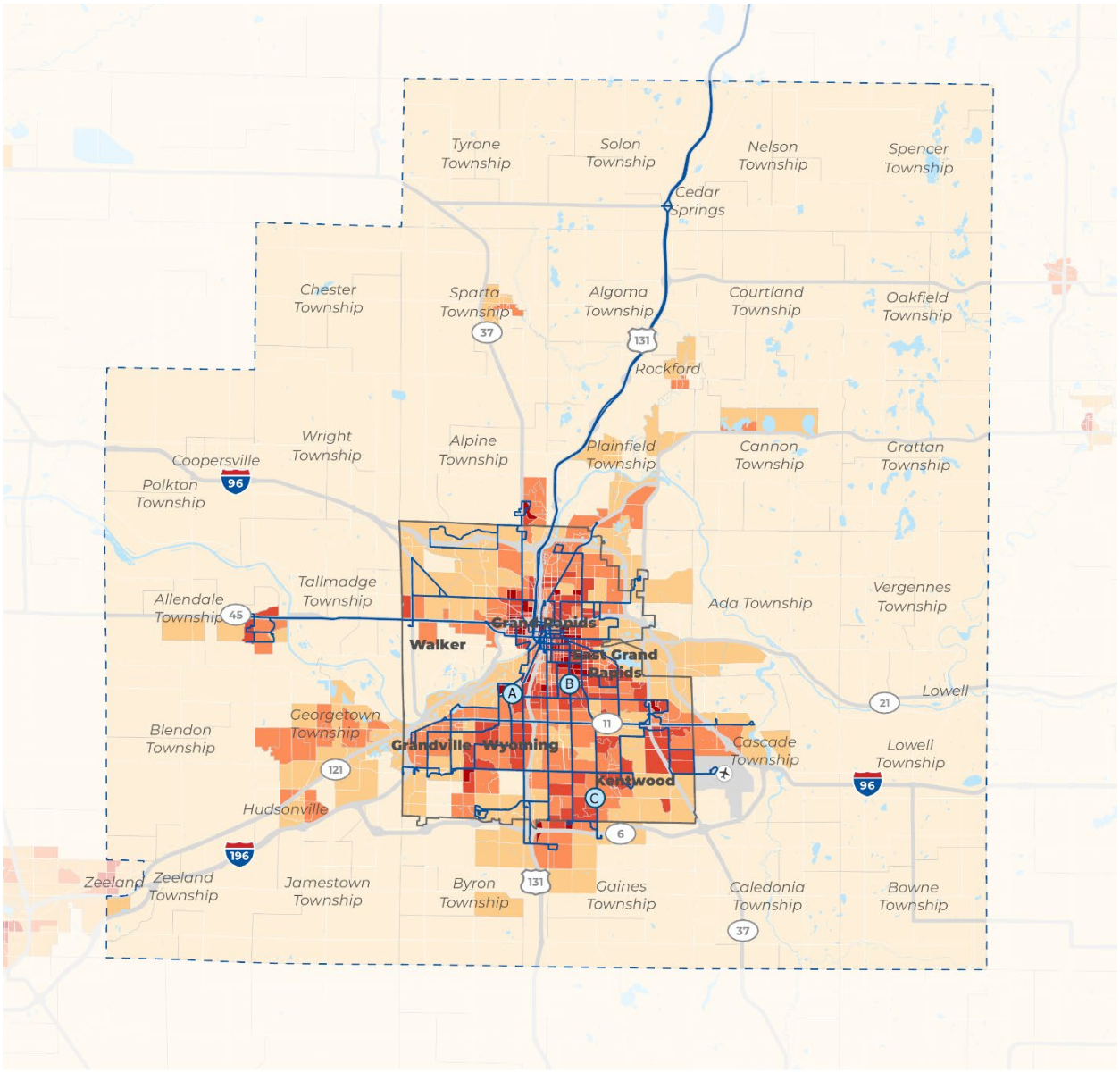
In general, nearly all (98%) ITP-member community block groups have sufficient demand to support some level of fixed route bus service while north-south corridors have stronger demand than east-west crosstown corridors. Similar to the transit demand index presented in The Rapid's most recent COA, the central core of downtown Grand Rapids, has the highest demand for transit with demand diminishing towards the periphery of the ITP-member communities.

Approximately 10% percent of the ITP-member community block groups—including downtown Grand Rapids, the West Grand and Southeast End neighborhoods, and select pockets along Burton Street and Division Avenue—are supportive of 15-minute or better transit service. Key corridors most supportive of fixed route bus services include:

- Burton Street (East-West) Ⓐ
- Alpine Avenue (North-South)
- Division Avenue (North-South)
- Eastern Ave (North-South) Ⓑ
- Kalamazoo Ave (North-South) Ⓒ
- Plainfield Ave (North-South)
- 28th Street [M-11] (East-West)
- 44th Street (East-West)

Areas with sufficient demand to support 60-minute fixed route service outside The Rapid's current service area include Georgetown Township between Bauer Road and Baldwin Street, and further north along Plainfield Avenue NE to the Grand River.

Figure 17: Existing Transit Demand Index



Transit Demand Index

Service Frequency Supported by Existing Population and Employment

- Insufficient Demand
- > 60 Minutes
- 60 Minutes
- 30 Minutes
- 15 Minutes or Better
- Zone One Boundary
- ITP-Member Communities
- The Rapid Routes (Winter 2023)

0 2 4 8 Miles

Source: 2019 US Census Bureau Longitudinal Employer-Household Dynamics (LEHD) dataset, 2021 American Community Survey (ACS) 5-Year Block Group Estimates, The Rapid

Projected Growth

Complementing the existing transit demand, as indicated by population and employment densities, projected regional growth is analyzed to identify where areas of transit demand may emerge or be heightened in the future. Two variables, household growth and employment growth, are visualized using regional GVMC Transportation Analysis Zone (TAZ) projections. GVMC develops these growth projections using "nationally recognized data sources such as U.S. Census data, American Community Survey (ACS) data, InfoUSA and Hoovers employment data, Bureau of Economic Analysis (BEA) data, and Regional Economic Model Inc. (REMI) data as the basis for projections."[11] GVMC then refines these projections using local information such as building permits as well as input from local planners based on their knowledge of local development expectations.

Household Growth (2015-2045)

Household growth not only reflects population growth, but also suggests potential areas of development and growth in transit needs. It is expected that the number of households within the Zone One Study Area will grow by more than 85,600 (30%) between 2015 and 2045.[12] Rather than a uniform increase in housing units across the region, household growth is instead expected to be concentrated in pockets as more than a quarter of the regional TAZs are projected to have zero household growth (nearly half of which are located within the City of Grand Rapids).

As shown in Figure 18, areas of elevated housing unit growth include near the Woodland Mall and The Rapid's Kentwood Station Ⓐ as well as Allendale Township west of GVSU Ⓑ. Communities with significant projected household growth that are not currently served by The Rapid's fixed route system include:

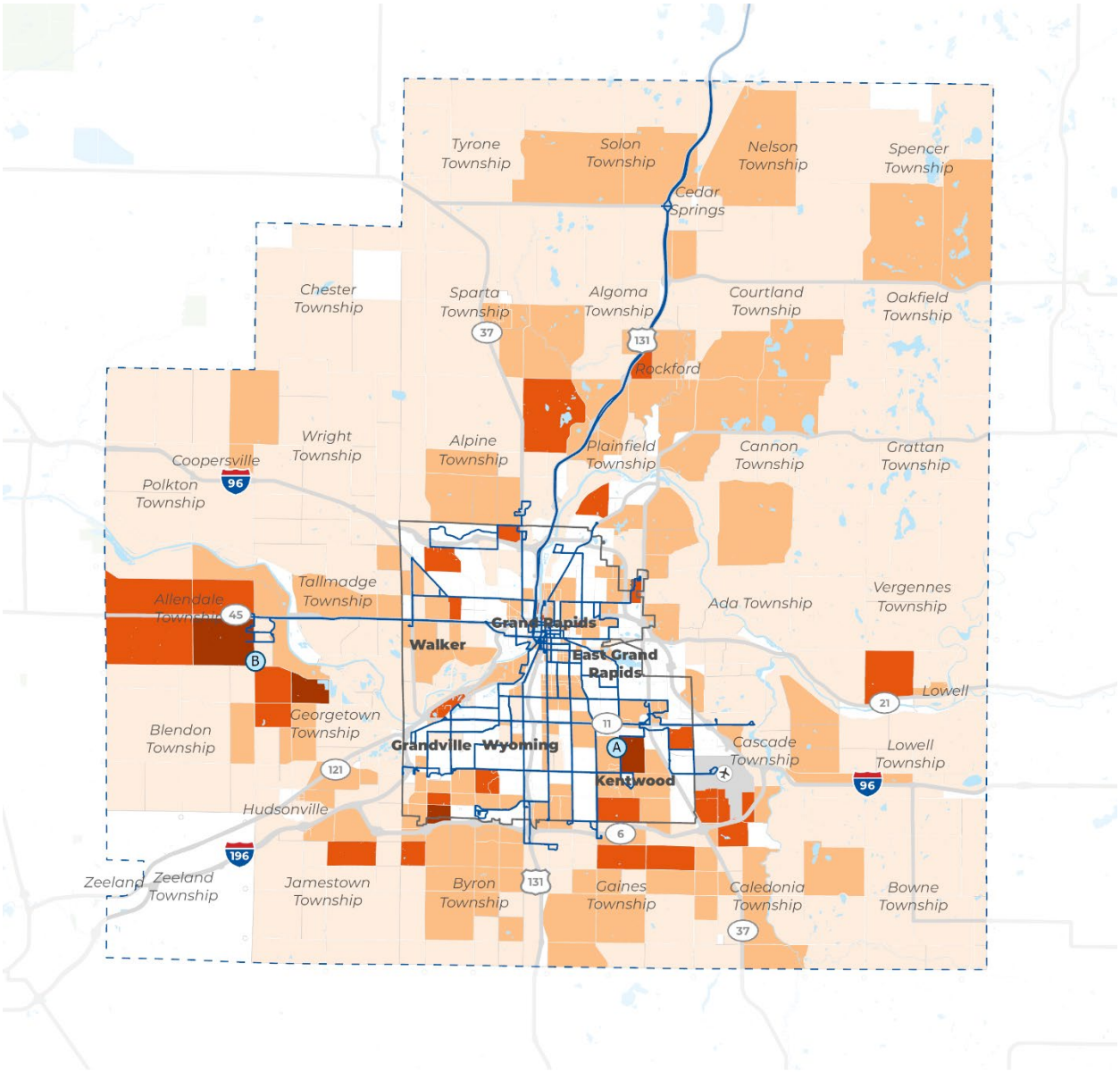
- Northeastern Georgetown Township near 36th Avenue and Bauer Road.
- Portions of Gaines Township in Crystal Springs along 68th Street southeast of where Route 3 currently terminates.
- Northern Byron Township near M-6 and Wilson Avenue west of where Route 1 currently terminates.

Employment Growth (2015-2045)

Between 2015 and 2045, an additional 64,500 jobs are projected to be located in the Zone One Study Area, nearly a third of which are anticipated to be in the City of Grand Rapids (Figure 19). Employment growth, to an even greater degree, is projected to be concentrated in pockets. Outside of the ITP-member communities, high employment growth is projected in Alpine Township Ⓐ and Caledonia Township Ⓑ. The only area with decreasing employment density is in Ada Township Ⓒ, where Amway World Headquarters is located.

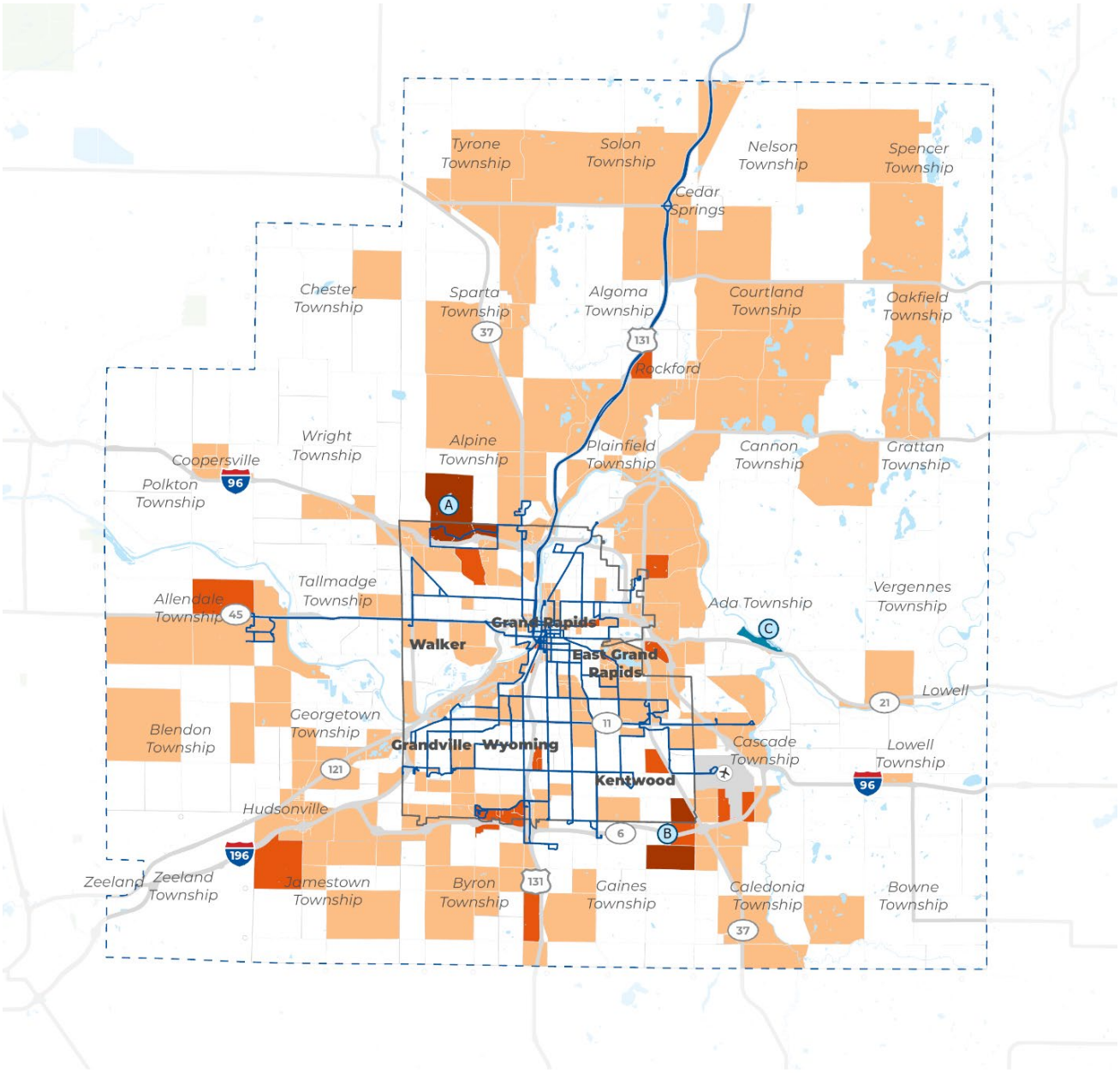
[11] Source: 2045 Metropolitan Transportation Plan, GVMC, May 7, 2020
[12] Note: GVMC 2045 TAZ data does not include data for Zeeland Township. As such Zone 1 household and employment growth statistics reflect the Zone 1 growth excluding Zeeland Township.

Figure 18: Projected Household Growth (2015-2045)



Source: GVMC 2045 Transportation Analysis Zones

Figure 19: Projected Employment Growth (2015-2045)



Source: GVMC 2045 Transportation Analysis Zones

Transit Propensity

The transit propensity analysis assesses Zone 1 demographic and socioeconomic characteristics to identify areas where the population is more likely to need and utilize public transportation services compared to the general public. It is important for transit to provide connectivity for all races, incomes, ages, and abilities to ensure equitable services. Therefore, it is vital to include the following populations within the transit analysis to ensure all users are represented and benefit from future transit improvements by understanding demographic patterns and predictions.

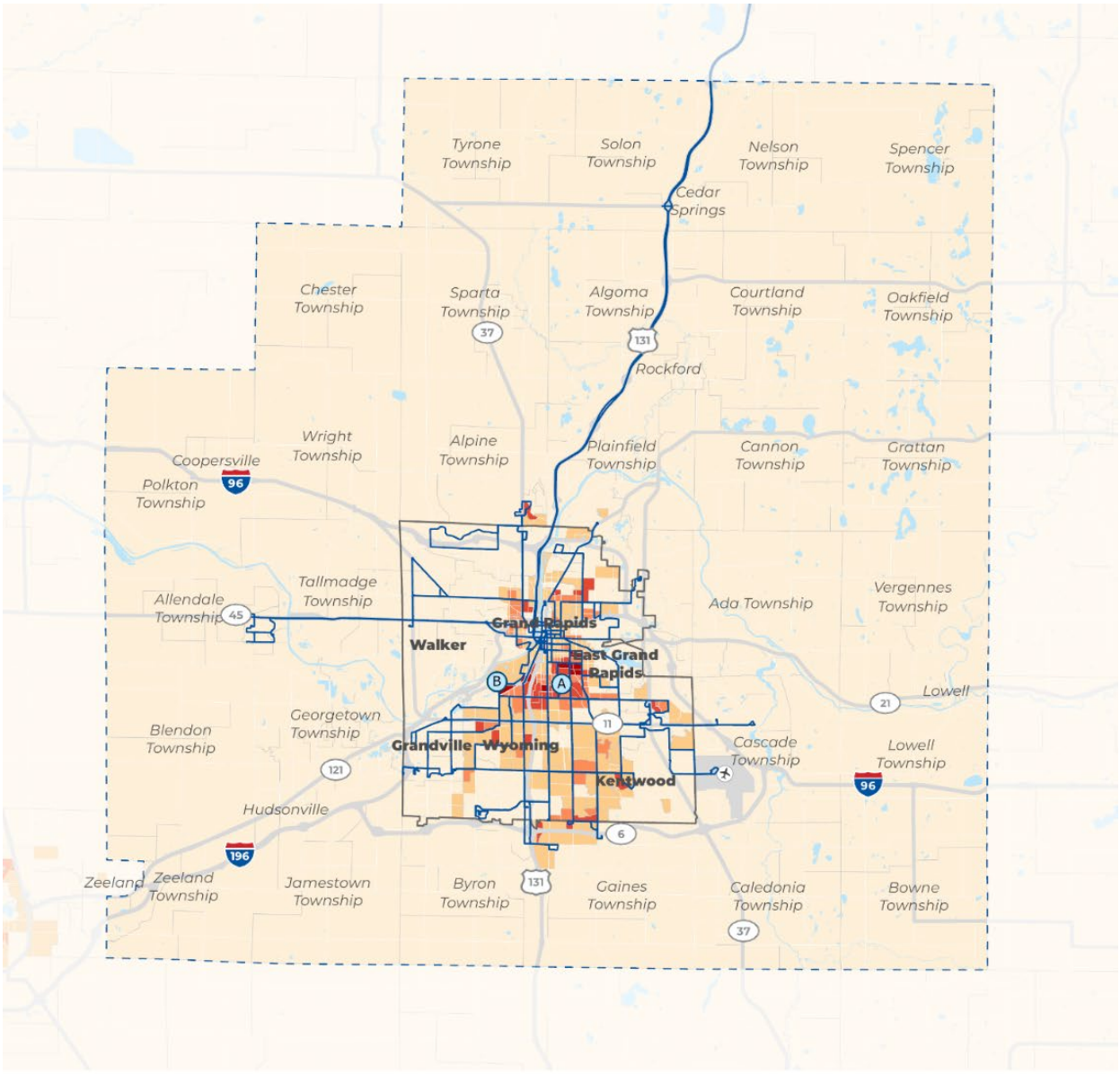
- Minority populations, as these populations are more likely to use transit than non-minority populations.
- Young adults, defined as persons between the ages of 18 and 24, as they are more likely to take transit than adults over the age of 24.
- Seniors, defined as persons 65 years of age or more, who often become less comfortable or able to operate a vehicle as they age.
- Persons with disabilities, many of whom are unable or have difficulty driving.
- Individuals living below the poverty line, as transit is typically less expensive than owning and operating a car.
- Zero-vehicle households, as people without access to a vehicle are typically more reliant on public transportation for their mobility needs.
- Rental units, as higher concentrations of rental units are typically correlated with higher transit ridership.
- Existing transit users, as these populations already utilize existing transit services.

The following sections highlight areas of heightened transit propensity that should be prioritized when designing a sustainable transit system that provides services for future growth and needs. The prevalence of each population subgroup amongst The Rapid's riders is first summarized followed by an overview of where concentrations of these populations reside within the Zone 1 area.

Minority Populations

Minority populations are defined as individuals who identify as a race/ethnicity other than white (non-Hispanic). Amongst regular bus riders surveyed as part of The Rapid's 2022 Passenger Perceptions and Satisfaction On-Board Survey, about two thirds self-identified as a race/ethnicity other than white (non-Hispanic). Figure 20 shows that areas of increased minority population density are primarily located within the ITP-member communities, specifically in southeastern Grand Rapids between Hall Street and Burton Street (A), northern Wyoming (B), and in central Kentwood. Notably, with the exception of a handful of block groups near the ITP-member community boundary, a portion of all Zone 1 block groups with increased minority population densities (more than 1,000 non-White persons per square mile) are within a half mile of an existing bus route.

Figure 20: Minority Population Density (2021)

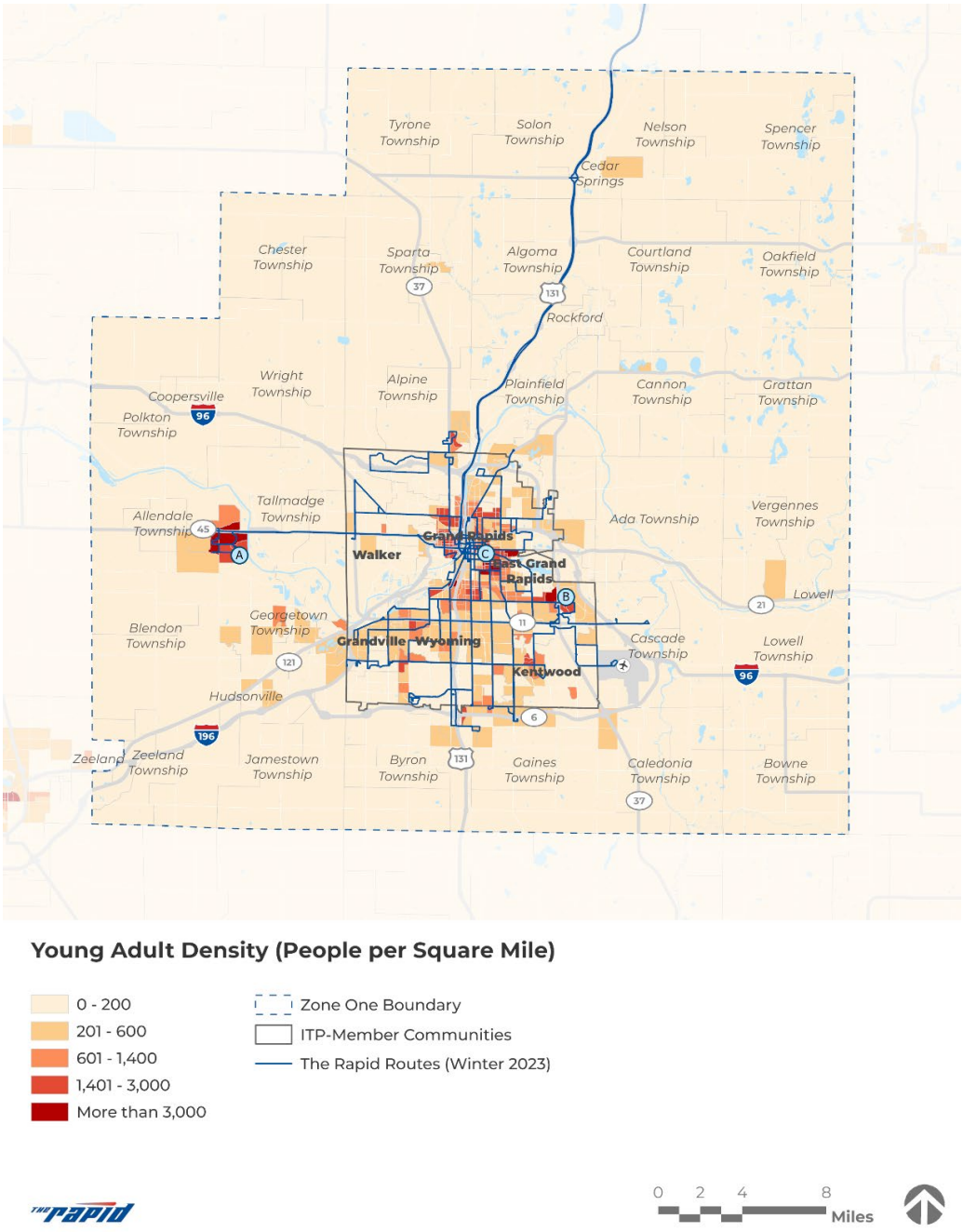


Source: 2021 American Community Survey (ACS) 5-Year Block Group Estimates, The Rapid

Young Adults (18-24 Years of Age)

The Rapid's 2022 On Board Survey indicates that 13% of respondents were young adults (18-24 years old). Historically, young adults have comprised between 15% to 19% of The Rapid's bus riders. Figure 21 shows that areas with greater young adult population density in Grand Rapids are near higher educational campuses including GVSU Allendale Campus (A), Calvin University (B), and Aquinas College (C). Other communities with increased prevalence of young adult populations include downtown Grand Rapids and portions of East Grand Rapids, Kentwood, Wyoming, and Georgetown Township.

Figure 21: Young Adults Population Density (2021)

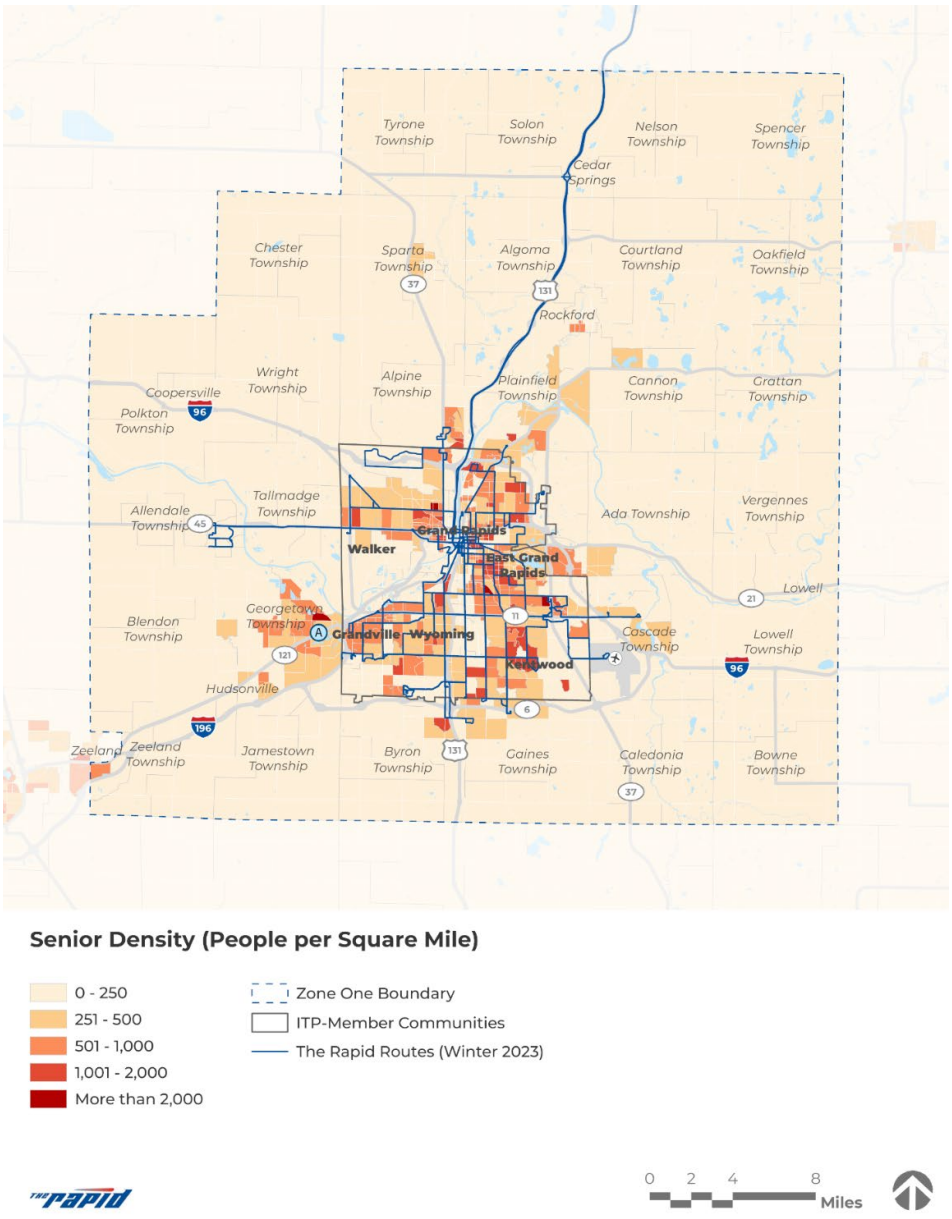


Source: 2021 American Community Survey (ACS) 5-Year Block Group Estimates, The Rapid

Senior Populations (65+ Years of Age)

About seven percent of regular bus riders reported being 65 years of age or older in The Rapid's 2022 On Board survey. Notably, the percentage of senior riders has increased 3-points (4% to 7%) between 2021 and 2022. ITP-member communities along with portions of Georgetown Township Ⓐ have relatively large senior population densities compared to rest of the region (Figure 22). Unlike young adult populations, which are primarily concentrated to the east of the Grand River, senior populations are more evenly distributed throughout the ITP-member communities with the exception of the City of Walker which has both low senior and young adult population densities. Key areas of elevated senior population densities currently without fixed route bus service include Georgetown Township, Hudsonville, and Plainfield Township.

Figure 22: Senior Population Density (2021)

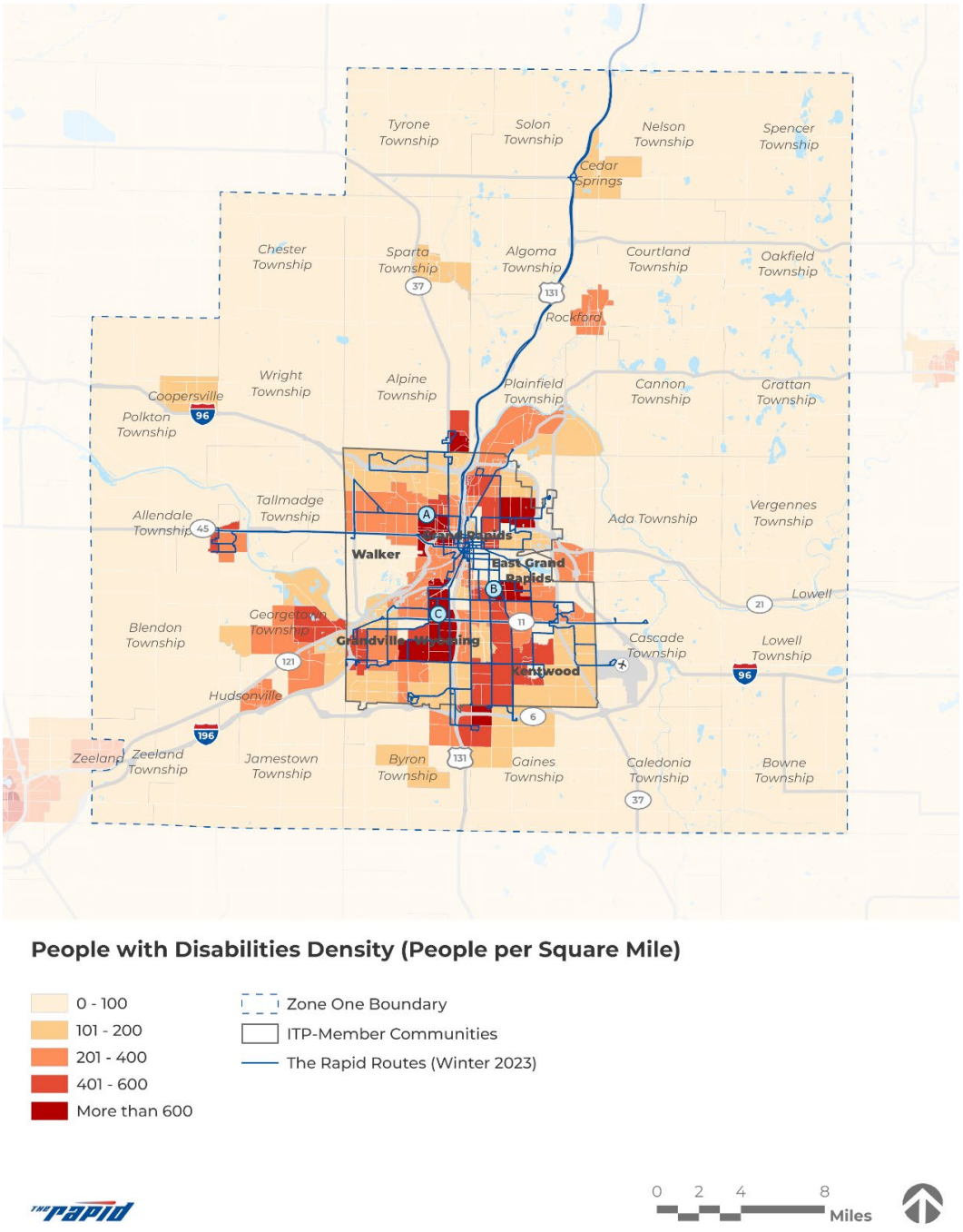


Source: 2021 American Community Survey (ACS) 5-Year Block Group Estimates, The Rapid

People with Disabilities

Transit often serves as a preferred means of transportation for people with disabilities. As shown in Figure 23, areas of West Grand Ⓐ and Southeast End in Grand Rapids Ⓑ as well as eastern Wyoming Ⓒ have the highest density of people with disabilities. Other areas with elevated densities include northeast of Grand Rapids, Wyoming, and Cutlerville. Except for Georgetown Township, most Zone 1 block groups with elevated concentrations of persons with disabilities are served by existing fixed route services.

Figure 23: People with Disabilities Density (2021)



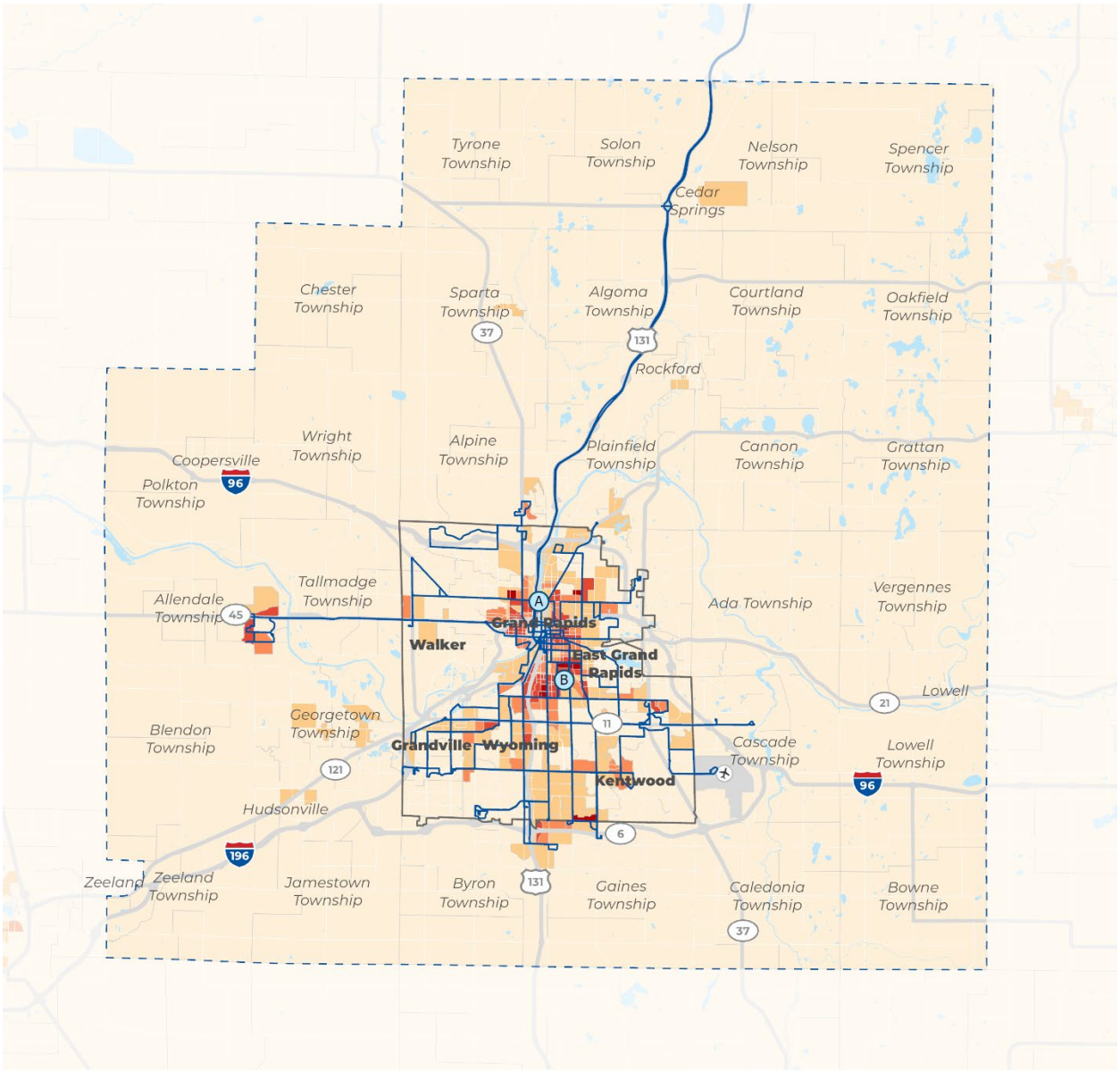
Source: 2021 American Community Survey (ACS) 5-Year Census Tract Estimates, The Rapid

Low-Income Populations (Under 100% of the Federal Poverty Level)

Low-income populations are defined as persons with household incomes under 100% of the federal poverty level. Due to lower relative costs of transit compared to other mobility options, low-income populations are more likely to be reliant on transit. Historically, low-income populations have always comprised between a quarter to a third of The Rapid's fixed route bus passengers according to The Rapid's On-Board surveys. After declining to just 12 percent of riders in 2021, there was a dramatic 22-point increase (12% to 34%) in the percentage of riders reporting household incomes under the federal poverty level in 2022.

Concentrations of low-income households are primarily located near downtown Grand Rapids (A) and to the north of 28th Street (M-11) and east of US-131 (Figure 24) in neighborhoods including Garfield Park and Baxter (B). Additional areas with large concentrations of low-income populations include the four block groups along Lake Michigan Drive (M-45) in Allendale Township adjacent to GVSU (C) as well as the block groups located in Cutlerville near the intersection of US-131 and M-6.

Figure 24: Density of Low-Income Populations (2021)



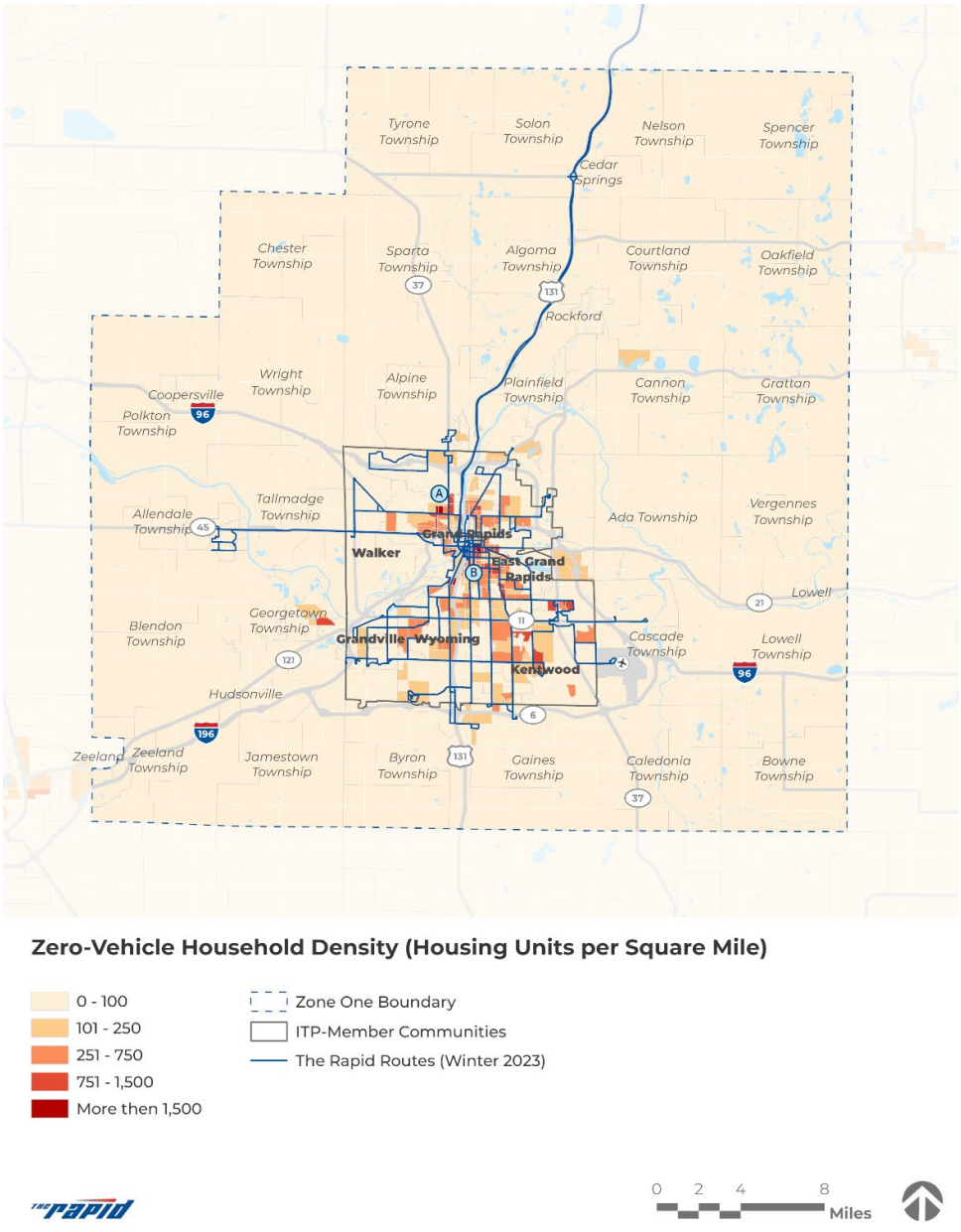
Source: 2021 American Community Survey (ACS) 5-Year Block Group Estimates, The Rapid

Zero-Vehicle Households

Individuals living in zero-vehicle households are more likely to be reliant on transit for mobility needs. As such, it is critically important that transit serve areas with greater concentrations of zero-vehicle households.

Figure 25 indicates that nearly all concentrations of households without access to a vehicle are located within the ITP-member communities. Concentrations of zero-vehicle households are primarily located in West Grand (A) and Heritage Hill near downtown Grand Rapids (B) although one block group in Georgetown Township has a significant density of zero vehicle households.

Figure 25: Density of Zero-Vehicle Households (2021)

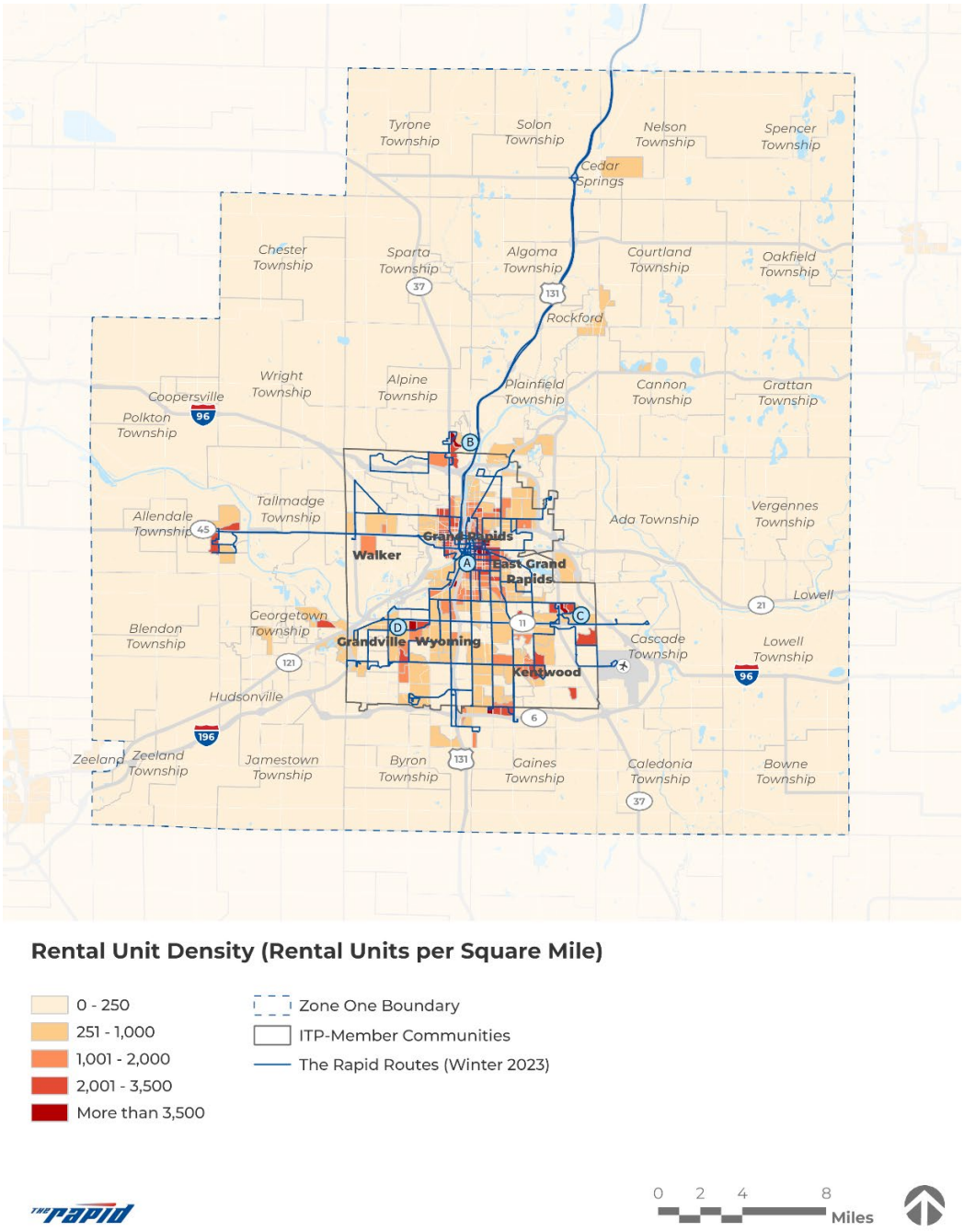


Source: 2021 American Community Survey (ACS) 5-Year Block Group Estimates, The Rapid

Rental Units

Higher concentrations of rental units are typically correlated with higher propensity to ride transit. The highest concentrations of rental units are generally located in downtown Grand Rapids Ⓐ although notable concentrations also exist at large apartment complexes on the periphery of the ITP-member communities (Figure 26). Large rental unit densities outside of downtown Grand Rapids include Alpine Center/Comstock Park Ⓑ near Calvin University Ⓒ, and the apartment complexes located along Byron Center Avenue and near Prairie Street in Wyoming Ⓓ.

Figure 26: Rental Unit Density (2021)

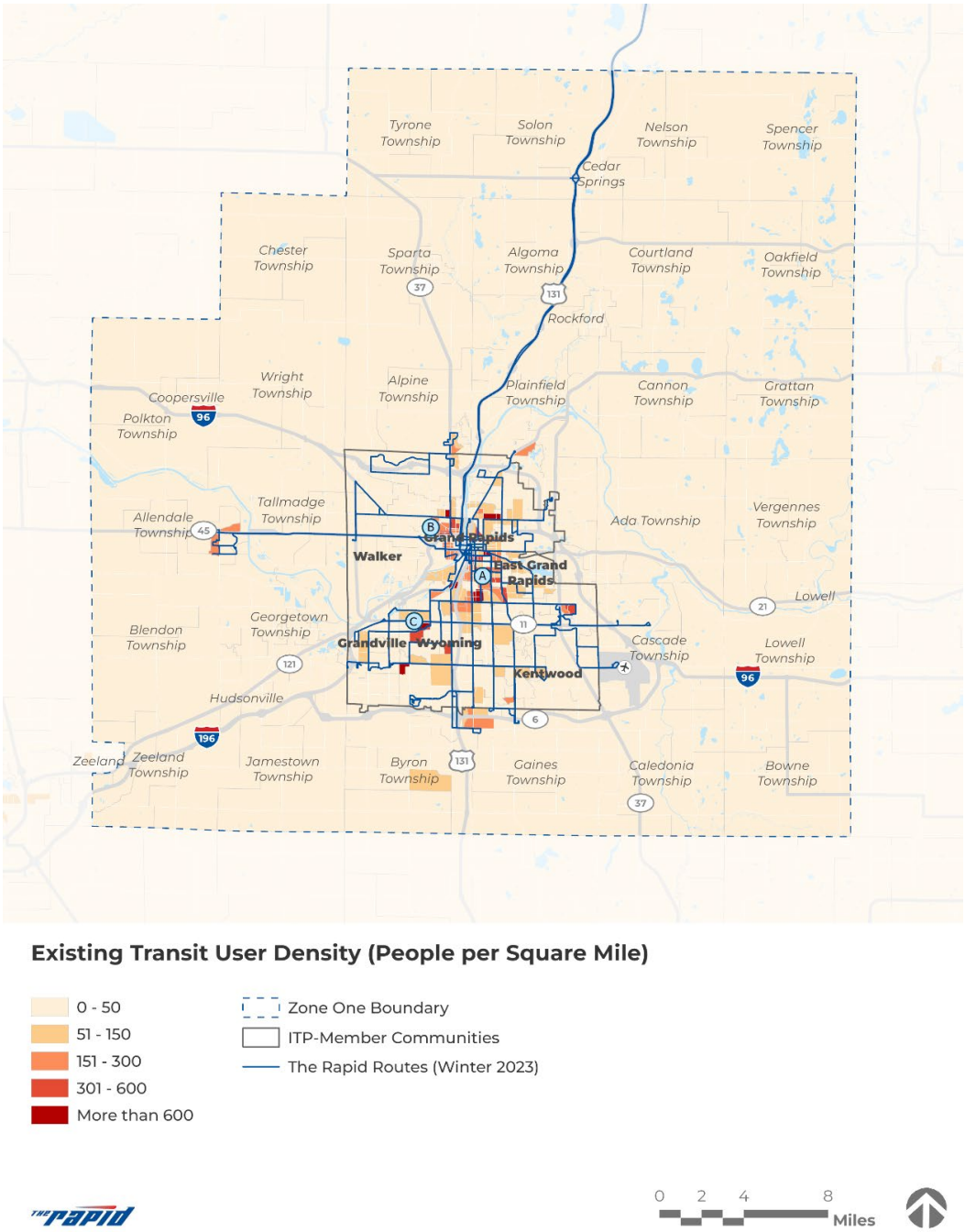


Source: 2021 American Community Survey (ACS) 5-Year Block Group Estimates, The Rapid

Existing Transit Users

Retaining and improving transit service in areas with concentrations of existing transit riders is important as these populations already rely on the transit system. As shown in Figure 27, areas with elevated densities of workers 16 years of age and older that commute by transit include communities along US-131 in Grand Rapids and Wyoming Ⓒ, especially east of US-131 and downtown Grand Rapids Ⓐ. Two block groups in Allendale Charter Township Ⓑ near GVSU have more than 200 transit users per square mile.

Figure 27: Density of Existing Transit Users (2021)



Source: 2021 American Community Survey (ACS) 5-Year Block Group Estimates, The Rapid

Composite Transit Propensity Index

To provide insight into which areas of Zone One Study Area are more likely to need and utilize public transportation services across all eight population/household characteristics introduced above, a composite transit propensity index was created (Figure 28). To identify areas of higher transit propensity, this analysis applied equal weight to census block groups for each of the eight population/household characteristics. These characteristics were each scored from 1 (lowest propensity) to 5 (highest propensity) and then summed together to produce a composite index with a maximum possible value of 40.

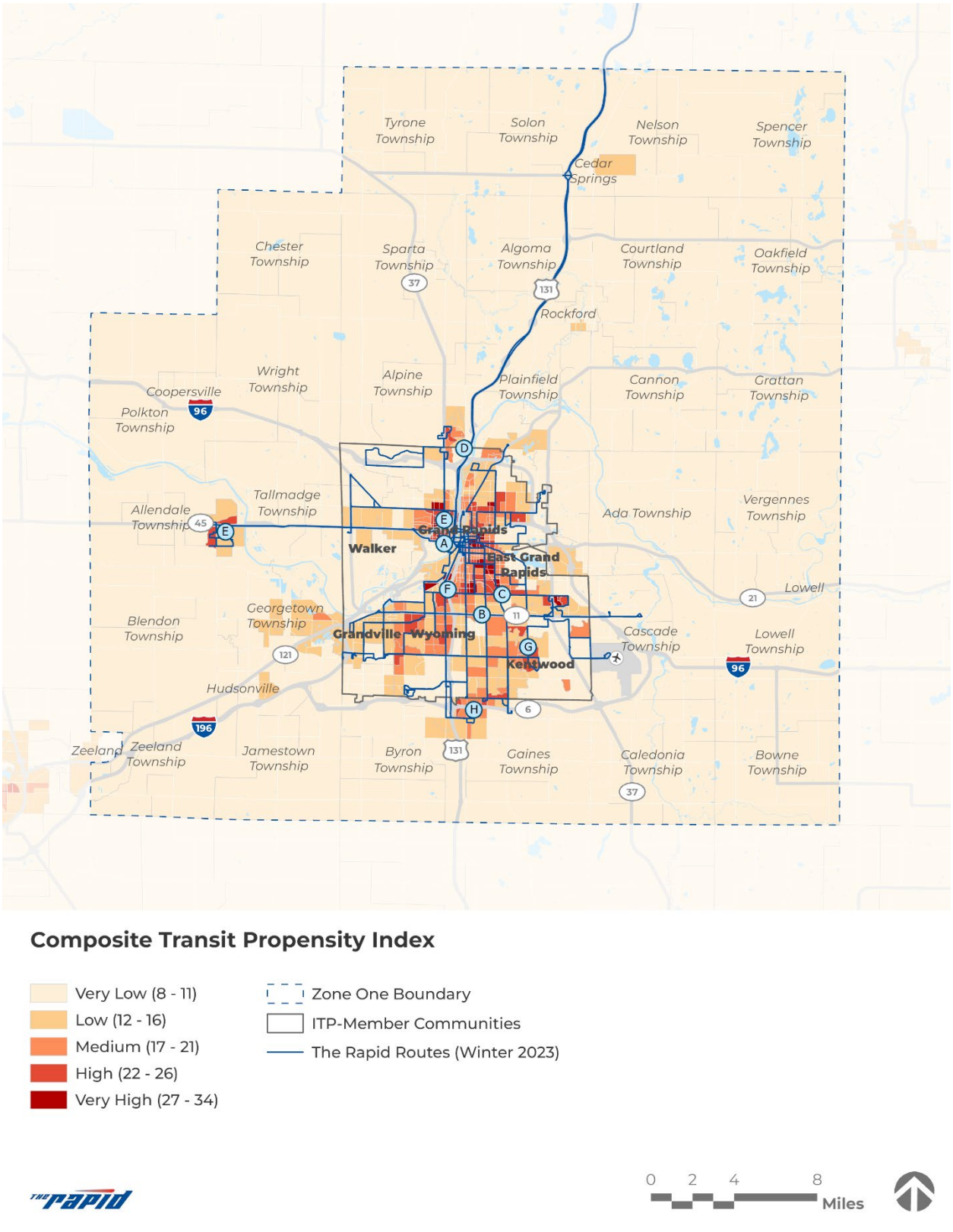
As highlighted in Figure 28, areas with particularly high transit propensity are clustered into four primary areas:

- **Downtown Grand Rapids**: Generally bounded by Michigan St NE, Eastern Avenue NE, Wealthy Street SE, and the Grand River this core area ranks highly in nearly all of the eight population characteristics.
- **West Grand Rapids (West Grand, SWAN) Ⓐ:** Similar to downtown Grand Rapids, the West Grand and SWAN neighborhoods contain high concentrations of low income and zero vehicle households as well as rental units, persons with disabilities, and existing transit users.
- **Along Burton Street SE:** This crosstown street runs east-west through the southern portion of Grand Rapids connecting the cities of Wyoming and Kentwood. This area ranks highly across all eight population characteristics particularly along the northeast side of the corridor. Additionally, the block groups surrounding the intersection of Division Avenue and Burton Street SE Ⓑ as well as near Calvin University have some of the highest densities of existing transit users in the Zone One Study Area.
- **South East End Ⓒ:** Adjacent to the Burton Street SE Corridor, the South East End neighborhood contains a high density of low-income and minority populations as well as persons with disabilities.

Other clusters of higher transit propensity include:

- Alpine Township (Comstock Park/Alpine Center) Ⓓ;
- GVSU campuses (Allendale and downtown Grand Rapids) Ⓔ;
- Northern Wyoming Ⓕ;
- Central Kentwood Ⓖ; and
- Cutlerville Ⓗ.

Figure 28: Composite Transit Propensity Index (2021)



Source: 2021 American Community Survey (ACS) 5-Year Block Group Estimates, The Rapid

Trip Generators

In addition to demographic and socioeconomic characteristics, transit usage is also influenced by the built environment. This section details the existing and future land use and activity centers within Zone 1 to identify areas with current transit-supportive uses as well as planned transit-supportive areas that may be key trip generators in the future.

Land Use

Land use can be a key indicator of potential trip generators as residential and commercial uses create origin and destination points throughout the city. High intensity land uses that are well positioned to support transit infrastructure and likely to be trip generators include:

- Airport
- Civic/Institutional
- Commercial/Office
- Mixed Use
- Multifamily Residential

Conversely, lower intensity uses such as agricultural/open space,[13] single-family residential, or industrial uses have a lower potential to be trip generators.

Existing Land Use

The existing land use conditions by parcel are mapped in Figure 29. The two primary land uses within the Zone 1 Study Area are agriculture/open space and single family residential, both of which are low intensity uses. Most of the higher-intensity land area within Zone 1 is commercial/office space although there are also notable pockets of multi-family residential and civic/institutional uses. Concentrations of higher-intensity land use include:

- *Civic/Institutional* uses near GVSU (Allendale Township), Calvin University and surrounding area Ⓐ, and Cornerstone University Ⓑ.
- *Commercial/Office* along major Zone 1 freeways and arterial corridors including 28th Street (M-11), 44th Street Ⓒ, Alpine Avenue Ⓓ, Division Avenue as well as the area surrounding the M-6 US-131 interchange.
- *Multi-family residential* surrounding downtown Grand Rapids.

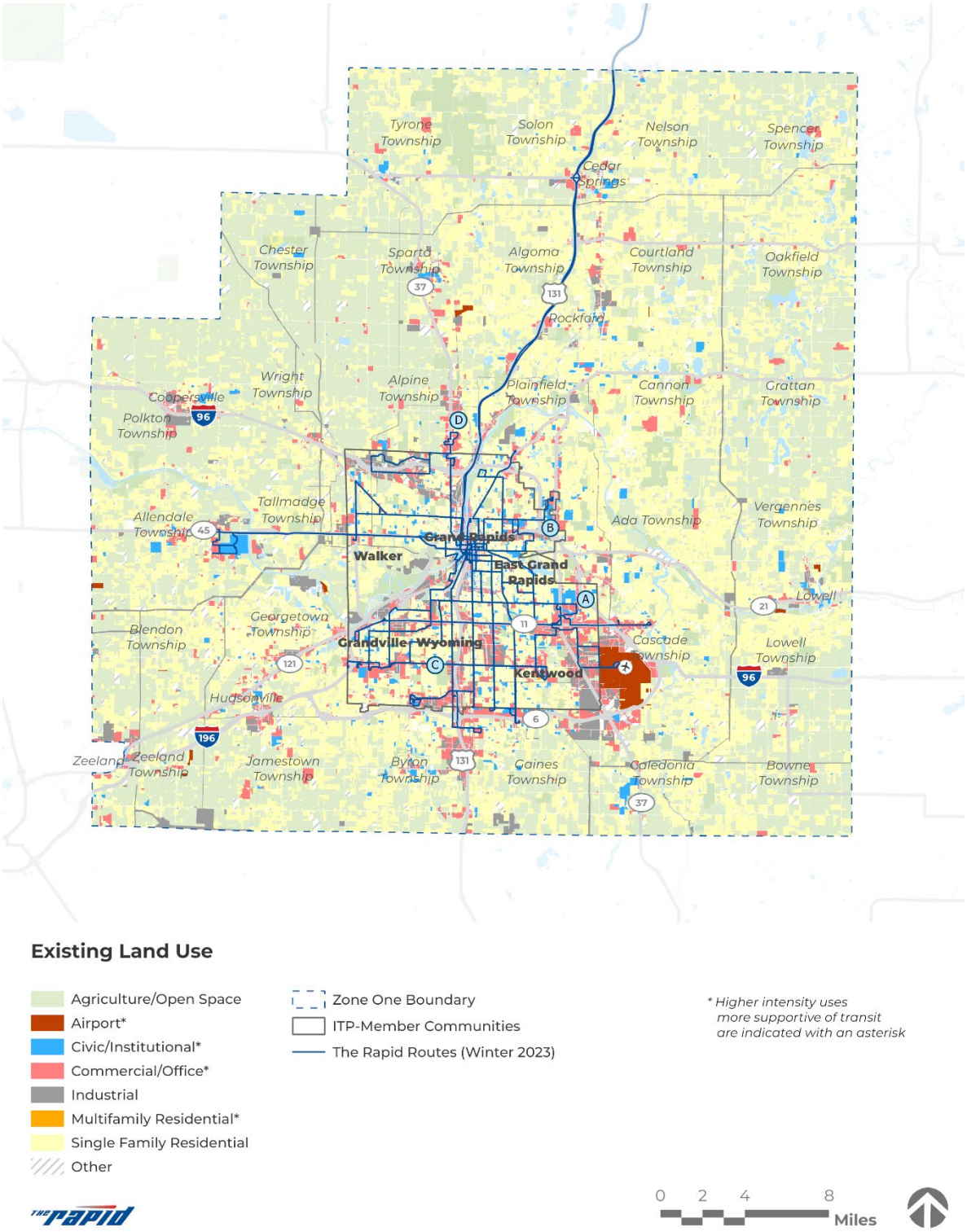
[13] Note: GVMC Single Source Master Plan (Future) Land Use data groups Public Institutional and/or Open Space into one category, the majority of which corresponds with parks, lakes, and open space. As such, this category has been classified as "Agricultural/Open space for the purposes of this analysis although this does underrepresent future transit supportive land uses around some civic facilities including airports and higher education. Nearly 40% of block groups with existing Civic/Institutional uses are designated as mixed use in the Master Plan Land Use dataset.

Master Plan (Future) Land Use

In 2016, the Grand Valley Metro Council (GVMC) collected all zoning and master plan (future) land use datasets from all Metro Council members from which a generalized land use codes were developed to be used for regional projects.[14] Although much of the Zone One area remains comprised of lower-intensity uses, significant concentrations of mixed use land as well as growth in higher-intensity "multi-family residential" uses present opportunities for potential ridership growth (Figure 30). In particular, Alpine Township (Comstock Park/Alpine Center), Coopersville, Lowell, South Grandville, and Hudsonville all have significant portions of their community's future land use designated as "multi-family residential" while significant portions of Grand Rapids, Kentwood, and Byron Township are designated as mixed use.

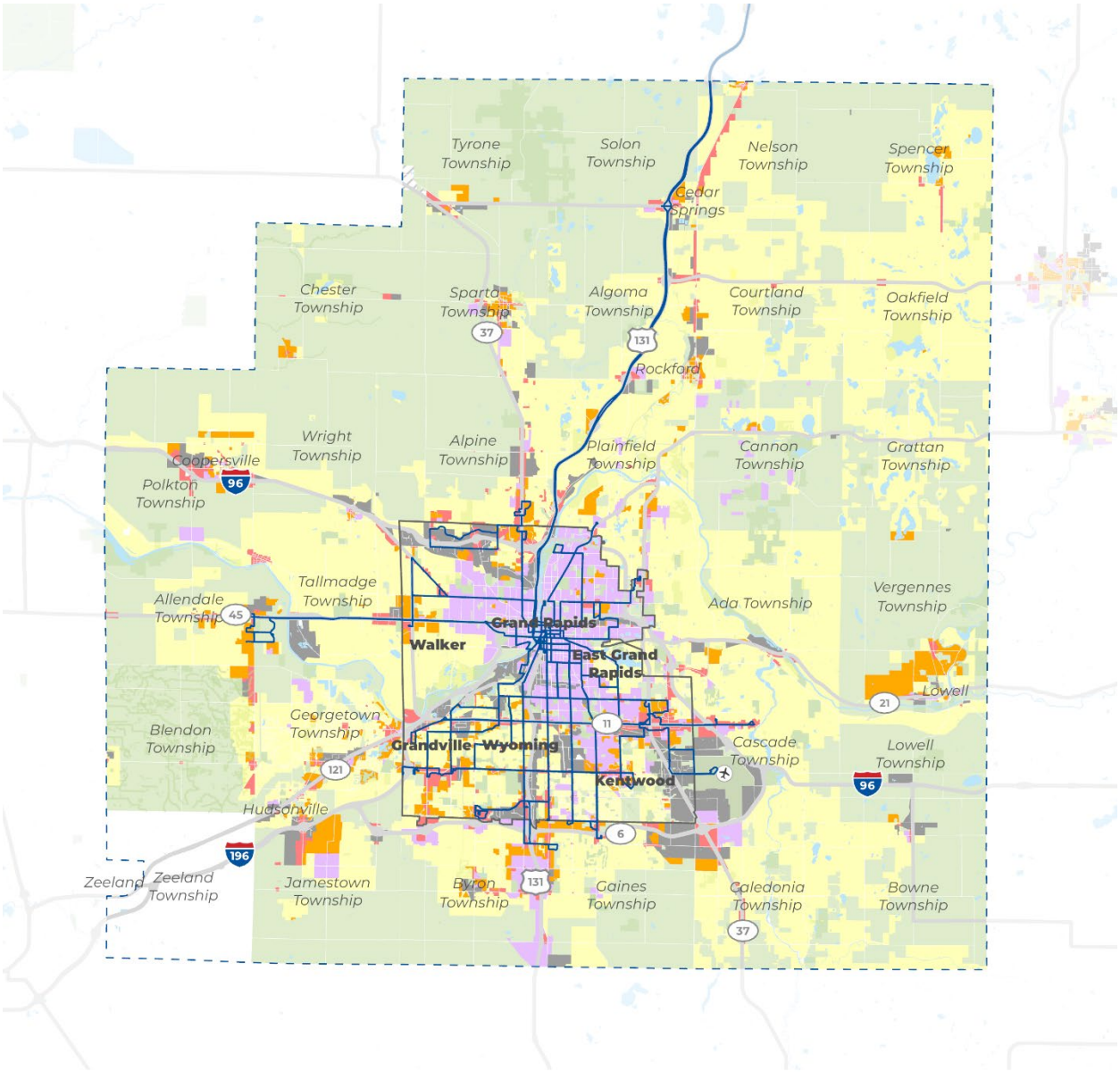
[14] Note: Although future land use data for Zeeland Township is not included as part of the GVMCs Single Source dataset, a review of Zeeland Township's planned land use indicates that agricultural uses represent the majority of the Township's planned land use with commercial uses along Chicago Drive and mixed-use settlements at the intersection of 64th Ave. and Adams St. as well as 72nd Ave. and Ransom St.

Figure 29: Existing Land Uses by Parcel



Source: Urban Footprint Parcel Data, AECOM, The Rapid

Figure 30: Future (Master Plan) Land Uses



Future (Master Plan) Land Use

- Agricultural/Open Space
- Commercial/Office*
- Industrial
- Mixed Use*
- Multifamily Residential*
- Single Family Residential/Rural Estate
- Other

- Zone One Boundary
- ITP-Member Communities
- The Rapid Routes (Winter 2023)

* *Higher intensity uses more supportive of transit are indicated with an asterisk*

0 2 4 8 Miles

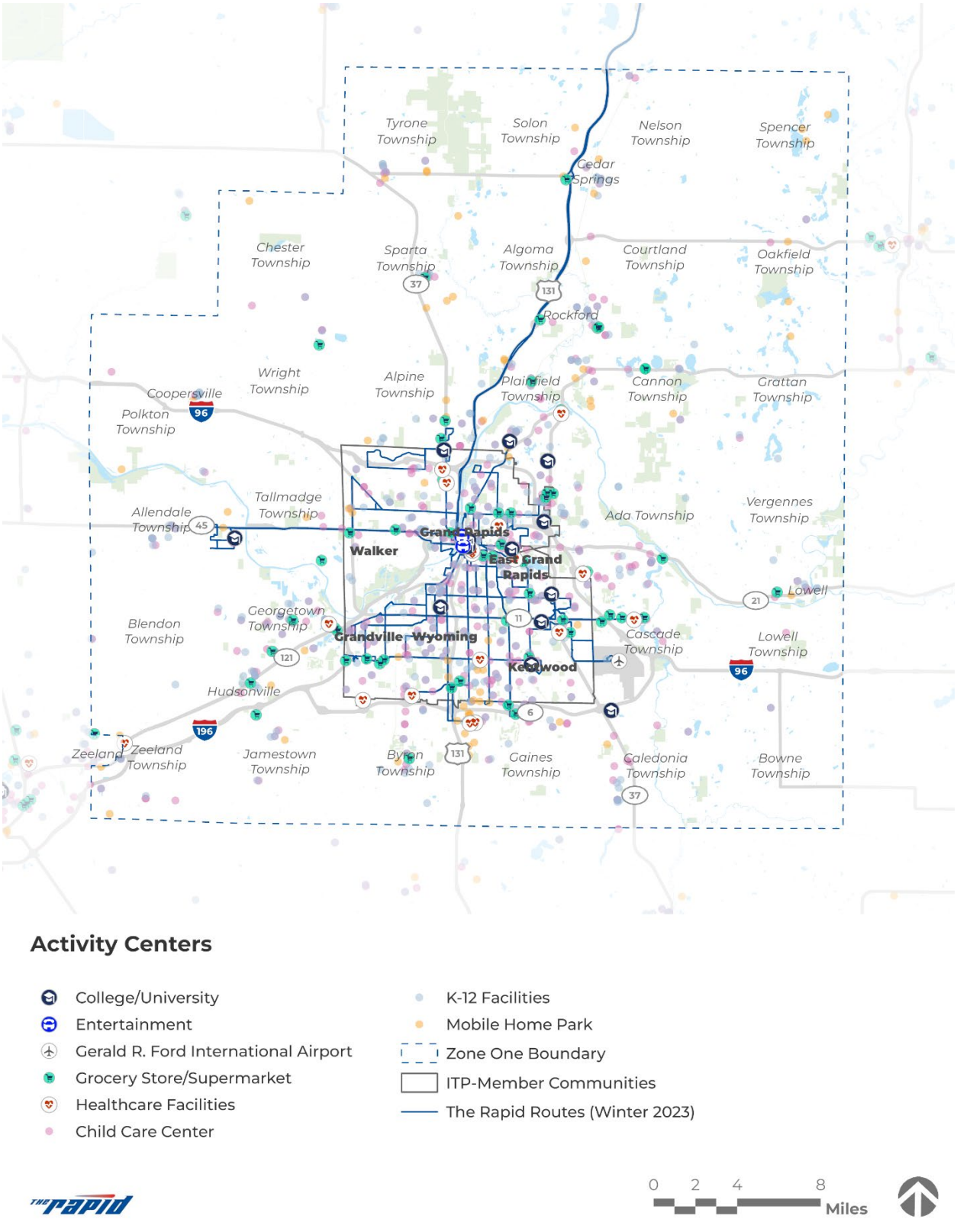
Source: GVMC Single Source Online Web Map, 2016

Activity Centers

Activity centers are key destinations that have the potential to generate transit trips. Often, these facilities provide essential goods or services to the surrounding community. Activity centers include schools and universities, medical facilities, major entertainment centers or arenas, and grocery stores and supermarkets, as well as mobile home parks which are often correlated with above average transit usage.

Zone One activity centers are primarily clustered within the ITP-member community area with additional concentrations in Georgetown Township, Hudsonville, Plainfield Township, and Byron Township (Figure 31). Compared to other ITP-member communities, Walker has a notable absence of activity centers in part due to its more rural low-density existing land uses. With the exception of GVSU, most colleges/universities are on the east side of the ITP-member community area. Healthcare facilities and urgent care centers are mainly located east of the Grand River and Entertainment venues are primarily in downtown Grand Rapids. A large number of mobile home parks are clustered near Cutlerville adjacent to the US-131 and M-6 interchange which has higher transit propensity and usage as indicated in the preceding sections of this document.

Figure 31: Zone 1 Activity Centers



Source: Homeland Infrastructure Foundation-Level Data (HIFLD), Urban Footprint

Composite Trip Generation Potential Index

The composite trip generator index synthesizes activity center data as well as existing and future land uses to create one metric that indicates areas with higher transit trip generation potential. As data granularity differed for existing and master plan (future) land use data sources land use characteristics are summarized at the block group level as the percentage of the block group's area that had a high intensity transit supportive land use.[15] Activity center data is summarized as the density of activity centers within a block group.

To identify areas of higher trip generation potential, this analysis applied equal weight to census block groups for each of three metrics: existing land use, future land use, activity center density. These characteristics were each scored from 1 (lowest potential) to 5 (highest potential) and then summed together to produce a composite index with a maximum possible value of 15.

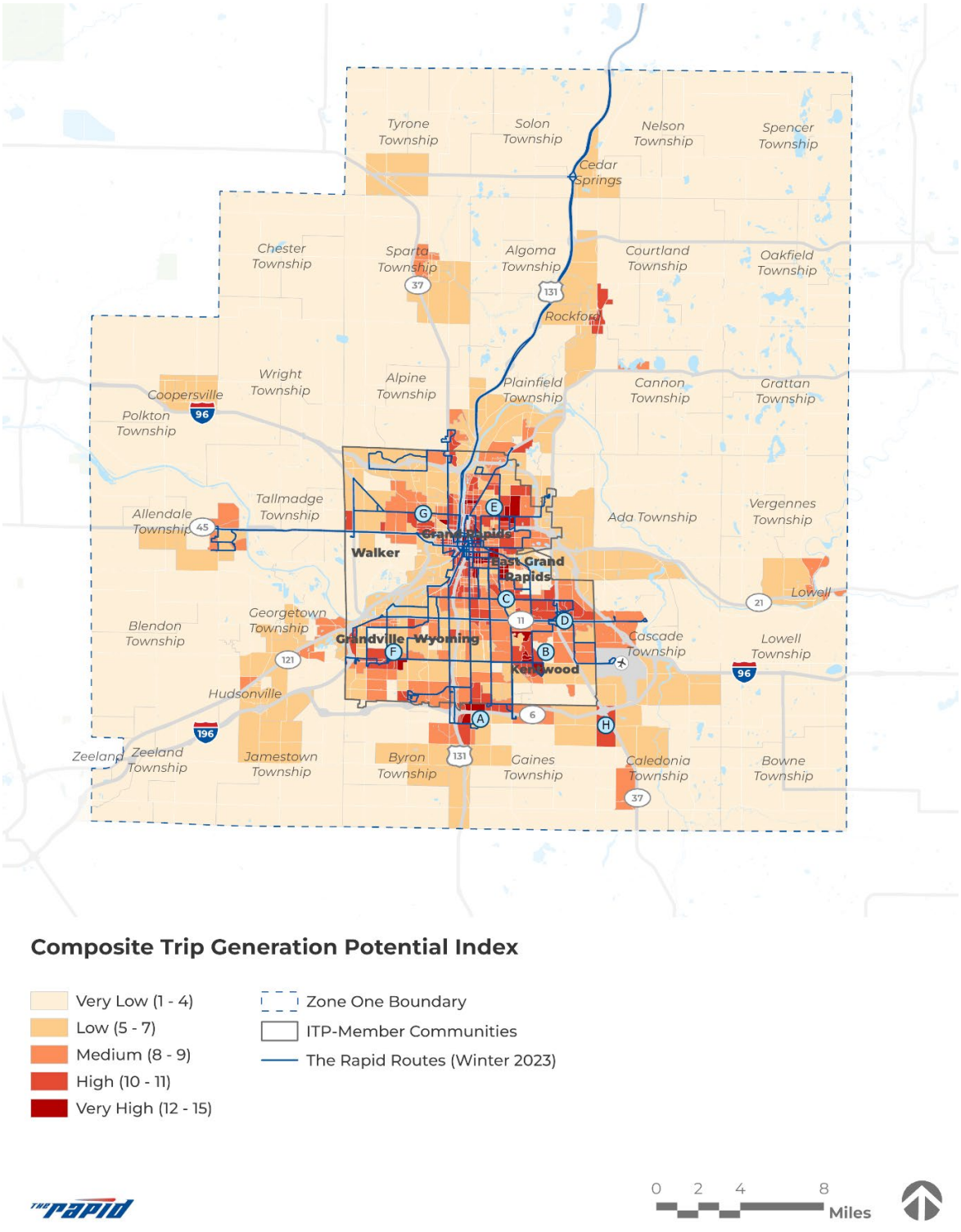
As highlighted in Figure 32, nearly all block groups with high trip generation potential are in close proximity to a bus route. Areas with particularly high trip generation potential are clustered into eight primary areas:

- **Downtown Grand Rapids**: Generally bounded by Michigan St NE, Eastern Avenue NE, Wealthy Street SE, and the Grand River this core area ranks highly in all three trip generation metrics.
- **Cutlerville Ⓐ:** With nine existing mobile home parks as well as planned multifamily and mixed-use land uses in the future, the portion of Cutlerville east of US-131 has very high trip generation potential.
- **Central Kentwood Ⓑ:** The presence of the Ross Medical Education Center, several multifamily apartments, and a variety of groceries and other stores located near the intersection of 44th Street SE and Breton Road SE suggest very high trip generation potential in this area.
- **Along Burton Street SE Ⓒ:** Much like for the transit propensity index and transit demand index, the area along Burton Street SE ranks highly across all three trip generation metrics characteristics particularly along the north and eastern side of the street.
- **Surrounding Calvin University Ⓓ:** This area contains a high density of activity centers located in a mix of multifamily housing, and civic, medical, and commercial uses.
- **Northeast Grand Rapids between I-96 and I-196 Ⓔ:** Although currently comprised of primarily single-family residential uses, the area has a high concentration of activity centers, and the planned land uses for this area are primarily mixed use.
- **Bucktown Shopping Center and RiverTown Crossing Mall Area Ⓕ:** Located along Rivertown Parkway/44th Street SW from I-196 to Byron Center Ave SW, this area has a diverse amount and high density of activity centers including the Ferrand Estates mobile home park and the RiverTown Crossing mall.
- **West Grand Rapids (West Grand, SWAN) Ⓖ:** This area, particularly near the Grand River, has significant portions of existing civic/institutional uses and is planned to be primarily mixed use in the future.

Outside the ITP-member communities, areas with "Medium" or higher trip generation potential include portions of Sparta Township, Lowell, and Rockford, as well as south of M-6 near Davenport University and the Amazon Fulfillment Center located off of 68th Street SE Ⓗ.

[15] Note: High intensity transit supportive land uses include: Airport, Civic/Institutional, Commercial/Office, Mixed Use, Multifamily Residential

Figure 32: Composite Trip Generation Potential Index



Source: GVMC Single Source Online Web Map, Homeland Infrastructure Foundation-Level Data (HIFLD), Urban Footprint, AECOM

Note: Compared to other block groups, the area encompassed by the Gerald R. Ford International Airport is unique in that it contains only one activity center rather than a high density of smaller activity centers. Recognizing that the airport is a significant trip generator that may not be otherwise captured by this methodology, the airport footprint has been shaded light gray but is treaded as a key trip generation location.

TRANSIT NETWORK CONDITIONS AND SERVICE QUALITY

The Rapid's current transit network is a product of continual refinement and evolution. Currently, four primary types of service are provided: (1) fixed route bus, (2) Rapid Connect on-demand, (3) Passenger Adaptive Suburban Service [PASS], and (4) Go!Bus paratransit. This section assesses the existing transit network conditions and the quality of service for each of The Rapid's primary transportation services to identify strengths and weaknesses of the existing system and to identify areas for improvement as well as potential future challenges.

Key Findings

System Historical Trends

The Rapid's existing fixed route services are beginning to recover following the COVID-19 pandemic as indicated by gradual increases in ridership as well as annual passengers per revenue hour and revenue mile between FY2020 and FY2022. Despite significant improvements in FY2022, fixed route operating costs per passenger in FY2022 were nearly 1.9 times greater than in FY2019. Farebox recovery has remained below 20% since the onset of the COVID-19 pandemic, despite recent improvements, highlighting the importance of identifying new funding sources to supplement fare revenue in funding growing operational expenses.

Fall 2022 Performance Assessment

Fixed Route and BRT Service: The Rapid's system is heavily reliant on weekday ridership; weekday productivity is higher than weekends; weekday service is not as reliable as Sunday service but better than Saturday service; a majority of routes are more than half full during peak hours; contracted routes are generally more expensive per revenue mile than directly operated routes but less expensive per passenger. Routes 12, 15, and the Laker Line and Silver Line are among the top performing routes in many performance metrics. Users are generally satisfied with The Rapid's fixed route service but only 42% of users agree that the Rapid's service hours meet their needs.

Rapid Connect On-Demand Service: Rapid Connect on-demand service was launched in January 2022 and has been successful in attracting ridership, promoting the usage of Wave Card, and providing connections to the fixed route network. High volume pickup and drop-off locations include the Alpine Meijer (Walker), Kentwood Station/Woodland Mall (Kentwood) and Kentwood City Hall (Kentwood) hubs. The fourth hub located at Walker Village, has relatively low ridership activity. On-time performance is fairly comparable with fixed route bus service but Rapid Connect is significantly more expensive to operate per passenger.

Passenger Adaptive Suburban Service (PASS): From October 2022 through December 2022, only 669 PASS trips were provided. Although PASS service is offered on weekends, 96% of trips were taken on weekdays. PASS trips were more common in the early part of the week. The majority of PASS ridership activity occurs in the southeast portion of the ITP-member communities in and around Kentwood where fixed route densities are less prevalent. Other concentrations of PASS activity are in the southwest and northwest corners of the ITP-member communities.

Go!Bus Paratransit Service: The GO!Bus paratransit service continues to provide travel options for disabled and elderly users. The most common Go!Bus trip purposes included rides

to work (45%), other (16%), recreation (8%), and shopping (7%). Go!Bus on-time performance (54%) is significantly lower than Rapid Connect on-demand service (86% on-time) and fixed route services (84%-91% on-time).GO!Bus services cost less per passenger than Rapid Connect but significantly more than fixed route services.

Fixed Route Service

This section summarizes the existing fixed route (Bus + Bus Rapid Transit) services provided by The Rapid as of Fall 2022. This summary includes a review of geographic coverage/equity, route-level utilization, vehicle and staff capacity, and user experience. In acknowledgement of the COVID-19 pandemic's profound impact, while also recognizing that we are in a "new normal" more than three years removed from the onset of COVID-19, this analysis begins with a high-level review of recent service changes and five-year system trends before focusing on Fall 2022 data—the most recent full season of performance data—to provide an in-depth route-level analysis.

Significant Recent Service Changes

To best meet the evolving local conditions and transit demand The Rapid implements service changes three times a year as outlined in the agency's current Collective Bargaining Agreement. These established periods are late August, early January, and mid-May. While these improvements typically involve minor schedule and route adjustments over the last three years, The Rapid has had numerous significant service level changes primarily attributable to the COVID-19 Pandemic and implementation of the 2021 Comprehensive Operational Analysis (COA) service recommendations. Figure 33 depicts a high-level view of the changing service provided by The Rapid in recent years.

March 2020

Following the onset of COVID-19 in March 2020, The Rapid's monthly ridership levels drastically decreased, dropping as low as 90% from the previous year.[16] In response to these unprecedented ridership levels and the state-mandated "shelter-in-place" order, on March 24th, 2020 The Rapid:

- Instated 15-person on-board capacity limitations;
- Suspended contracted services as well as eight of the system's lowest ridership/least productive routes and Route 19;
- Reduced service spans to 7 AM to 7 PM on all routes; and
- Reduced services to hourly headways[16]

To lessen crowding on the busiest routes, by late April, headways were improved to 30-minutes on Routes 1, 2, 4, 9, and 28.

Summer 2020

As ridership began to slowly return, on May 26th The Rapid:

- Increased fixed route weekday service spans for all routes to 5:30 AM to 10:30 PM;
- Reintroduced regular weekend hours and spans of service;

[16] Source: 2020 Title VI Documentation for the Federal Transit Administration, Max Dillivan, The Rapid, October 2020

- Reintroduced previously suspended routes at hourly frequencies (Except for Route 19 and contracted services which remained suspended)
- Upgraded high ridership routes (Silver Line and Route 1, 2, 4, 9, and 28) to 15-minute frequencies to provide proper social distancing.[16]

Fall 2021

On August 31st, as part of The Rapid's regular fall service changes, all routes that were operating at hourly service were upgraded to half-hour frequencies, Route 1 returned to half-hour weekday frequency service as it had operated pre-COVID, and on-board capacity limits were removed.

In addition to these COVID-related service changes. The Rapid also implemented the fixed route recommendations outlined in the Preferred Alternative of the agency's Comprehensive Operational Analysis (COA) with the goal of improving on-time performance, service frequency on key corridors, and providing more direct service to popular destinations. Largely in response to changing demand and fiscal constraints due to the impacts of COVID-19, the COA's Preferred Alternative used approximately 10 percent less revenue hours than were operated in 2019.

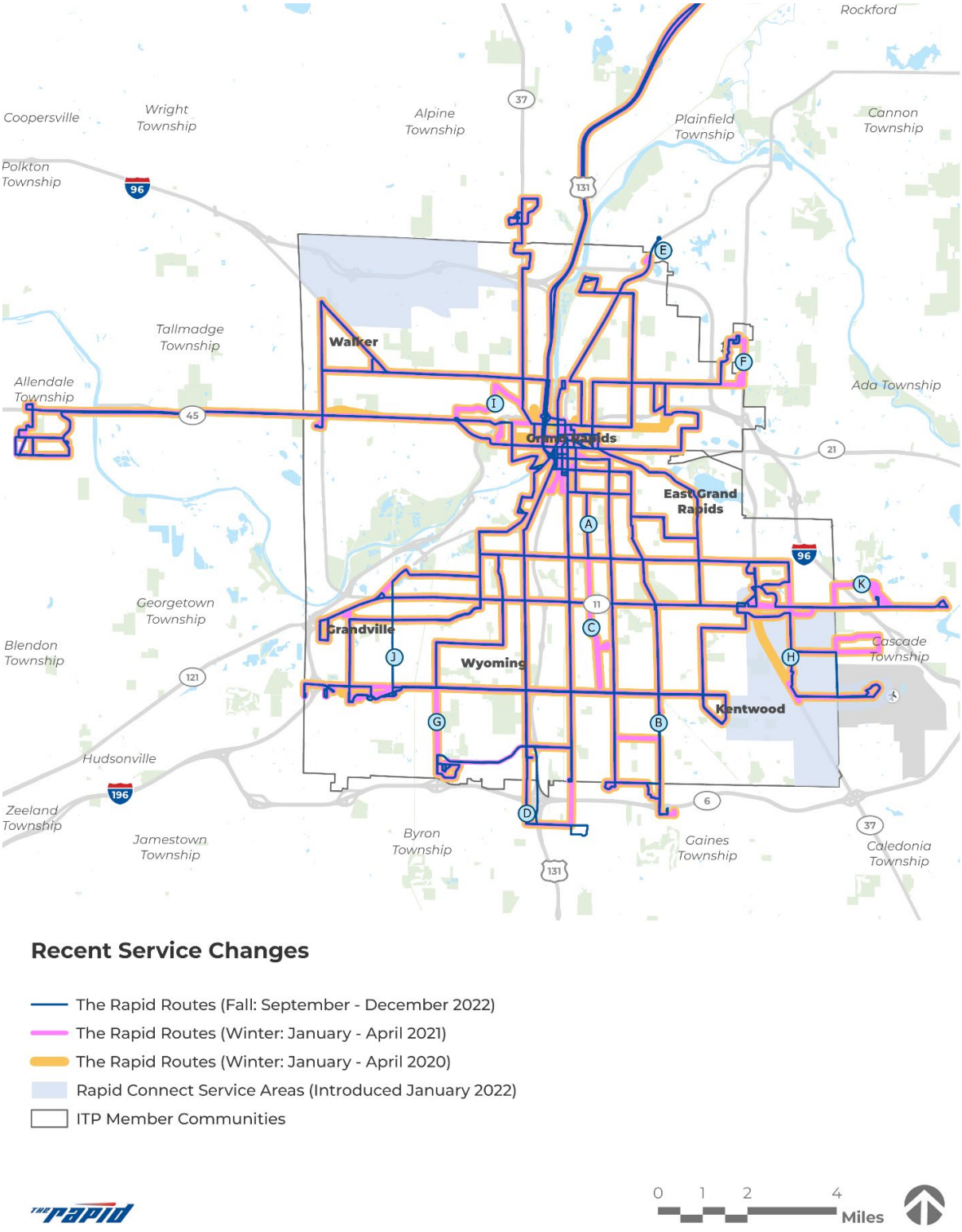
Significant route realignment, consolidation, or removal for 2020 through 2022 as depicted in Figure 33 included:

- **Route 1 – Division:** Deviation off of Division Avenue between Martin Luther King Jr. St. SE and Burton St SE Ⓐ to reduce redundant service with the Silver Line and replace Route 3 service
- **Route 2 – Kalamazoo:** Extension to Gaines Township Meijer Ⓑ
- **Route 3 – Madison:** Removed Ⓒ and partially replaced by Routes 1 and 2 due to low ridership south of Burton Street
- **Route 10 – Clyde Park:** Extension to 68th Street SE Ⓓ
- **Route 11 – Plainfield**: Extension to Plainfield Meijer Ⓔ
- **Route 15 – East Leonard**: Removal of service on the highly congested Beltline Avenue to improve on-time performance Ⓕ
- **Route 16 – Wyoming / Metro Health**: Renumbered to Route 3 and realigned away from Metro Health Village Ⓖ to serve RiverTown Crossings, a more robust all-day destination
- **Route 17 – Woodland / Airport:** Replaced by new Route 27 and Kentwood Rapid Connect Zone Ⓗ
- **Route 18 – Westside:** Consolidated with Route 12 with removal of service to lower ridership areas Ⓘ
- **Route 24 – Burton Crosstown**: Realigned to serve Rivertown Crossings Mall rather than operating west of Ivanrest Avenue to increase ridership Ⓙ
- **Route 28 – 28th Street Crosstown**: Split into Routes 28 (west of Woodland Mall) and 29 (east of Woodland Mall). Deviations to 29th Street, Patterson Avenue, and Burton Street were removed on the new Route 29 to improve reliability Ⓚ

In addition to many route realignments other major implemented improvements included improving service frequency to 15-minute all-day weekday service on the Rapid's most popular routes including Routes 2, 4, 11, 28 and the Silver Line. Five months later, in January

2022, The Rapid also introduced two new Rapid Connect on-demand zones to serve key employment clusters in Walker and Kentwood.

Figure 33: Recent Service Changes



Source: The Rapid GTFS
Note: Although this analysis focuses on changes through the Fall 2022 season, in January 2023, The Rapid introduced the new Route 33 to serve the Walker Industrial area along Northridge Drive and Three Mile Road

Systemwide Trend Analysis (FY2017 to FY2022)

In this section, annual operational and financial performance metrics from FY2017 to FY2022 are evaluated to quantify and contextualize recent service changes and highlight potential future trends using data from the National Transit Database (NTD).[17] A summary of these key metrics is presented in Table 6 with detailed discussion for each metric following in the subsections below.

Table 6: Systemwide Fixed Route Operational Metrics (FY2017 – FY 2022)

Metric	2017	2018	2019	2020	2021	2022
Ridership Trends						
Annual Unlinked Passenger Trips	10.6M	10.1M	10.1M	6.5M	3.9M	5.3M
Service Effectiveness (Productivity) Trends						
Annual Revenue Hours	447,000	442,000	465,000	381,000	402,000	405,000
Annual Revenue Miles	5.6M	5.5M	5.8M	5.0M	5.3M	5.5M
Passengers Per Revenue Mile	1.91	1.82	1.75	1.31	0.74	0.96
Passengers Per Revenue Hour	23.7	22.8	21.7	17.0	9.8	13.0
Financial Trends						
Operating Expenses	$34.9M	$37.7M	$39.0M	$38.2M	$38.3M	$38.3M
Fare Revenue	$9.3M	$8.7M	$8.1M	$5.7M	$5.1M	$6.9M
Operating Expense Per Passenger Trip	$3.30	$3.74	$3.86	$5.90	$9.77	$7.28
Operating Expense Per Revenue Mile	$6.28	$6.82	$6.77	$7.73	$7.22	$7.01
Operating Expense Per Revenue Hour	$78.01	$85.27	$83.76	$100.63	$95.22	$94.67
Farebox Recovery Ratio	26.6%	22.9%	20.7%	14.8%	13.4%	18.0%

Source: NTD Data (FY2017-FY2021), The Rapid FY2022 NTD Submittal. Values over 100,000 rounded to the nearest 1,000 and values over one million rounded to the nearest 100,000.

Key Findings

Gradual increases in monthly unlinked passenger trips (ridership) and annual passengers per revenue hour and mile between FY2020 and FY2022 suggest that **The Rapid's fixed route transit service is beginning to recover following the COVID-19 pandemic**

- Following an increase between FY2020 and FY2021, the **average fare revenue per passenger was stable between FY2021 and FY2022**.
- Despite a 4.6 percentage point increase between FY2021 and FY2022, annual farebox recovery ratios have remained below 20% since the onset of the COVID-19 pandemic highlighting the **importance of identifying new funding sources to supplement fare revenue in** funding growing operational expenses, especially as ridership is slow to recover post-pandemic.

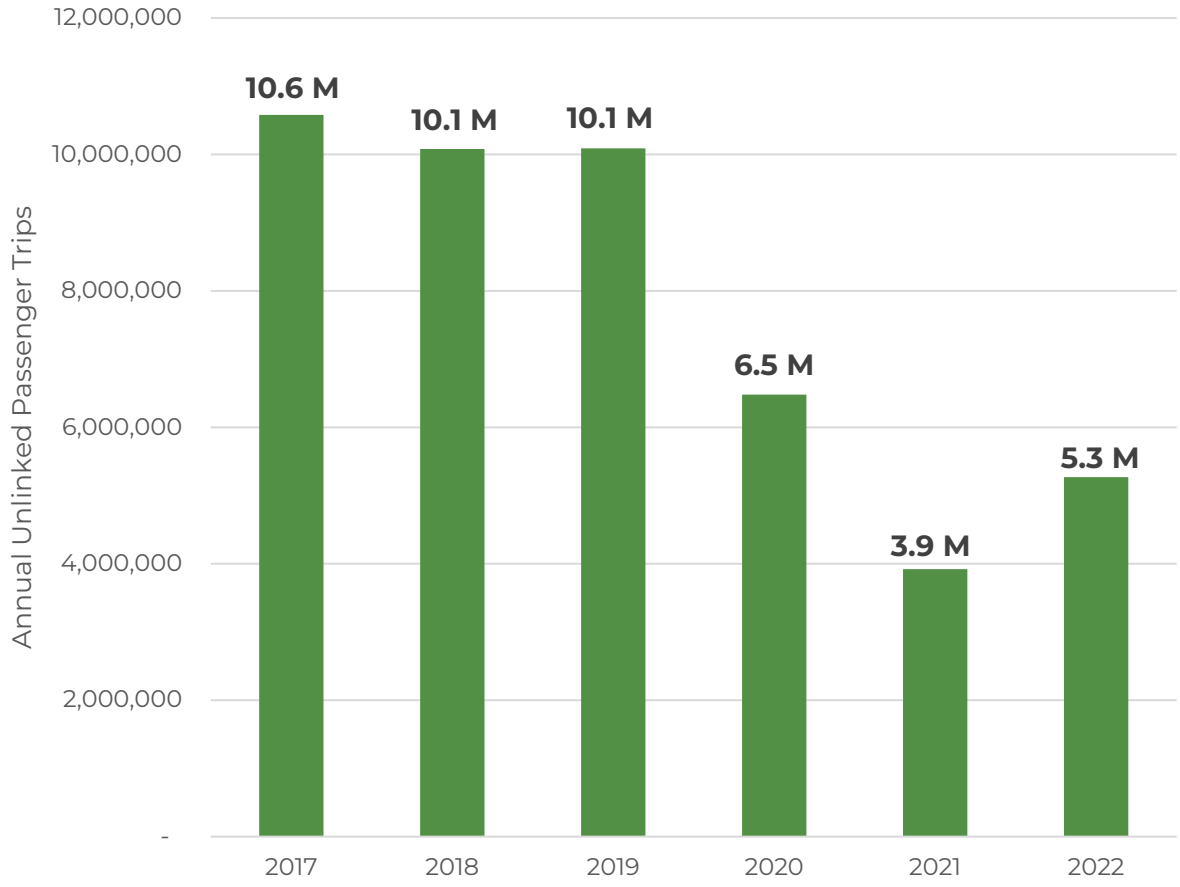
[17] Note: The Rapid's fiscal year spans from October 1 to September 30. Thus, FY2021 spans from 10/1/2020 – 9/30/2021.

Fixed Route Ridership Trends

Ridership[18] on The Rapid's fixed route services has been declining since 2017 (Figure 34). Between FY2017 and FY2019, prior to the onset of the COVID-19, annual ridership declined by about 5%. Between FY2019 and FY2021, COVID-19 significantly reduced transit demand resulting in a 60% decrease in annual ridership. Between FY2021 and FY2022, however, annual ridership grew by 36% showing significant improvement from ridership lows during the height of the pandemic.

Based on a monthly ridership timeseries, it is apparent that following sharp declines in monthly ridership between February and April 2020, The Rapid's fixed route ridership began to rebound starting in May 2020 (Figure 35). At an average increase of about 10,000 unlinked trips per month this suggests a "new normal" of reduced but growing transit demand rather than a return to pre-pandemic ridership levels in the near future.

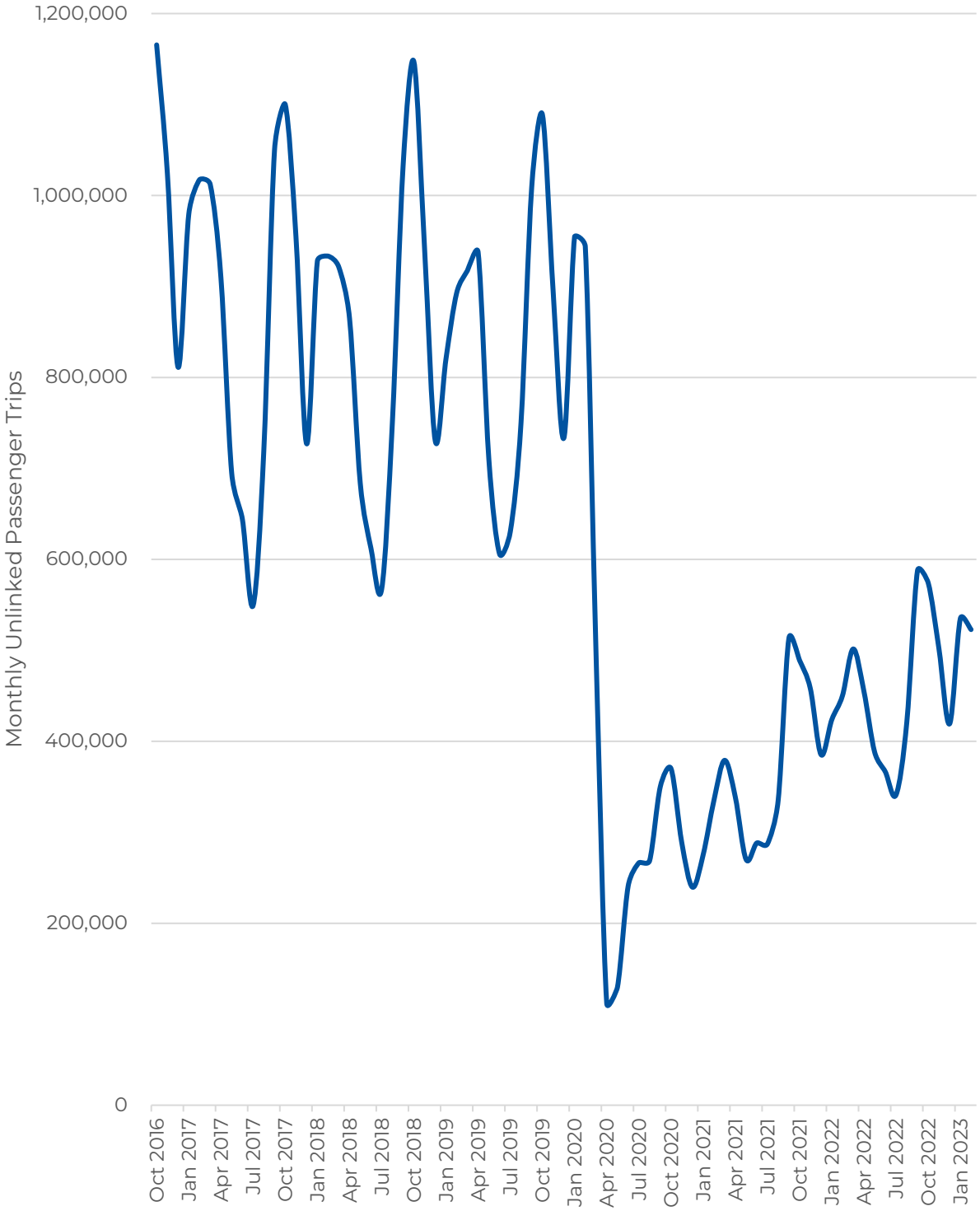
Figure 34: Fixed Route Annual Unlinked Passenger Trips (FY2017 – FY2022)



Source: NTD Data (FY2017-FY2021, The Rapid's FY2022 NTD Submittal)

[18] Ridership is measured in annual unlinked passenger trips defined by the National Transit Database (NTD) as the number of passengers who board public transportation vehicles. Passengers are counted each time they board a vehicle.

Figure 35: Fixed Route Monthly Unlinked Passenger Trips (FY2017 – FY2022)



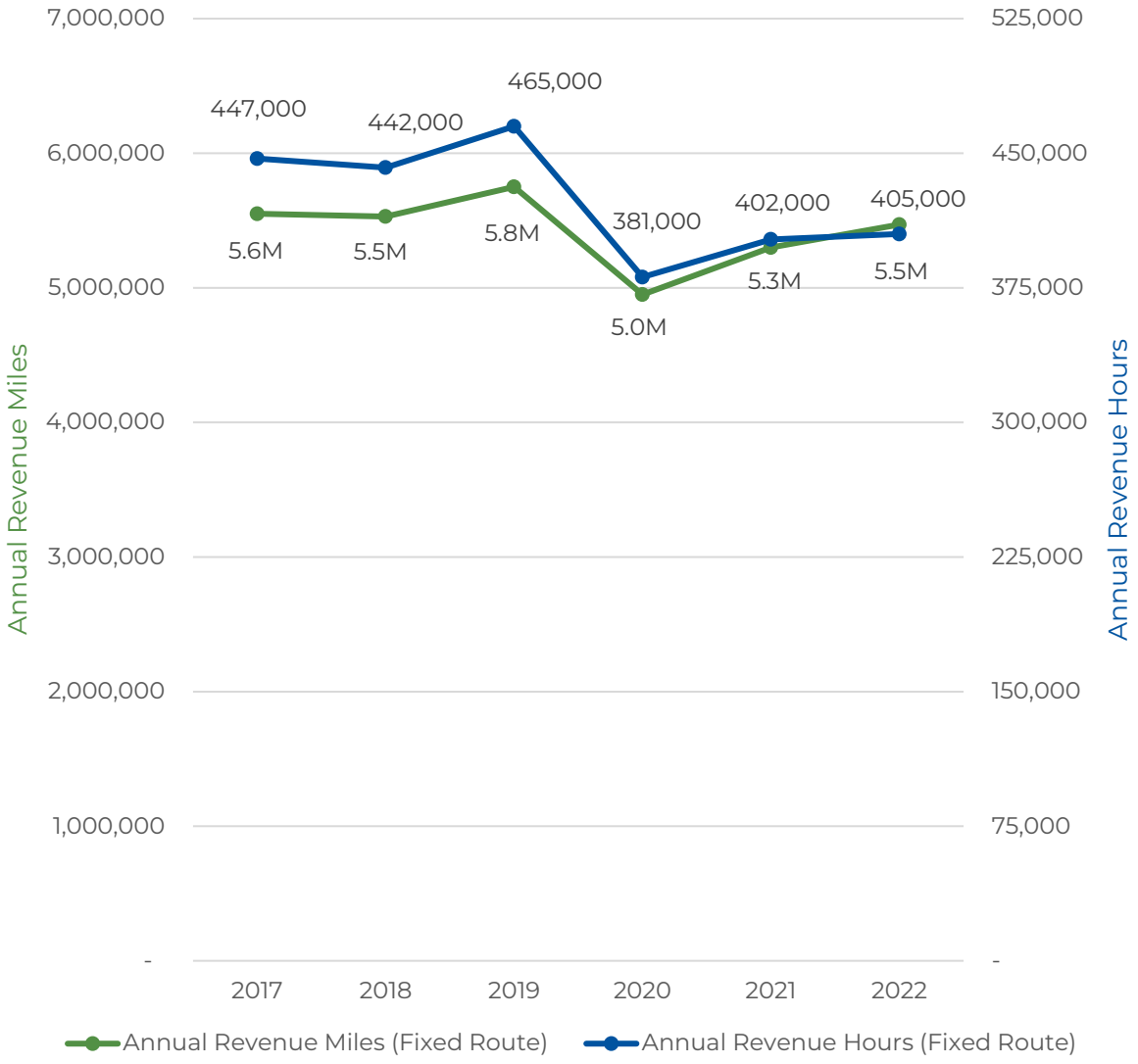
Source: NTD Data (FY2017-FY2022)

Fixed Route Service Effectiveness (Productivity) Trends

Vehicle Revenue Hours and Miles

Vehicle revenue hours and miles are defined by NTD as the hours and miles that a transit vehicle is in operation and available to the general public. As indicated in Figure 36, annual fixed route revenue hours and miles share very similar trend lines between FY2017 and FY2022. Both metrics experienced an increase prior to the COVID-19 pandemic before decreasing significantly (down 18% and 14% respectively) from FY2019 to FY2020 due to the service reductions during the onset of the pandemic. As public transit service slowly rebounded, revenue hours and miles increased by about 5 percent and 7 percent respectively from FY2020 to FY2021. The Rapid's revenue hours and miles have continued to increase between FY2021 and FY2022 by 1 percent and 3 percent respectively, continuing the rebound following the COVID-19 pandemic.

Figure 36: Fixed Route Annual Revenue Hours and Miles (FY2017 – FY2022)

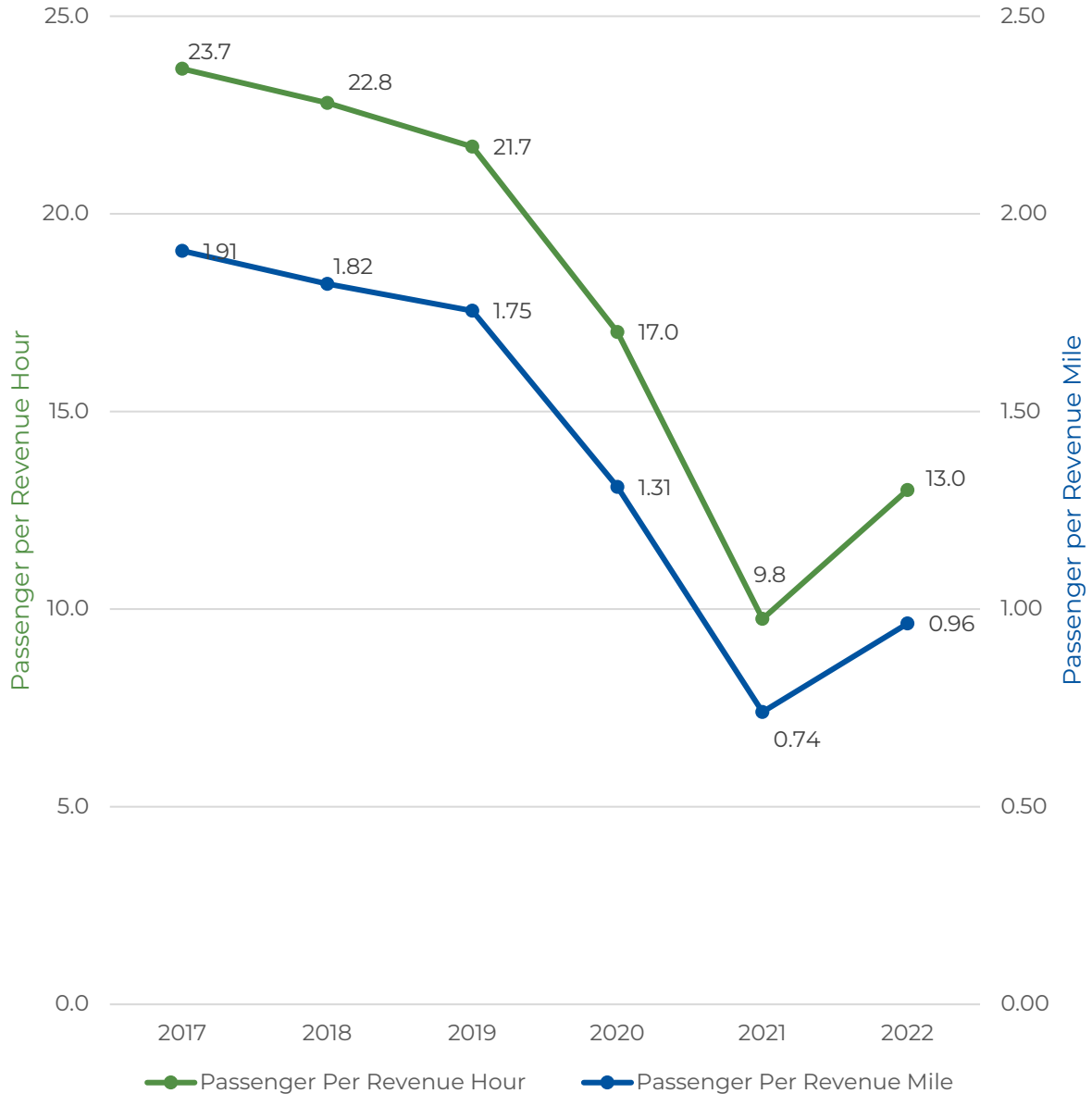


Source: NTD Data (FY2017-FY2021, The Rapid's FY2022 NTD Submittal)

Passengers per Revenue Mile and Revenue Hour

Passengers per revenue mile (PPM) indicates the average volume of passengers carried per mile on a vehicle while passengers per revenue hour (PPH) calculates the average volume of passengers carried in an equivalent period on a vehicle. The larger these two metrics, the more efficient the system is in carrying passengers. Figure 37 shows very similar trend lines for both metrics. These metrics indicate that although The Rapid's fixed route operational efficiency was declining prior to the pandemic (down 8% between FY17 and FY19), COVID-19 accelerated these declines. Following these sharp declines, both metrics showed significant improvement in FY2022 as PPH returned to 60% of FY2019 levels and PPM returned to 55% of FY2019 levels (Figure 36).

Figure 37: Fixed Route Passenger Per Revenue Mile and Revenue Hour (FY2017 – FY2022)



Source: NTD Data (FY2017-FY2021, The Rapid's FY2022 NTD Submittal)

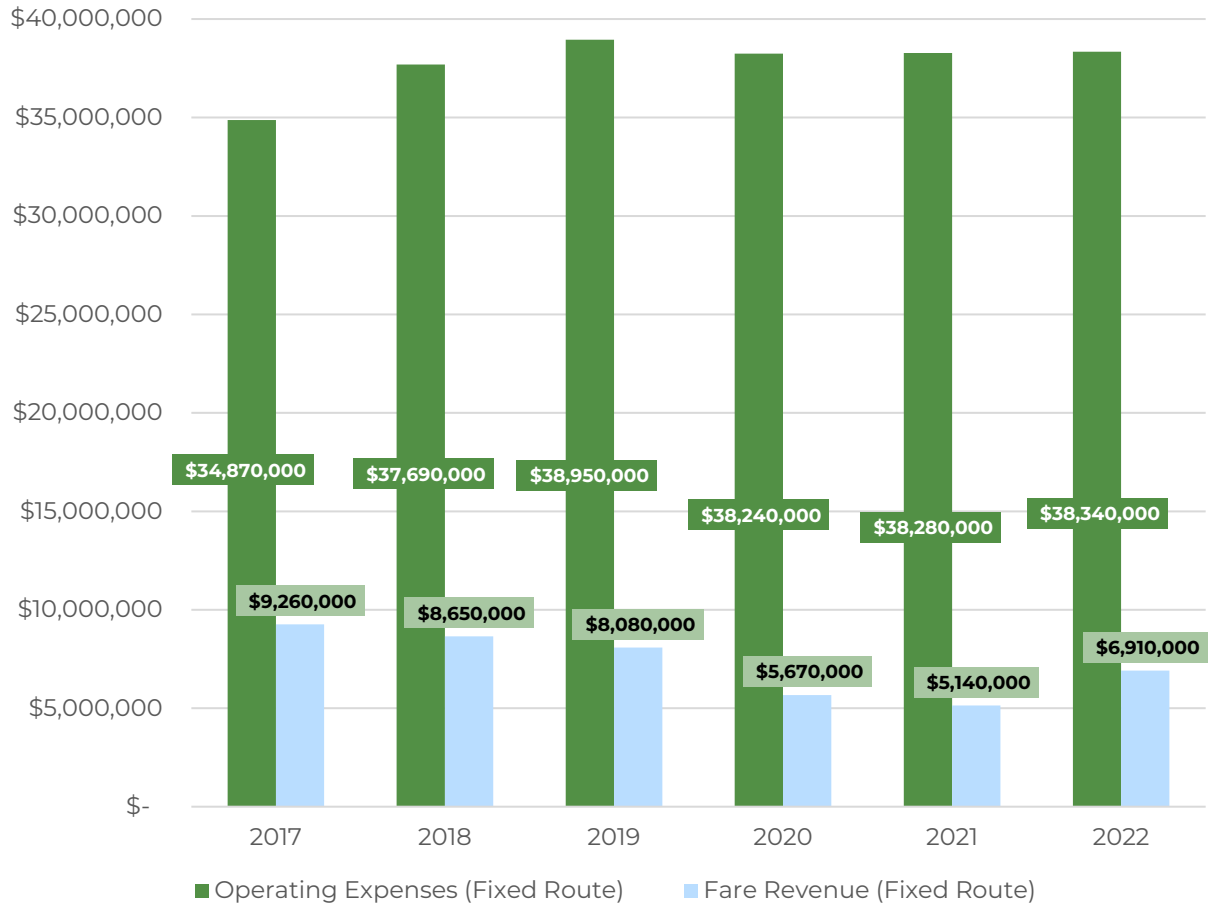
Fixed Route Financial Trends

Operating Expenses and Fare Revenues

Annual fare revenues generally trended downward between FY2017 and FY2021 while annual operating expenses have remained fairly stable since FY2018 (Figure 38). The rate at which fare revenue declined during the COVID-19 pandemic did not markedly increase, indicating that demand for fixed route services is rather rigid and some of the fare policy changes implemented in August 2020[19] might have offset the negative impact of declining ridership on fare revenue. More recently, in FY2022 total fare revenue grew to 86% of FY2019 revenue as the COVID-19 Pandemic abated, and ridership increased.

As shown in Figure 38, between FY2017 and FY2022, operating expenses increased by about 10 percent while fare revenue has decreased by 25 percent. Comparing ridership (Figure 34) and fare revenue (Figure 38) trends indicates that between FY2017 and FY2020 the average fare revenue per passenger remained fairly constant hovering at approximately $0.88 before significantly increasing to $1.31 in FY2021 and FY2022.

Figure 38: Fixed Route Annual Operating Expenses and Fare Revenues (FY2017 – FY2022)



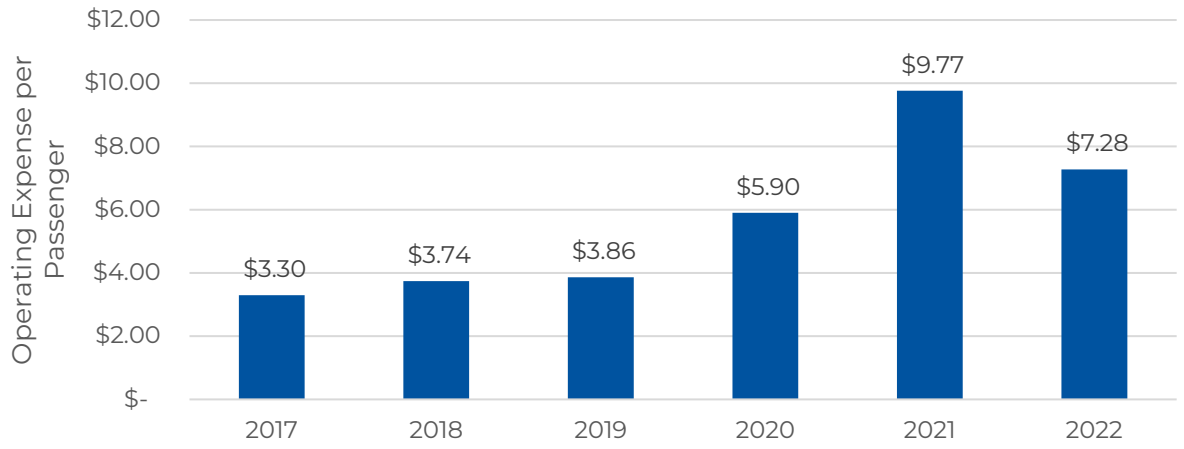
Source: NTD Data (FY2017-FY2021, The Rapid's FY2022 NTD Submittal)

[19] Source: The Rapid to Implement Fare Payment Changes on Aug. 1, 2020, The Rapid

Operating Cost per Passenger Trip

The operating cost per passenger trip is an indicator used to evaluate transit services' financial effectiveness. Figure 39 indicates a notable increase (153%) in operating expenses per passenger from FY2019 to FY2021. This is an indication that the COVID-19 pandemic has imposed significant financial burden to The Rapid. As the COVID-19 pandemic lessened, the operating expense per passenger decreased to $7.28 in FY2022, a significant improvement over FY2021 but still nearly 1.9 times greater than in FY2019.

Figure 39: Fixed Route Operating Expenses per Passenger Trip (FY2017 – FY2022)

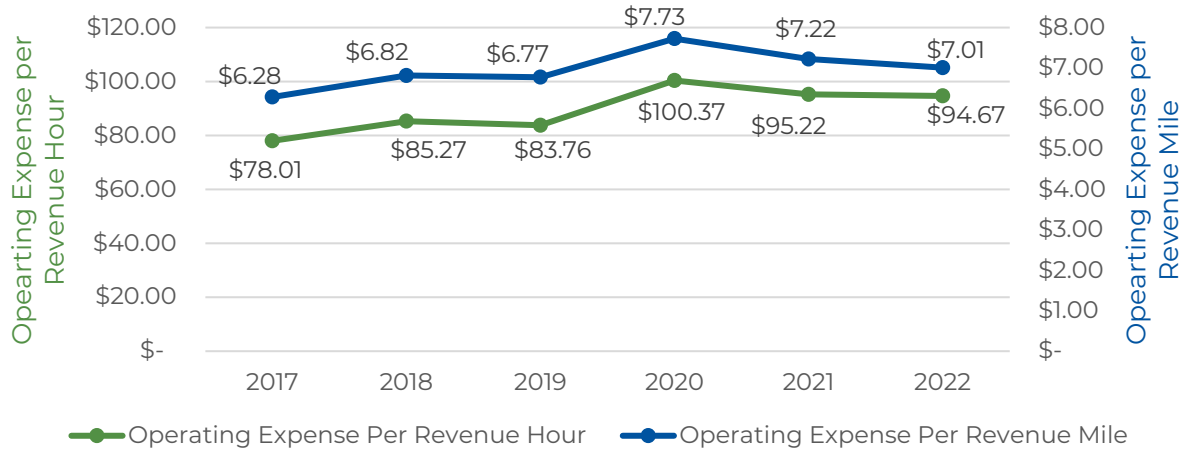


Source: NTD Data (FY2017-FY2021, The Rapid's FY2022 NTD Submittal)

Operating Cost per Revenue Hour and Revenue Mile

Figure 40 indicates a steady increased trend in operating costs per revenue hour and revenue mile from FY2017 to FY2020, 29% and 23% increase respectively. An increased trend of unit operating costs typically indicates the operation of the service is not cost effective. From FY2020-FY2022, however, the operating expense per revenue mile decreased by 9% while operating costs per revenue hour decreased by 6% indicating that service is being operated more cost efficiently.

Figure 40: Fixed Route Operating Expenses per Revenue Hour and Revenue Mile (FY2017-FY2022)



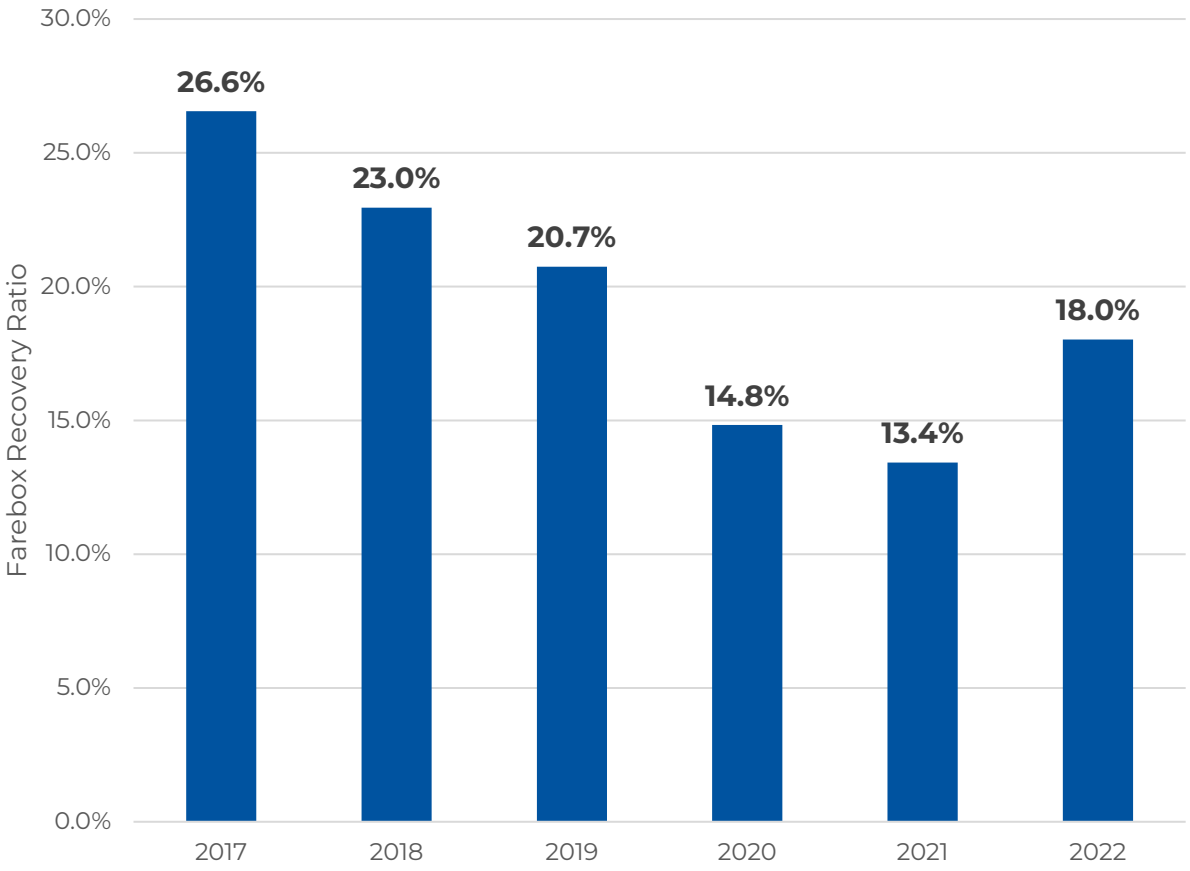
Source: NTD Data (FY2017-FY2021, The Rapid's FY2022 NTD Submittal)

Farebox Recovery Ratio

The farebox recovery ratio calculates the percentage of total operating expenses that are made up by passenger fares. Figure 41 shows a fairly linear downward trend of farebox recovery ratio for The Rapid's fixed route services from FY2017 to FY2021, with a notable increase from FY2021 to FY2022.

The financial impacts of COVID-19 seem to be lingering as indicated by Figure 38 and Figure 39. These impacts continue to impose pressure on The Rapid to identify new funding sources to fund their operation and new service launches as fare revenue has accounted for less than 20% of The Rapid's total operating expenses since the onset of the COVID-19 pandemic. In addition, the impacts of the COVID-19 pandemic on ridership and the fare revenues have demonstrated how burdensome the recovery ratio is as a performance metric for transit agencies. New metrics will be needed in the future to enable more equitable delivery of transit service.

Figure 41: Fixed Route Farebox Recovery Ratio (FY2017 – FY2022)



Source: NTD Data (FY2017-FY2021, The Rapid's FY2022 NTD Submittal)

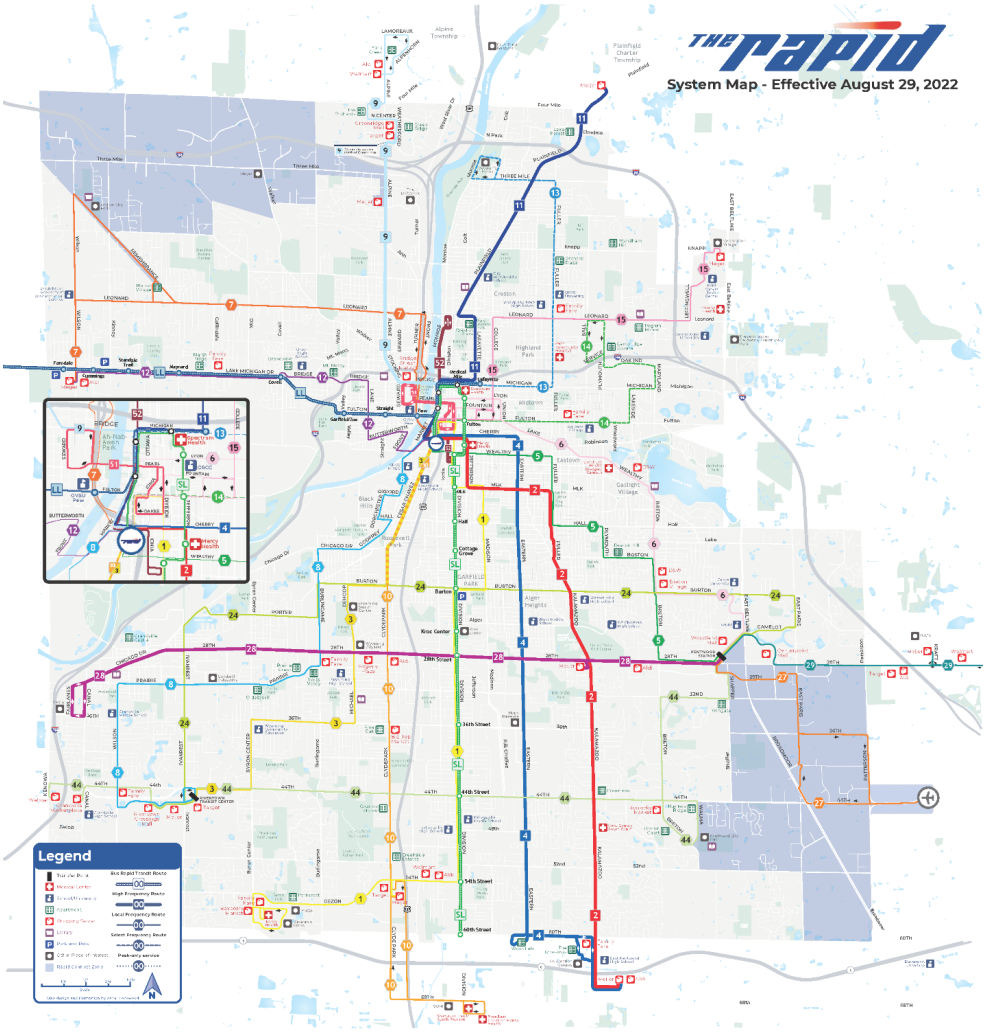
The Rapid's Fixed Route Network (Fall 2022)

Where are fixed route bus services provided?

In Fall 2022, The Rapid's fixed route bus network included 29 routes, serving over 1,500 bus stops distributed throughout the greater Grand Rapids region (Figure 42). In addition to the 21 routes operated by The Rapid, the Rapid offers eight contracted/specialized services including two free Downtown Area Shuttle (DASH) routes, the Laker Line BRT service, and as well as services to higher education institutions including Ferris State University (FSU), Grand Rapids Community College (GRCC), and Grand Valley State University (GVSU).

The Rapid's existing fixed route service is primarily contained within the boundaries of its six member communities although service also extends into Ottawa County, the townships of Alpine, Byron, Gaines, and Cascade, and Northern Kent County to the cities of Cedar Springs and Big Rapids. The Rapid's fixed route service largely radiates from the downtown Grand Rapids core to outer neighborhoods connecting major local and regional activity centers to key downtown destinations.

Figure 42: Fall 2022 System Map



Source: The Rapid

When does fixed route bus service run?

On weekdays, service is provided on the average bus route for a total of approximately 17 hours (about 70% of the day) compared to Saturday and Sunday service when the average route's span of service is about 15.5 hours and 12 hours, respectively (Table 7). Three-quarters of directly operated non-contracted routes (16 of 21 routes) provide service seven days a week. Comparatively, only one contracted route—Laker Line BRT—operates seven days a week. As depicted in Table 7, weekday service is generally offered from about 5:15 AM to 11:00 PM which covers the majority of user activities. Weekend services are more limited, typically operating between 5:45 AM and 10:00 PM on Saturdays and 6:45 AM and 7:15 PM on Sundays.

Table 7: Fixed Route Service Spans (Fall 2022)

Route*	Weekday	Saturday	Sunday
Laker Line BRT	5:30 AM - 12:00 AM	7:00 AM - 12:00 AM	10:00 AM - 8:15 PM
Silver Line BRT	5:30 AM - 10:45 PM	5:45 AM - 10:00 PM	6:15 AM - 7:00 PM
Route 1 – Division / Madison	5:00 AM – 11:00 PM	5:30 AM - 10:30 PM	6:30 AM - 7:30 PM
Route 2 – Kalamazoo	5:00 AM - 10:45 PM	5:15 AM - 9:45 PM	6:30 AM - 7:15 PM
Route 3 – Wyoming / Rivertown	5:30 AM - 10:30 PM	6:15 AM - 10:15 PM	6:45 AM - 7:15 PM
Route 4 – Eastern	4:45 AM – 11:00 PM	5:15 AM - 10:00 PM	7:00 AM - 6:45 PM
Route 5 – Wealthy / Woodland	5:30 AM – 11:15 PM	6:45 AM - 10:15 PM	-
Route 6 – Eastown / Woodland	5:00 AM – 11:30 PM	5:30 AM - 10:00 PM	6:30 AM - 7:00 PM
Route 7 – West Leonard	5:15 AM – 10:15 PM	5:15 AM - 10:15 PM	7:45 AM - 7:15 PM
Route 8 – Prairie / Rivertown	5:00 AM - 10:45 PM	6:00 AM - 9:45 PM	7:00 AM - 6:45 PM
Route 9 – Alpine	5:00 AM – 10:45 PM	5:45 AM - 10:15 PM	6:30 AM - 7:15 PM
Route 10 – Clyde Park	5:15 AM – 11:15 PM	5:15 AM - 10:00 PM	7:45 AM - 7:00 PM
Route 11 – Plainfield	5:15 AM - 10:45 PM	5:15 AM - 10:15 PM	6:45 AM - 7:00 PM
Route 12 – Westside	5:15 AM - 10:45 PM	5:45 AM - 10:15 PM	-
Route 13 – Michigan / Fuller	5:15 AM – 11:00 PM	5:45 AM - 10:00 PM	-
Route 14 – East Fulton	5:15 AM - 10:30 PM	5:45 AM - 10:00 PM	-
Route 15 – East Leonard	5:30 AM - 10:45 PM	5:45 AM - 10:00 PM	6:45 AM - 7:00 PM
Route 24 – Burton	5:45 AM - 11:00 PM	6:15 AM - 10:00 PM	-
Route 27 – Airport Industrial	6:00 AM – 10:00 PM	-	-
Route 28 – West 28th	5:45 AM – 11:00 PM	6:45 AM - 9:30 PM	6:45 AM - 6:30 PM
Route 29 – East 28th	6:00 AM – 10:00 PM	7:15 AM - 10:00 PM	7:15 AM - 7:00 PM
Route 37 – GVSU North Campus	7:00 AM – 12:00 AM	-	-
Route 44 – 44th Street	5:30 AM - 11:45 PM	5:15 AM - 10:15 PM	7:15 AM - 7:15 PM
Route 48 – GVSU South Campus	7:00 AM - 12:00 AM	-	-
Route 51 – DASH West	6:30 AM - 10:15 PM	10:00 AM - 10:15 PM	-
Route 52 – DASH North	6:30 AM – 10:00 PM	10:00 AM - 10:00 PM	-
Route 60 – GRCC Shuttle	7:00 AM - 6:45 PM	-	-
Route 85 – GVSU Apartment Connector (Combined 37/48)	5:45 AM - 3:00 AM	7:00 AM - 3:00 AM	10:00 AM - 7:45 PM
Route 100 – Ferris State University (FSU) Shuttle	6:30 AM – 7:45 PM	-	-

Source: The Rapid, Fall 2022 Schedule Book

** Contracted services italicized*

*** Service span calculated as first trip departure – last stop served (end of passenger service) and rounded to the nearest 15 min.*

**** Shading denotes total span of service hours—Dark Blue: >16 hrs, Blue: 14-16 hrs, Light Blue: 0-14 hrs, None = No Service*

How often does fixed route bus service run?

In Fall 2022, 12 routes (41%) provided high-frequency—15-minute or better—service during weekday peak and midday hours (Table 8). Outside of these times, the contracted GRCC shuttle and DASH shuttle routes also offered frequent service weekday evenings with the DASH routes providing additional high-frequency service after 10am on Saturdays.[20] The rest of the system operated every 30 minutes during weekday peak periods with all but Route 27 also operating 30 minute or better service during midday on weekdays (Figure 43). On weekends, most of the system operated 60-minute service (Figure 44).

Table 8: Bus Headways by Route and Time of Day (Fall 2022)

Route Name	Weekday Peak *6:15 AM – 8:45 AM 3:15 PM – 5:45 PM*	Weekday Midday *8:45 AM – 3:15 PM*	Weekday Evening *6:45 PM – 10:00 PM*	Sat. Morning *6:00 AM – 9:30 AM*	Sat. Midday *9:30 AM – 5:00 PM*	Sat. Evening *5:00 PM – 10:00 PM*	Sun. All Day
Laker Line BRT	15	15	20	30	30	30	30
Silver Line BRT	15	15	30	30	30	30	30
Route 1 – Division / Madison	30	30	30	30	30	30	30
Route 2 – Kalamazoo	15	15	30	60	30	60	30
Route 3 – Wyoming / Rivertown	30	30	60	60	60	60	60
Route 4 – Eastern	15	15	30	60	30	60	60
Route 5 – Wealthy / Woodland	30	30	60	60	60	60	
Route 6 – Eastown / Woodland	30	30	30	60	30	60	60
Route 7 – West Leonard	30	30	60	60	60	60	60
Route 8 – Prairie / Rivertown	30	30	60	60	60	60	60
Route 9 – Alpine	15	15	30	60	30	60	60
Route 10 – Clyde Park	30	30	60	60	60	60	60
Route 11 – Plainfield	15	15	30	60	30	60	60
Route 12 – Westside	30	30	60	60	60	60	
Route 13 – Michigan / Fuller	30	30*	60	60	60	60	
Route 14 – East Fulton	30	30*	60	60	60	60	
Route 15 – East Leonard	30	30	60	60	60	60	60
Route 24 – Burton	30	30	60	60	60	60	
Route 27 – Airport Industrial	30	60	60				
Route 28 – West 28th	15**	15**	30	60	30	60	60
Route 29 – East 28th	30	30	60	60	60	60	60
Route 37 – GVSU North Campus	7	7					
Route 44 – 44th Street	30	30	60	60	60	60	60
Route 48 – GVSU South Campus	5	5					
Route 51 – DASH West	8	8	8		8	8	
Route 52 – DASH North	15	15	15		15	15	
Route 60 – GRCC Shuttle	12	12	12				
Route 85 – GVSU Apartment Connector (Combined 37/48)	20			25	25	25	25
Route 100 – Ferris State University (FSU) Shuttle	4 trips						

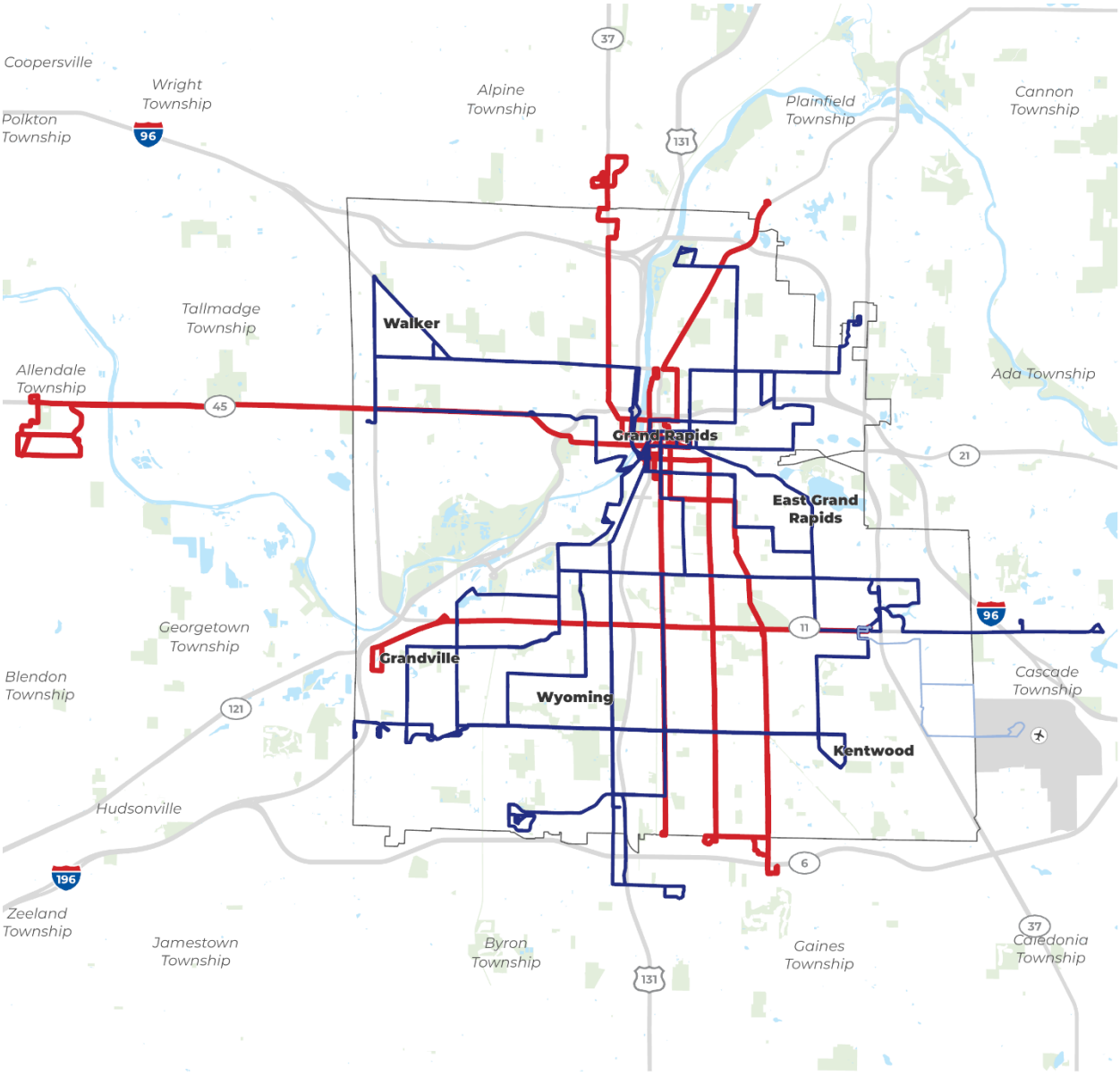
Source: The Rapid's Fall 2022 GTFS, The Rapid Schedule Book Fall 2022

** Routes 13 and 14 operates 30-minute headways weekdays 5:15 AM – 9:45 AM and 3:00 PM – 7:45 PM*

*** Route 28 operates 15-minute headways weekdays 10:30 AM – 5:45 PM*

[20] Note: Starting spring 2023, the two DASH shuttles will be consolidated into a single circulator operating every 15 minutes Wednesday to Friday 7 AM – 12 AM, Saturday 11 AM – 1 AM, and Sunday 11 AM – 5 PM (City of Grand Rapids, 2023)

Figure 43: Weekday Frequency by Route (Fall 2022, Midday Service)



Weekday Frequency by Route (Fall 2022)

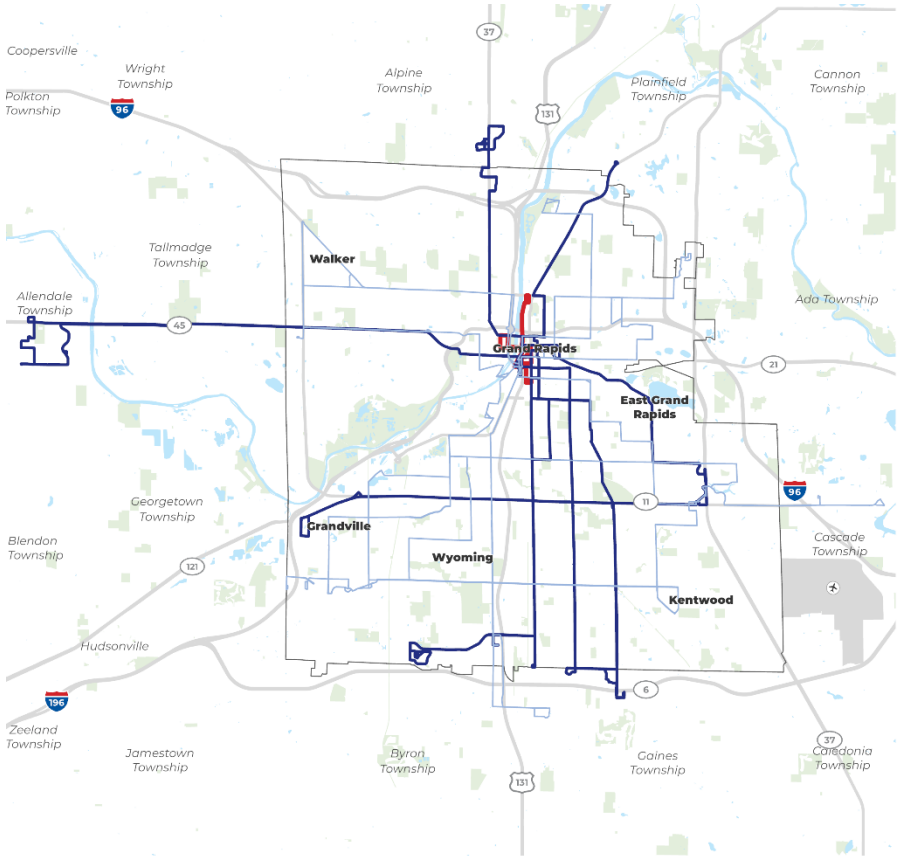
Midday Frequency
- 15-Minute Service or Better
- 30-Minute Service
- 60-Minute Service

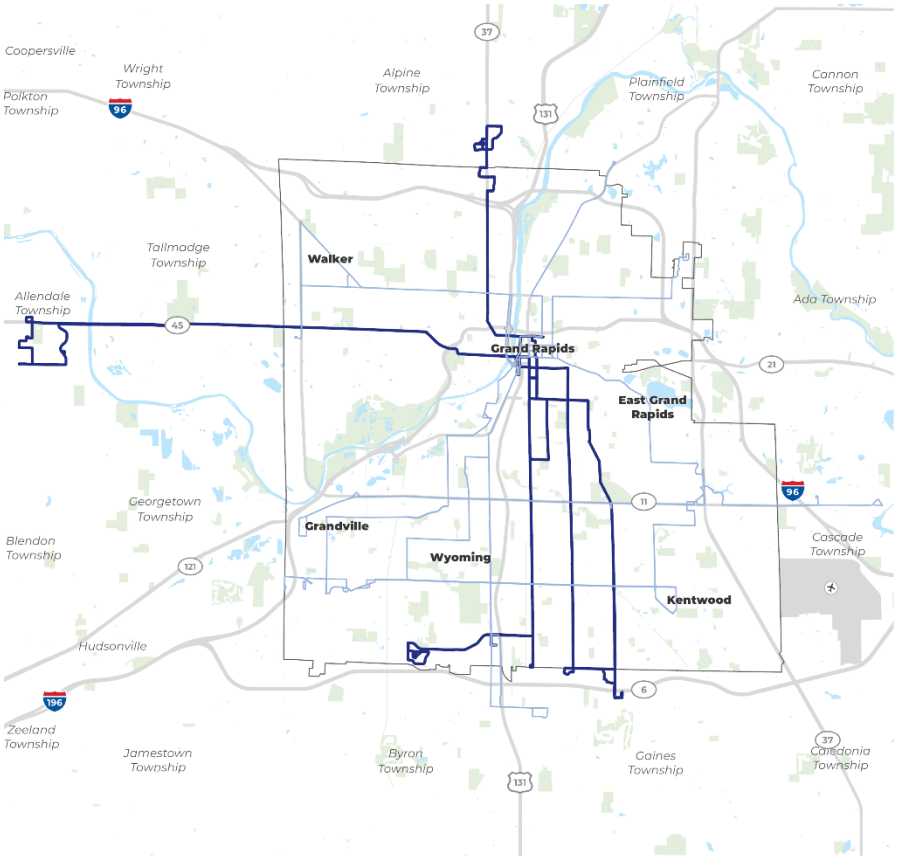
ITP Member Communities

0 1 2 4 Miles

Source: Fall 2022 GTFS, The Rapid

Figure 44: Weekend Frequency by Route (Fall 2022, Midday Service)





Source: Fall 2022 GTFS, The Rapid

Who lives near existing fixed route bus service?

In total, approximately 263,000 residents and 125,000 jobs are located within a quarter mile buffer (5-minute walk) of existing bus stops (Figure 45). Within the ITP-member community area, 67% of the jobs and 64% of the population are within a quarter mile (five-minute walk) of an existing bus stop.[21] Furthermore, despite only covering about six percent of the total Zone One Study Area, 40 percent of the jobs and a third of the population within this larger geography is within a 5-minute walk of a bus stop.

Within the ITP-member Communities...

67% of jobs and **64%** of people are located within a quarter mile of a bus stop

Notable areas lacking close proximity to a bus stop include:

- Walker south of Lake Michigan Drive (M-45) Ⓐ;
- South Grandville Ⓑ; and
- Kentwood south of 52nd Street SE Ⓒ and North Walker Ⓓ.

As discussed in the *Rapid Connect On-Demand Service* section of this report, The Rapid launched on-demand service within the historically underserved Kentwood and North Walker areas in January 2022. In January 2023, the Rapid also added a new fixed route service (Route 33) to serve the Walker Industrial area along Northridge Drive and Three Mile Road Ⓓ.

Compared to regional averages, the Rapid provides service to areas with greater concentrations of people who are a minority race/ethnicity, are in poverty, or live in zero-vehicle households

As shown in Figure 45, compared to both the Zone 1 Study Area and ITP-member community Area, The Rapid's fixed routes provide service to areas with higher percentages of the population that are at or below the federal poverty threshold, are a minority race/ethnicity, or live in a zero-vehicle household. In particular, all but four routes (Route 27, 28, 29, and 44) provide service to high poverty areas that exceed the ITP-member community area average of 14% of the population living at or below the federal poverty threshold. Furthermore, six routes, including Routes 1, 2, 3, 4, 10, and the Silver Line, provide service to areas where more than half of the local population is non-white.

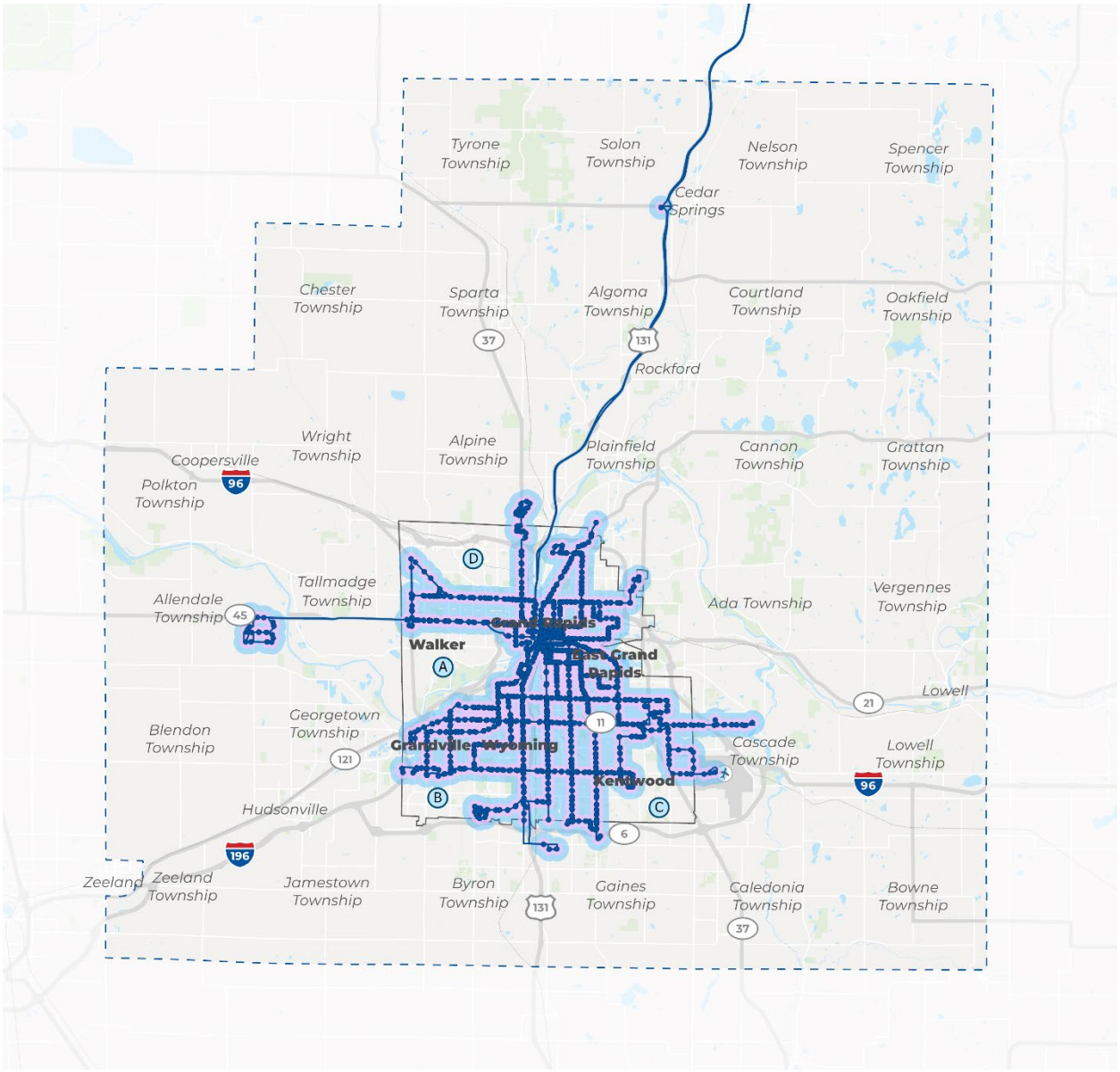
Table 9: Fixed Route Coverage (Fall 2022)

Geography	Jobs (Work)	Population	% in Poverty	% Minority	% Zero-Vehicle HH
Fixed Route System (Fall 2022)					
Quarter Mile Buffer	125,000	263,000	17%	43%	10%
Half Mile Buffer	164,000	375,000	16%	40%	10%
ITP-member community Area	167,000	378,000	14%	39%	9%
Zone 1 Study Area	311,000	791,000	10%	26%	6%

Source: 2021 American Community Survey (ACS) 5-Year Estimates, Remix. Values rounded to nearest 1,000 jobs or persons.

[21] Note: As The Rapid's fixed route bus services extend beyond the ITP Member Communities, only the portion of the bus stop buffer population within the Member Communities was included in this statistic. For this reason, these percentages will not match percentages calculated by dividing the Fixed Route System and ITP Member Community Area numbers in Table 8.

Figure 45: Fixed Route Bus Stop Half-Mile and Quarter-Mile Buffer Coverage (Fall 2022)



Source: Fall 2022 GTFS, The Rapid

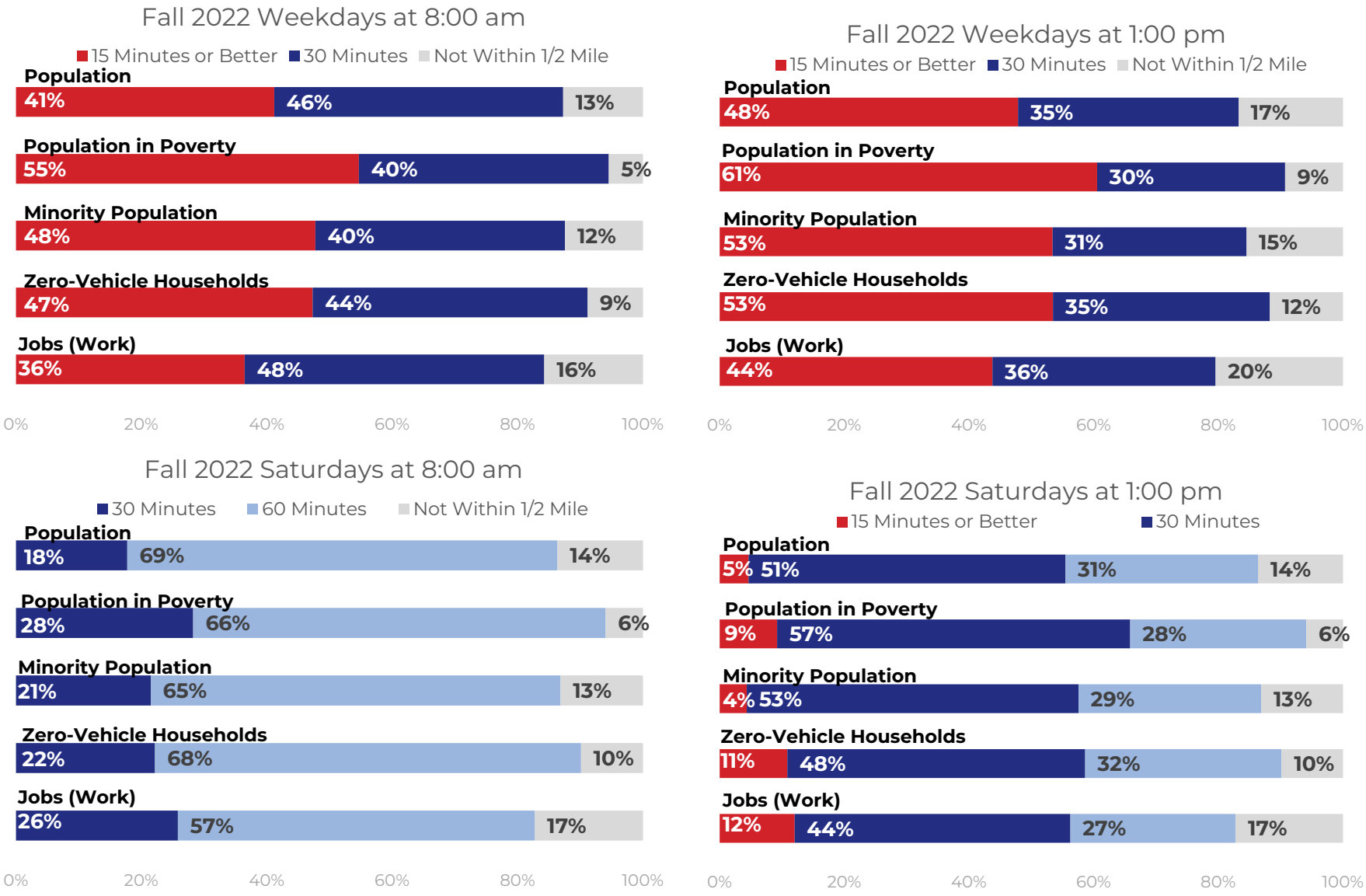
Figure 46 combines the questions *How often does bus service run?* and *Who lives near existing transit services?* to identify the portion of the ITP-member community population and jobs within a half mile (10-minute walk) of an existing bus stop at 8:00 AM and 1:00 PM for both weekdays and Saturdays. Overall, fixed route coverage across all four service times is comparable as approximately 83%-87% of the ITP-member community population and 80%-84% of the same area's jobs are within a half mile of a bus stop.

On weekdays, access to 15-minute service is greater at 1:00 PM than at 8:00 AM as Route 28 operates at 15-minute rather than 30-minute service. In general, populations that are typically more transit reliant including zero vehicle households, minority populations, and persons in poverty, have greater access to the bus network than the ITP-member community population as a whole. In addition to having greater access to bus service, more than half of these transit reliant population groups are in close proximity to frequent 15-minute service at 1:00 PM on weekdays.

Despite overall transit coverage being comparable between weekday and Saturday service, proximity to frequent service is significantly reduced, particularly in the morning hours. For example, while 89% of the ITP-member community population is near 30 minute or better service on weekday mornings, just 18% are near this same level of service on Saturday mornings. Proximity to 30 minute or better service is more comparable, but still reduced, at 1:00 PM (83% of people on weekdays vs. 56% on Saturdays). Overall, transit reliant populations are in closer proximity to the most frequent services offered on Saturdays, similar to weekday trends.

As The Rapid identifies areas for improvement and optimization in the delivery of transit services over the next 20 years, the success of these strategies in achieving agency goals can be evaluated by comparing the relative size of each of the bars in Figure 46. Strategies aimed at maximizing coverage are successful when the length of the gray bar is reduced, and more people and jobs are within a half mile of transit service while strategies aimed at increasing ridership are successful when frequent service (red bar) is increased as frequent service is more desirable and convenient.

Figure 46: ITP-Member Community Half Mile Proximity to Transit by Service Frequency and Time of Day



Where can the fixed route bus network take me?

In order to achieve The Rapid's vision of a future in which "citizens can live conveniently without owning a car" and "public transportation is an integral part of life of every citizen in the region," [22] transit service must take riders where they need to go in a reasonable amount of time. Travel time isochrones depict the area that can be reached within a particular amount of time from a given starting point, including the time spent walking, waiting, and riding fixed route transit.[23] Isochrones typically increase in size in areas with more routes (greater connectivity and transfer potential) or higher-frequency routes (faster travel times).

Figure 47 and Table 10 highlight travel time isochrones for weekday trips departing at 8:00 am for two areas of elevated transit demand and propensity: downtown Grand Rapids and northern Cutlerville at the intersection of Division Avenue & 60th Street. Downtown Grand Rapids has the greatest density of transit routes while the Division Avenue and 60th Street example demonstrates that significant transit coverage can be achieved in areas with fewer routes if these routes connect to other high-frequency routes.

Table 10: Coverage by Transit Travel Time (Fall 2022, Weekday 8:00 am trip)

	15 min	30 min	45 min	60 min
Population				
From Rapid Central Station	11,000	114,900	277,600	369,300
From Division Ave. & 60th St.	4,800	25,000	96,400	237,800
Jobs (Work)				
From Rapid Central Station	15,100	46,600	102,300	150,700
From Division Ave. & 60th St.	700	8,900	54,000	93,900
% of ITP-member community Area				
From Rapid Central Station	1%	15%	50%	72%
From Division Ave. & 60th St.	< 1%	3%	15%	38%

Source: Remix, Fall 2022 GTFS Data

From Rapid Central Station

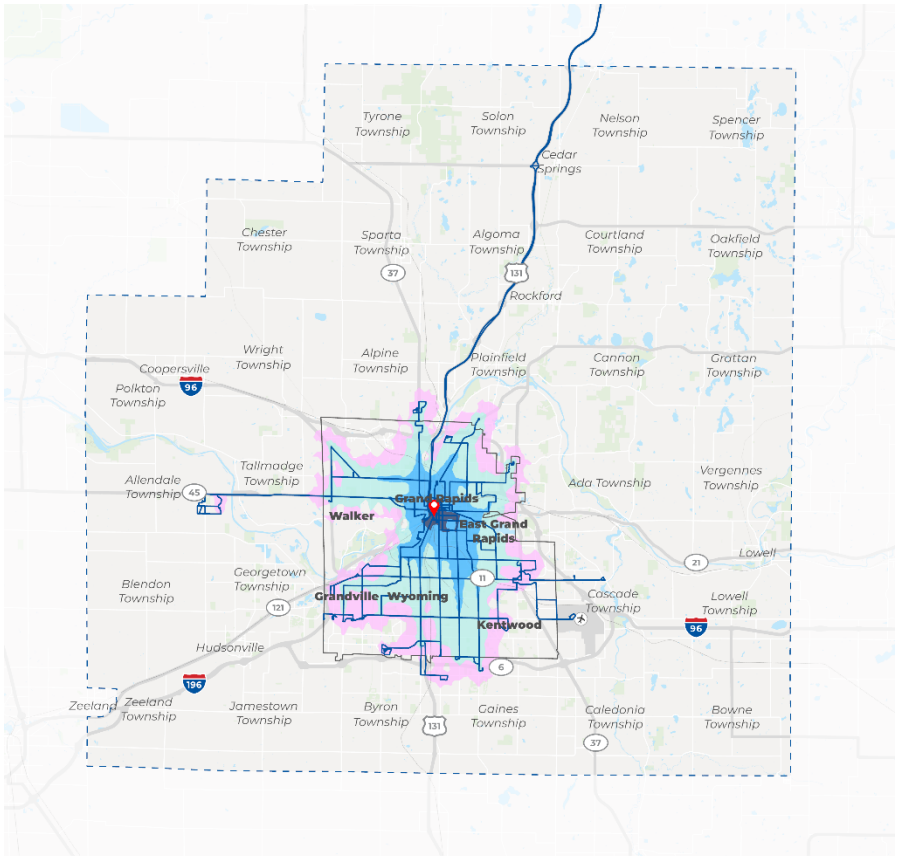
As the majority of fixed route bus service radiates from downtown Grand Rapids, half of the ITP-member community area can be reached within a 45-minute transit trip from Rapid Central Station. Notable service gaps from Rapid Central Station include the same areas without proximity to a bus stop including portions of Walker, South Grandville, and Kentwood.

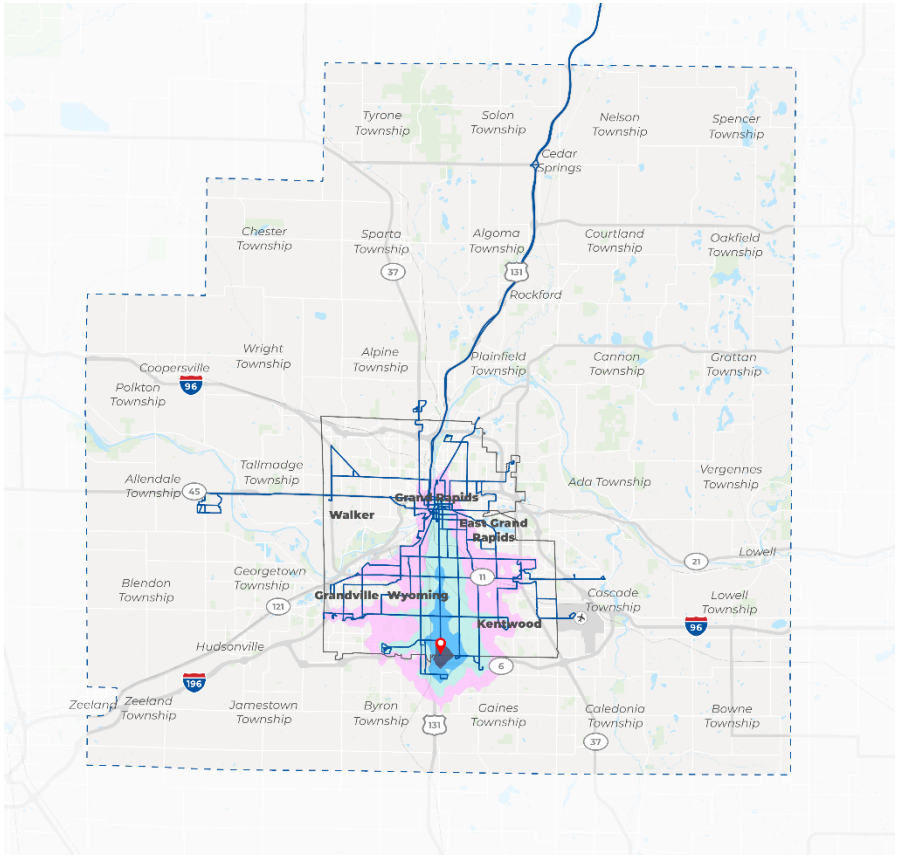
From Division Avenue & 60th Street

Despite fewer routes serving northern Cutlerville, more than a third (38%) of the ITP-member community area can still be reached within a 60-minute transit trip from the Division Avenue & 60th Street BRT Station largely due to the Silver Line's faster speeds and high frequency which shortens passenger wait time. Passengers can travel further within a fixed duration as highlighted by the north-south band of higher access along Division Avenue. Although not depicted in Figure 47, the isochrone for trips departing the GVSU Allendale campus is much smaller in size despite the Laker Line's high frequency due to the limited number of transfer opportunities to other routes prior to reaching downtown Grand Rapids.

[22] Source: Our Mission & Vision, The Rapid
[23] Note: Waiting times are assumed to be half the frequency for a given route. For example, if a route comes every 10 minutes, it is assumed that an individual will wait for the bus an average of 5 minutes.

Figure 47: Fixed Route Travel Time Isochrones (Fall 2022, Weekday 8 AM Departure)





Source: Remix Isochrones, Fall 2022 GTFS Data

Performance Assessment

This section assesses the existing fixed route service performance by evaluating the system output, service quality, and financial effectiveness. System output is measured by ridership and productivity, specifically passengers per revenue mile and passengers per revenue hour. Service quality is measured by on-time performance and vehicle capacity. Financial effectiveness is measured by the operating cost per passenger and operating cost per revenue mile. Where available, fixed route performance data is analyzed for the following service times:

- **Weekday**
  - **Weekday Daytime**: Weekdays before 6:00 PM
  - **Weekday Evening**: Weekdays after 6:00 PM
- **Saturday**
- **Sunday**

Table 11 summarizes all the performance metrics data in October 2022 at the route level by Weekday, Saturday, and Sunday service as available.

Table 11: Summary of Fixed Route Performance Metrics by Route (Fall 2022)

Route Name	Avg. Daily Ridership			Passengers per Revenue Hour			Passengers per Revenue Mile			On-Time Performance			Peak Load Factor	Operating Cost Per Passenger	Operating Cost Per Revenue Mile
	Weekday	Sat.	Sun.	Weekday	Sat.	Sun.	Weekday	Sat.	Sun.	Weekday	Sat.	Sun.			
Laker Line BRT	3,860	1,042	594	41.1	37.0	21.1	2.6	2.2	1.2	73%	52%	77%	-	$2.71	$6.82
Silver Line BRT	1,629	806	574	18.5	16.9	15.8	1.5	1.4	1.3	89%	84%	94%	0.53	$5.41	$7.94
Route 1 – Division / Madison	1,099	622	432	15.8	9.7	8.9	1.2	0.7	0.7	77%	78%	91%	0.51	$6.98	$7.39
Route 2 – Kalamazoo	1,420	585	395	16.5	16.2	10.7	1.2	1.2	0.8	86%	77%	90%	0.51	$6.11	$7.02
Route 3 – Wyoming / Rivertown	445	207	117	11.6	11.0	6.8	0.9	0.8	0.5	92%	87%	92%	0.39	$8.83	$7.21
Route 4 – Eastern	1,215	464	197	12.8	11.2	11.0	0.9	0.8	0.7	87%	82%	88%	0.52	$7.77	$7.13
Route 5 – Wealthy / Woodland	484	176	-	13.4	7.5	-	1.0	0.7	-	91%	92%	-	0.40	$7.79	$7.85
Route 6 – Eastown / Woodland	718	381	256	14.4	10.2	14.1	1.2	0.9	1.3	89%	87%	95%	0.47	$7.10	$8.48
Route 7 – West Leonard	548	188	104	14.4	11.2	9.1	0.9	0.6	0.5	88%	83%	89%	0.72	$7.09	$5.95
Route 8 – Prairie / Rivertown	560	265	162	11.8	11.1	9.1	0.8	0.7	0.6	90%	80%	91%	0.42	$8.48	$6.37
Route 9 – Alpine	1,278	756	373	17.1	19.5	20.6	1.6	1.9	2.1	84%	82%	90%	0.62	$5.60	$9.43
Route 10 – Clyde Park	675	280	39	16.3	12.1	3.4	1.2	0.9	0.2	90%	88%	94%	0.57	$6.49	$7.41
Route 11 – Plainfield	825	314	184	13.1	12.4	14.8	0.9	0.8	0.9	87%	84%	94%	0.48	$7.45	$6.46
Route 12 – Westside	729	239	-	23.3	14.6	-	1.6	1.0	-	84%	86%	-	0.84	$4.38	$6.66
Route 13 – Michigan / Fuller	447	209	-	14.3	12.7	-	1.2	0.9	-	83%	77%	-	0.49	$6.93	$7.80
Route 14 – East Fulton	333	122	-	12.7	7.5	-	1.0	0.6	-	94%	90%	-	0.52	$8.14	$7.63
Route 15 – East Leonard	744	250	204	19.8	11.1	16.5	1.7	1.1	1.2	91%	89%	89%	0.81	$5.28	$8.33
Route 24 – Burton	512	181	-	8.7	6.3	-	0.6	0.4	-	82%	80%	-	0.36	$11.64	$6.32
Route 27 – Airport Industrial	155	-	-	8.0	-	-	0.5	-	-	91%	-	-	0.60	$12.23	$6.15
Route 28 – West 28th	734	452	223	10.5	13.0	12.4	0.7	0.9	0.9	85%	85%	93%	0.34	$9.05	$6.84
Route 29 – East 28th	258	194	107	11.2	14.4	10.0	0.9	1.3	0.9	88%	82%	89%	0.62	$8.57	$7.82
Route 37 - GVSU North Campus	1,621	-	-	37.5	-	-	3.5	-	-	-	-	-	-	$2.36	$8.18
Route 44 – 44th Street	652	315	187	10.1	9.3	7.6	0.6	0.6	0.5	87%	88%	90%	0.43	$9.94	$6.29
Route 48 - GVSU South Campus	1,316	-	-	29.2	-	-	2.8	-	-	-	-	-	-	$2.99	$8.17
Route 51 - DASH West	768	384	-	16.5	10.7	-	2.2	1.4	-	-	-	-	-	$6.26	$12.93
Route 52 – DASH North	390	268	-	12.8	11.2	-	1.3	1.1	-	-	-	-	-	$7.77	$9.68
Route 60 - GRCC Shuttle	208	-	-	17.8	-	-	4.5	-	-	-	-	-	-	$5.51	$24.77
Route 85 - GVSU Apartment Connector	52	731	309	17.1	36.6	31.7	1.5	3.2	2.8	-	-	-	-	$3.66	$10.09
Route 100 - FSU Shuttle	29	-	-	2.7	-	-	0.1	-	-	-	-	-	-	$35.74	$2.58

*Source: The Rapid, October 2022 Monthly Report and FY23 System Summary, * Contracted services italicized*

Ridership

The Rapid's fixed route system consists of 21 non-contracted routes and 8 contracted routes as of October 2022. The majority of ridership on The Rapid's fixed route system is carried by seven "High Ridership Routes" which together account for 51% of the total system fixed route ridership (Table 12). These seven High Ridership Routes include:

- Laker Line BRT
- Silver Line BRT
- Route 2 – Kalamazoo
- Route 9 – Alpine
- GVSU North Campus
- Route 4 – Eastern
- Route 1 – Division / Madison

Key Findings:

- Seven routes (Laker Line, Silver Line, Routes 1, 2, 4, 9, GVSU N Campus) accounted for **51%** of total system ridership in Oct. 2022
- BRT routes carried nearly a quarter (**23%**) of monthly ridership in Oct. 2022
- Heavily reliant on weekday ridership. **88%** of the system-wide ridership in Oct. 2022 is on weekdays
- Highest activity stops are typically located on the GVSU Campus, in downtown Grand Rapids, at key transfer points, along a BRT corridor, or at select Meijer grocery stores.

Comparing these trends to the pre-COVID data for contracted routes presented in The Rapid's most recent COA, it is apparent that these high ridership routes have a robust ridership base as each route was also a high ridership route in 2019.

In October 2022, the top two performing routes representing nearly a quarter (23%) of monthly ridership were The Rapid's BRT routes—the Laker Line and Silver Line—which served 89,324 and 41,116 riders, respectively. Although non-contracted routes carry the majority (67%) of The Rapid's fixed route ridership approximately one third of all trips are taken on a contracted route—defined as a route that is paid for by a different entity than The Rapid. In total four contracted routes (Laker Line, GVSU North Campus, GVSU South Campus, and DASH West), exceed the average monthly ridership with both the Laker Line and GVSU North Campus routes positioned in the top seven "High Ridership Routes."

As depicted in Figure 48 and detailed in Table 12, most passengers appear to travel along north-south corridors as the Silver Line and Route 1 – Division / Madison, Route 2 – Kalamazoo, Route 4 – Eastern, and Route 9 – Alpine all travel north-south and serve downtown Grand Rapids. The primary crosstown (east-west) backbones for The Rapid's fixed route service are the Laker Line (Lake Michigan Dr.) and Route 28 – West 28th, the only two crosstown routes with above average ridership.

Figure 49 and Figure 50 summarize each route's average daily ridership by weekday (Figure 49) and weekend (Figure 50) service. Overall, The Rapid's system is heavily reliant on weekday ridership as nearly 88% of fixed route ridership occurs during this service time despite only representing about 85% of total revenue hours. The Rapid's two BRT lines, have the largest ridership across all service days (weekdays, Saturdays, and Sundays). Conversely, of routes that provide both weekday and weekend service, Routes 7, 14, and 29 have consistently low average daily ridership. Although average weekend ridership is significantly lower than during the weekday, some routes perform better on weekdays compared to the average route systemwide. For example, Routes 6, 15, 28, and 44 all have above average weekend ridership despite having below average weekday ridership.

Table 12: Monthly Ridership by Route (October 2022)

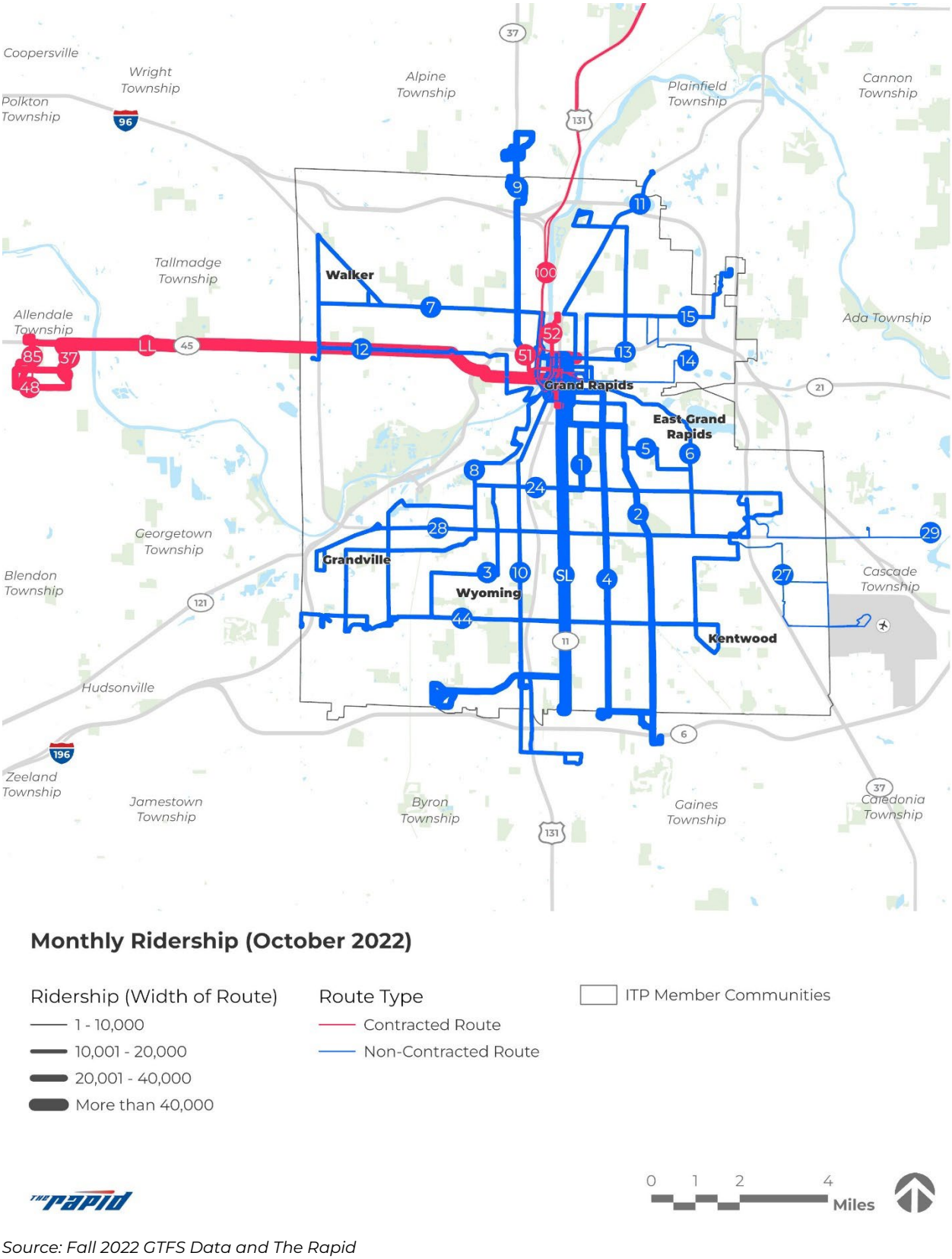
Route*	Total Monthly Ridership	% of Ridership	Peak Frequency
Laker Line BRT	89,234	16%	15 mins
Silver Line BRT	41,116	7%	15 mins
Route 2 – Kalamazoo	34,722	6%	15 mins
Route 9 – Alpine	32,484	6%	15 mins
Route 37 – GVSU North Campus	30,800	5%	7 mins
Route 4 – Eastern	28,822	5%	15 mins
Route 1 – Division / Madison	28,341	5%	30 mins
Route 48 – GVSU South Campus	24,761	4%	5 mins
Route 11 – Plainfield	19,807	4%	15 mins
Route 51 – DASH West	19,592	3%	8 mins
Route 28 – West 28th	18,789	3%	15 mins
Route 6 – Eastown / Woodland	18,262	3%	30 min
AVERAGE:	**19,404**	—	
Route 15 – East Leonard	17,904	3%	30 min
Route 12 – Westside	16,495	3%	30 min
Route 44 – 44th Street	16,193	3%	30 min
Route 10 – Clyde Park	15,766	3%	30 min
Route 8 – Prairie / Rivertown	13,888	2%	30 min
Route 7 – West Leonard	12,965	2%	30 min
Route 24 – Burton	11,662	2%	30 min
Route 5 – Wealthy / Woodland	11,044	2%	30 min
Route 3 – Wyoming / Rivertown	10,969	2%	30 min
Route 13 – Michigan / Fuller	10,428	2%	30 min
Route 52 – DASH North	10,309	2%	15 min
Route 14 – East Fulton	7,613	1%	30 min
Route 29 – East 28th	6,925	1%	30 min
Route 85 – GVSU Apartment Connector (Combined 37/48)	6,433	1%	20 min
Route 60 – GRCC Shuttle	3,532	1%	12 min
Route 27 – Airport Industrial	3,254	1%	30 min
Route 100 – Ferris State University (FSU) Shuttle	612	< 1%	4 trips
TOTAL:	**562,722**		

Source: The Rapid, October 2022 Monthly Report Totals

** Contracted services italicized*

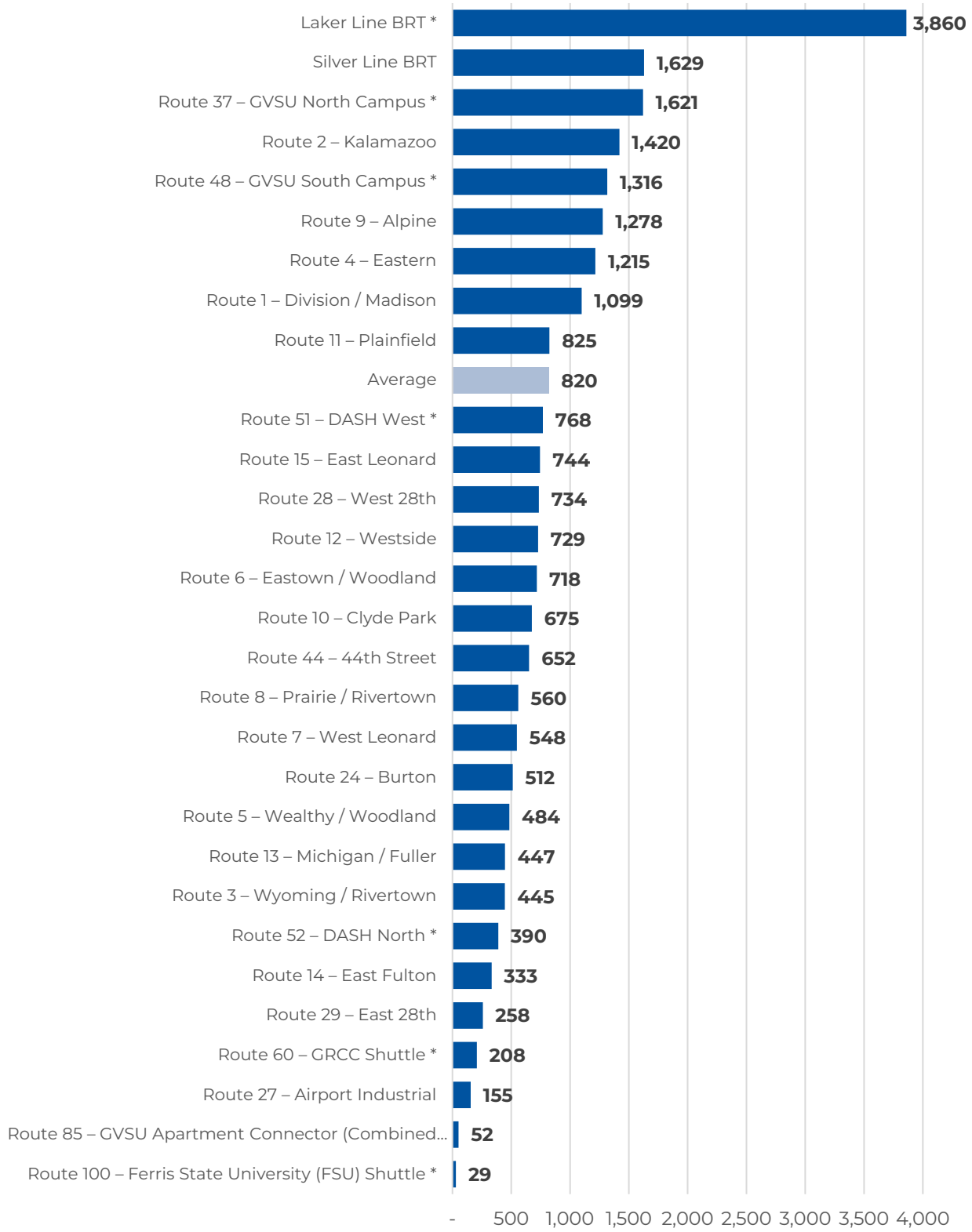
***Top 7 routes representing half of The Rapid's fixed route ridership are highlighted blue. Table sorted in descending ridership order*

Figure 48: Fixed Route Monthly Ridership by Service Type (October 2022)



Source: Fall 2022 GTFS Data and The Rapid

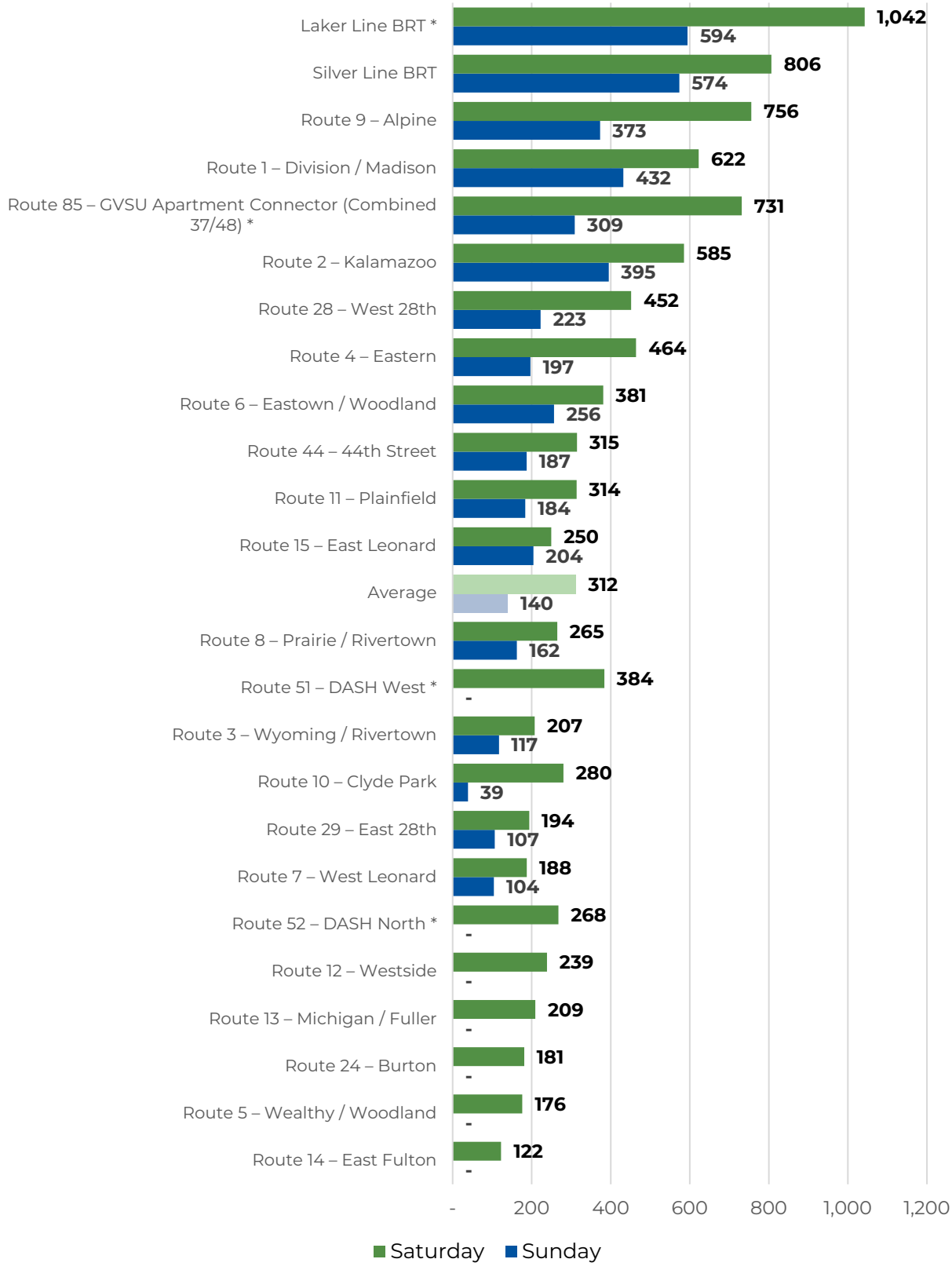
Figure 49: Average Weekday Riders (Weekday Daytime + Evening) by Route (October 2022)



Source: The Rapid, FY23 System Summary (October 2022) Average Riders

** Contracted services denoted with an asterisk*

Figure 50: Average Weekend Riders by Route (October 2022)



Source: The Rapid, FY23 System Summary (October 2022) Average Riders

** Sorted by average weekend total. Contracted services denoted with an asterisk*

Ridership activity is not typically evenly dispersed along a given route. Instead, select stops have higher ridership than others. Figure 51 depicts average weekday stop activity (boardings + alightings) for October – November 2022 to highlight the variability of regional fixed route ridership at the stop-level and identify key areas with above average stop activity. During this time period, the average bus stop in The Rapid's system saw an average of about 29 boardings and alightings on a given weekday.

As illustrated in Figure 51 as well as Table 13 and Table 14, weekday ridership is primarily clustered in three locations: downtown Grand Rapids, GVSU Allendale Campus, and Kentwood Station-Woodland. Other locations of elevated stop activity include key transfer points, along a BRT corridor, or select Meijer grocery stores (Table 13, Table 14, Table 15, Figure 51). Overall, the top ridership stop was Rapid Central Station while 6 of the top 10 stops with the greatest stop activity were located on GVSU's campus. Notably, route termini near the periphery of the ITP-member communities typically also have an above average stop activity level suggesting potential transit demand beyond this boundary and highlighting that more suburban riders may use these bus stops as an access point to The Rapid's bus network.

Table 13: Top 10 GVSU Stops by Avg. Weekday Stop Activity (Oct. – Nov. 2022)

Stop Name	Routes Served	Boardings	Alightings	Total Activity
Kirkhof Station	37, 48, 85, Laker Line	2,578	2,319	4,897
Mackinac Station (NB)	37, 85, Laker Line	754	413	1,167
Pew Campus Station (EB)	Laker Line	78	769	847
Pew Campus Station (WB)	Laker Line	750	84	834
Mackinac Station (SB)	Laker Line	143	604	747
Cooper Beech Townhomes	48, 85	384	338	722
W Campus at Campus West (WB)	48	24	416	440
Pierce at Greek Housing (EB)	48, 85	157	189	346
48 West	37, 85	142	139	281
W Campus at The Meadows (EB)	37	229	32	261
Campus West/48th (EB)	37, 85	229	32	261

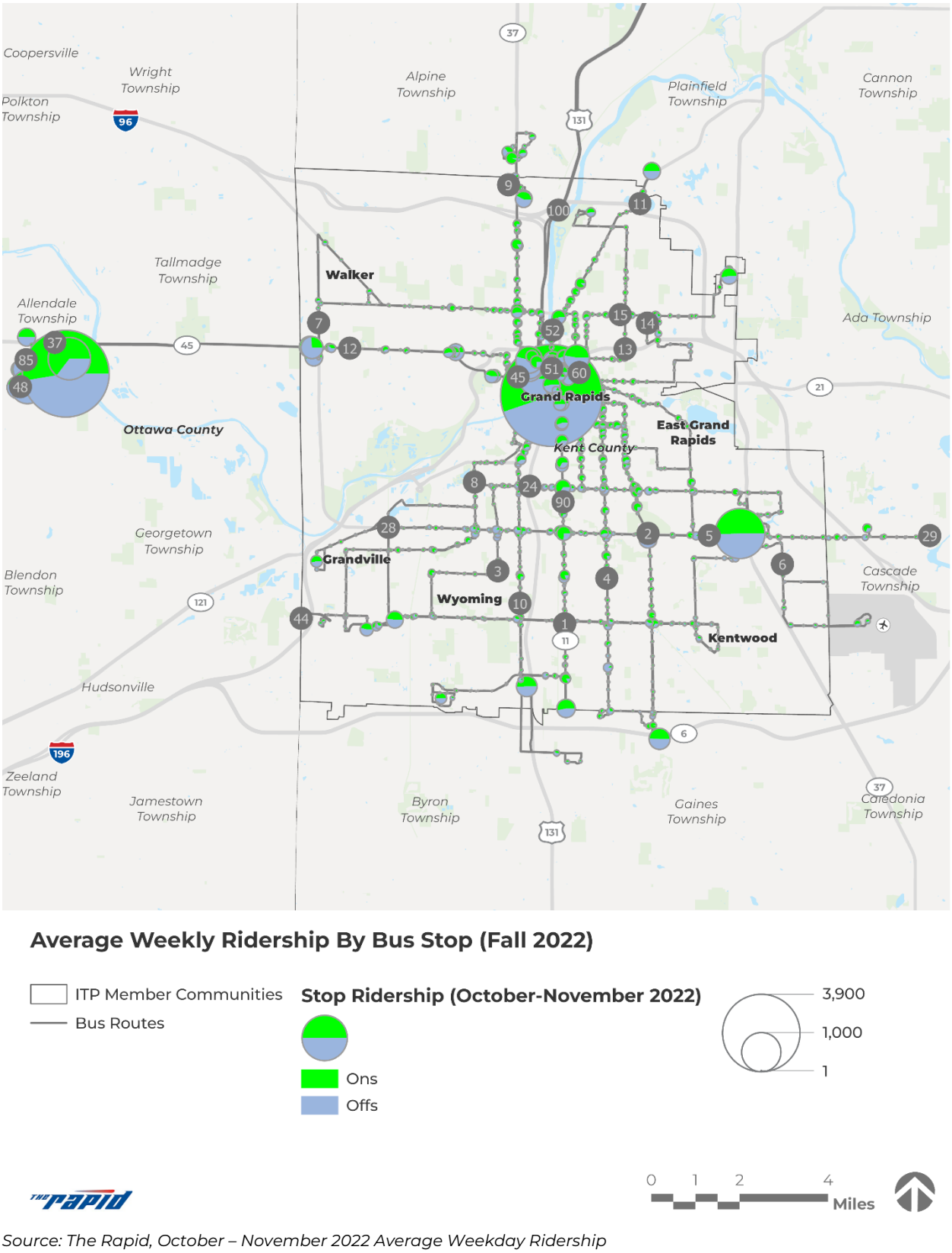
Source: The Rapid, October – November 2022 Average Weekday Ridership

Table 14: Top 10 Non-GVSU Stops by Avg. Weekday Stop Activity (Oct. – Nov. 2022)

Stop Name	Routes Served	Boardings	Alightings	Total Activity
Rapid Central Station	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, Laker Line, FSU Shuttle	3,725	3,019	6,744
Kentwood Station - Woodland	5, 6, 24, 27, 28, 29, 44	822	810	1,632
Seward/Area 9 Lot (NB)	51	212	250	462
Lafayette Ave Station (WB)	Laker Line	200	222	422
Ferndale Ave Station (EB)	Laker Line	82	231	314
Ferndale Ave Station (WB)	Laker Line	220	75	295
Meijer - Gaines Twp	2, 4	143	146	290
Meijer - 54th Street	1, 10	141	137	277
60th Street Station (NB)	Silver Line	117	103	220
Devos Place Station (NB)	Silver Line, Laker Line	69	145	214

Source: The Rapid, October – November 2022 Average Weekday Ridership

Figure 51: Average Weekday Stop Activity (October – November 2022)



Source: The Rapid, October – November 2022 Average Weekday Ridership

Service Effectiveness

The service effectiveness (productivity) of transit routes is measured by passengers per revenue hour (PPH) and passengers per revenue mile (PPM). Table 15 and Table 16 summarize these two productivity measures by route, respectively.

Key Findings:

- Weekday daytime productivities are higher than weekday evenings and weekends for most routes
- Contracted services have higher productivity than non-contracted services
- Top 4 performing contracted routes are GVSU North Campus, GVSU South Campus, Laker Line, and GRCC Shuttle
- Top 4 performing non-contracted routes are Routes 9, 12, 15 and the Silver Line

Passengers per Revenue Hour (PPH)

Table 15 indicates that the top four performing routes in terms of passengers per revenue hour are all contracted services: Laker Line, and GVSU North Campus, GVSU Apartment Connector, and GVSU South Campus. Although all four routes have above average Passengers per Revenue Hour across all four service times, weekday daytime Saturday productivities are higher than other service times. The top three performing non-contracted routes for passengers per revenue hour are Route 12, Route 15, and the Silver Line. These routes' weekday daytime productivities are higher than during other service times. Compared to the baseline conditions presented in the 2021 COA, Route 12's average weekday passengers per revenue hour has seen a significant improvement from ranking 17th (below the system average) to now fifth (above the system average). Conversely, several routes' PPH declined from an above average productivity in 2019 to below average in October 2022. These routes include Routes 1, 2, 4, 11, 28, and DASH West. Although all routes in October 2022 have experienced an increase in average weekday PPH since January 2021 (an intermediate period before the COA was implemented but after the COVID-19 pandemic began), it is difficult to determine the degree to which these improvements are due to the COA modifications as much of this growth is likely due to COVID-19 abating.

Passengers per Revenue Mile (PPM)

Many of the most productive routes, as measured by passengers per revenue mile (PPM), differ from the top performing routes as measured by PPH. As indicated in Table 16, the top four routes with the greatest PPM are the GRCC Shuttle, GVSU North Campus, GVSU Apartment Connector, and GVSU South Campus routes. Similar to passengers per revenue hour, the weekday daytime and Saturday PPM productivity of these routes are higher than during other service times. For the non-contracted routes, the top four performing routes are Routes 9, 15, 12, and the Silver Line. Their weekday daytime productivities are higher than other service times except for Route 9 whose highest productivity service time is Sunday.

Overall, both productivity evaluation metrics suggest that the system average is raised by a select few top performing routes as more routes have below average productivities. In general, contracted services have much higher productivity than non-contracted routes. Possible explanations include:

- Lingering effects of the COVID-19 pandemic
- Contracted services have more rigid demand as they are primarily serving students with less travel options

Table 15: Monthly Passengers per Revenue Hour by Route (October 2022)

Route Name	Total	Weekday Daytime	Weekday Evening	Saturday	Sunday
Laker Line BRT	39.5	47.1	26.6	37.0	21.1
Route 37 – GVSU North Campus	37.5	45.6	11.5	-	-
Route 85 – GVSU Apartment Connector (Combined 37/48)	31.2	-	28.3	36.6	31.7
Route 48 – GVSU South Campus	28.9	34.8	14.1	-	-
Route 12 – Westside	22.4	25.8	11.3	14.6	-
Route 15 – East Leonard	18.6	20.9	13.0	11.1	16.5
Silver Line BRT	18.1	18.9	16.4	16.9	15.8
Route 60 – GRCC Shuttle	17.8	18.6	2.0	-	-
Route 9 – Alpine	17.5	17.7	14.1	19.5	20.6
Average	**16.2**	**17.2**	**10.1**	**13.9**	**13.2**
Route 2 – Kalamazoo	16.0	17.1	13.0	16.2	10.7
Route 51 – DASH West	15.6	18.8	9.5	10.7	-
Route 10 – Clyde Park	15.1	17.0	12.0	12.1	3.4
Route 13 – Michigan / Fuller	14.1	17.6	1.3	12.7	-
Route 1 – Division / Madison	14.0	17.9	9.0	9.7	8.9
Route 7 – West Leonard	13.8	15.8	7.6	11.2	9.1
Route 6 – Eastown / Woodland	13.8	16.3	9.0	10.2	14.1
Route 11 – Plainfield	13.1	13.5	10.9	12.4	14.8
Route 4 – Eastern	12.6	13.3	10.1	11.2	11.0
Route 52 – DASH North	12.6	14.1	9.1	11.2	-
Route 5 – Wealthy / Woodland	12.6	15.4	2.5	7.5	-
Route 14 – East Fulton	12.0	14.7	5.7	7.5	-
Route 8 – Prairie / Rivertown	11.6	12.2	9.7	11.1	9.1
Route 29 – East 28th	11.4	11.3	10.6	14.4	10.0
Route 3 – Wyoming / Rivertown	11.1	12.1	8.4	11.0	6.8
Route 28 – West 28th	10.8	10.7	9.2	13.0	12.4
Route 44 – 44th Street	9.9	10.9	6.5	9.3	7.6
Route 24 – Burton	8.4	9.0	6.6	6.3	-
Route 27 – Airport Industrial	8.0	8.8	4.9	-	-
Route 100 – Ferris State University (FSU) Shuttle	2.7	3.0	-	-	-

*Source: The Rapid, October 2022 Monthly Report Fixed Operating Data, Sorted by "Total Monthly Passengers per Revenue Hour", * Contracted services italicized*

Table 16: Monthly Passengers per Revenue Mile by Route (October 2022)

Route Name	Total	Weekday Daytime	Weekday Evening	Saturday	Sunday
Route 60 – GRCC Shuttle	4.5	4.7	0.5	-	-
Route 37 – GVSU North Campus	3.5	4.2	1.0	-	-
Route 85 – GVSU Apartment Connector (Combined 37/48)	2.8	-	2.6	3.2	2.8
Route 48 – GVSU South Campus	2.7	3.3	1.3	-	-
Laker Line BRT	2.5	2.9	2.0	2.2	1.2
Route 51 – DASH West	2.1	2.5	1.2	1.4	-
Route 9 – Alpine	1.7	1.7	1.4	1.9	2.1
Route 15 – East Leonard	1.6	1.8	0.9	1.1	1.2
Route 12 – Westside	1.5	1.8	0.7	1.0	-
Silver Line BRT	1.5	1.5	1.3	1.4	1.3
Average	**1.4**	**1.5**	**0.8**	**1.1**	**1.0**
Route 52 – DASH North	1.2	1.4	0.9	1.1	-
Route 6 – Eastown / Woodland	1.2	1.4	0.7	0.9	1.3
Route 2 – Kalamazoo	1.1	1.2	0.9	1.2	0.8
Route 10 – Clyde Park	1.1	1.3	0.8	0.9	0.2
Route 13 – Michigan / Fuller	1.1	1.5	0.1	0.9	-
Route 1 – Division / Madison	1.1	1.4	0.7	0.7	0.7
Route 5 – Wealthy / Woodland	1.0	1.2	0.2	0.7	-
Route 14 – East Fulton	0.9	1.2	0.4	0.6	-
Route 4 – Eastern	0.9	1.0	0.7	0.8	0.7
Route 29 – East 28th	0.9	0.9	0.8	1.3	0.9
Route 11 – Plainfield	0.9	0.9	0.7	0.8	0.9
Route 7 – West Leonard	0.8	1.0	0.5	0.6	0.5
Route 3 – Wyoming / Rivertown	0.8	0.9	0.6	0.8	0.5
Route 28 – West 28th	0.8	0.8	0.6	0.9	0.9
Route 8 – Prairie / Rivertown	0.8	0.8	0.6	0.7	0.6
Route 44 – 44th Street	0.6	0.7	0.4	0.6	0.5
Route 24 – Burton	0.5	0.6	0.4	0.4	-
Route 27 – Airport Industrial	0.5	0.6	0.3	-	-
Route 100 – Ferris State University (FSU) Shuttle	0.1	0.1	-	-	-

Source: The Rapid, October 2022 Monthly Report Fixed Operating Data, Sorted by "Total Monthly Passengers per Revenue Mile"

** Contracted services italicized*

Reliability (On-Time Performance)

The reliability of a transit system is measured by its on-time performance. Table 17 presents the on-time performance (OTP) by route and by service time. On average, The Rapid's fixed route buses are least on time during Saturday service (82.5%), followed by weekday service (86.8%), and Sunday service (90.4%). In fact, on Sunday's, only five routes fail to meet the system standard of 90% on-time.
Four routes (Route 5, Route 14, Route 15, and Route 27) meet the system standard for all the service times during which they provide service. Conversely, the Silver Line, and Routes 4, 12, 13, and 24 all fall below the system standard for all service times. Silver Line has the worst on-time performance among all the routes, especially its Saturday service which is only on time about half the time (52.5%).

Top Performers & Key Findings:

- Only four routes (Routes 5, 14, and 27) meet the 90% on-time standard for all service times
- Five routes (Silver Line and Routes 4, 12, 13, and 24) did not meet the 90% on-time standard for any service time
- Bus service is most reliable on Sundays and least reliable on Saturdays
- Compared to the baseline established in the 2021 COA, Route 7 and Route 28 had the greatest reliability improvements

To identify whether the Silver Line's performance is an outlier caused by fall route detours due to nearby construction projects—such as the parking ramp construction at Lyon and Ransom—or indicative or underlying issues with the Silver Line, a supplemental analysis of Winter 2023 OTP was performed. Across The Rapid's fixed route system, routes had higher OTP performance in Winter 2023 compared to Fall 2022. In particular, average OTP improved by 4.6 percentage points for weekdays, 6.7 percentage points for Saturdays, and 2.3 percentage points for Sundays. Notably, the Silver Line saw significantly above average OTP improvements across all time periods (+11 percentage points on weekdays, +22.5 on Saturdays, and +13.8 on Sundays). Despite these large improvements, however, Silver Line OTP for Winter 2023 weekday service was the second worst for all routes (83.6%) while Saturday service had the worst performance (75% on time) falling nearly 11 percentage points below the system average. This indicates that although the Silver Line's Fall 2022 OTP was likely lower than it would otherwise have been without construction detours, the route consistently has some of the worst on-time performance regardless of season.

One of the project goals of The Rapid's 2021 COA was to improve the reliability (on-time performance) of the system. Routes with the lowest weekday on-time performance outlined in the COA included Routes 1, 7, 28 and the Silver Line. Additionally, the recommended service improvements for Routes 15 and 28 were explicitly designed to improve reliability. Compared to the OTP baseline used in the 2021 COA, the two routes that have improved their on-time performances the most are Route 28 and Route 7, which improved from 78.6% to 85.2% and 82.5% to 88.3% reflecting the improvements implemented following the COA. Conversely, routes with the greatest declines in OTP compared to the baseline used in the 2021 COA include Routes 12 and 24 which have declined from 95% to 84% and 93.1% to 82.4%, respectively.

Table 17: On-Time Performance (OTP) by Route and Service Time

Route	Weekday Avg.	Saturday Avg.	Sunday Avg.
Laker Line BRT	88.9%	83.8%	93.6%
Silver Line BRT*	72.6%	52.5%	76.6%
Route 1 – Division / Madison	76.9%	78.3%	90.8%
Route 2 – Kalamazoo	86.1%	77.3%	90.2%
Route 3 – Wyoming / Rivertown	92.2%	87.1%	91.8%
Route 4 – Eastern	86.5%	82.2%	87.9%
Route 5 – Wealthy / Woodland	90.9%	91.8%	-
Route 6 – Eastown / Woodland	89.4%	86.6%	94.5%
Route 7 – West Leonard	88.3%	83.4%	89.3%
Route 8 – Prairie / Rivertown	90.4%	80.0%	91.4%
Route 9 – Alpine	84.3%	81.8%	90.1%
Route 10 – Clyde Park	89.8%	88.1%	93.9%
Route 11 – Plainfield	87.1%	84.2%	93.9%
Route 12 – Westside	84.0%	85.5%	-
Route 13 – Michigan / Fuller	82.9%	76.7%	-
Route 14 – East Fulton	93.9%	89.9%	-
Route 15 – East Leonard	90.8%	89.1%	89.4%
Route 24 – Burton	82.4%	80.4%	-
Route 27 – Airport Industrial	91.3%	-	-
Route 28 – West 28th	85.2%	84.6%	93.2%
Route 29 – East 28th	87.8%	81.7%	89.3%
Route 44 – 44th Street	87.0%	88.1%	90.5%
Average	**87.4%**	**84.0%**	**91.2%**

Table sorted by Route Number

** Silver Line Fall 2022 OTP is an outlier due to construction detours. Winter 2023 OTP for the Silver Line is 83.6% on weekdays, 75% on Saturdays, and 90.4% on Sundays.*

Source: The Rapid (August 29, 2022 – December 31, 2022). Data limited to the Laker Line and non-contracted routes. Darker blue indicates better on-time performance while darker red indicates worse on-time performance.

Vehicle and Staff Capacity

Vehicle Capacity

Peak load factors measure the relationship between peak hour ridership and seating capacity. The peak load factor is calculated for each route given its peak hour vehicle capacity and ridership at peak hour (Table 18).

Top Performers & Key Findings:

- On average, vehicles are running half full during peak hours (Peak load factor = **0.5**)
- Routes 7, 12, and 15 have highly utilized peak services
- To provide directly operated services, The Rapid employs one general administration employee for approximately every seven vehicle operators

The system's average peak load factor in Fall 2022 was 0.5 which indicates that on average, vehicles are running half full during peak hours. The relative capacity utilization of the Rapid's transit service can be assessed by benchmarking individual route's peak load factor against the system average. All peak load factors are below one indicating that no bus is at or over capacity during peak periods.

The majority of The Rapid's non-contracted routes (12 out of 21) have over 50% peak hour vehicle capacity indicating good system-wide vehicle capacity. Route 12, Route 15, and Route 7 have the highest peak load factors which indicate their peak services are highly utilized. The top three highly utilized routes during their peak hours are all east-west direction routes serving downtown Grand Rapids.

The three routes with the lowest peak load factors (Routes 3, 24, and 28) all operate south of downtown Grand Rapids. Routes 24 and 28 provide east-west service connecting Rivertown and Kentwood along the Burton St and 28th St, respectively, while Route 3 in a north-south service connecting downtown Grand Rapids and Rivertown.

Table 18: Load Factor and Vehicle Capacity by Route (Fall 2022)

Route Name	Peak Hour	Frequency	Peak Load Factor
Route 12 – Westside	7:00-7:59 AM	30	0.84
Route 15 – East Leonard	3:00-3:59 PM	30	0.81
Route 7 – West Leonard	3:00-3:59 PM	30	0.72
Route 9 – Alpine	3:00-3:59 PM	15	0.62
Route 29 – East 28th	3:00-3:59 PM	30	0.62
Route 27 – Airport Industrial	3:00-3:59 PM	30	0.60
Route 10 – Clyde Park	3:00-3:59 PM	30	0.57
Silver Line BRT	4:00-4:59 PM	15	0.53
Route 14 – East Fulton	3:00-3:59 PM	30	0.52
Route 4 – Eastern	3:00-3:59 PM	15	0.52
Route 2 – Kalamazoo	3:00-3:59 PM	15	0.51
Route 1 – Division / Madison	3:00-3:59 PM	30	0.51
System Average			**0.50**
Route 13 – Michigan / Fuller	3:00-3:59 PM	30	0.49
Route 11 – Plainfield	3:00-3:59 PM	15	0.48
Route 6 – Eastown / Woodland	3:00-3:59 PM	30	0.47
Route 44 – 44th Street	3:00-3:59 PM	30	0.43
Route 8 – Prairie / Rivertown	3:00-3:59 PM	30	0.42
Route 5 – Wealthy / Woodland	4:00-4:59 PM	30	0.40
Route 3 – Wyoming / Rivertown	3:00-3:59 PM	30	0.39
Route 24 – Burton	2:00-2:59 PM	30	0.36
Route 28 – West 28th	3:00-3:59 PM	15	0.34

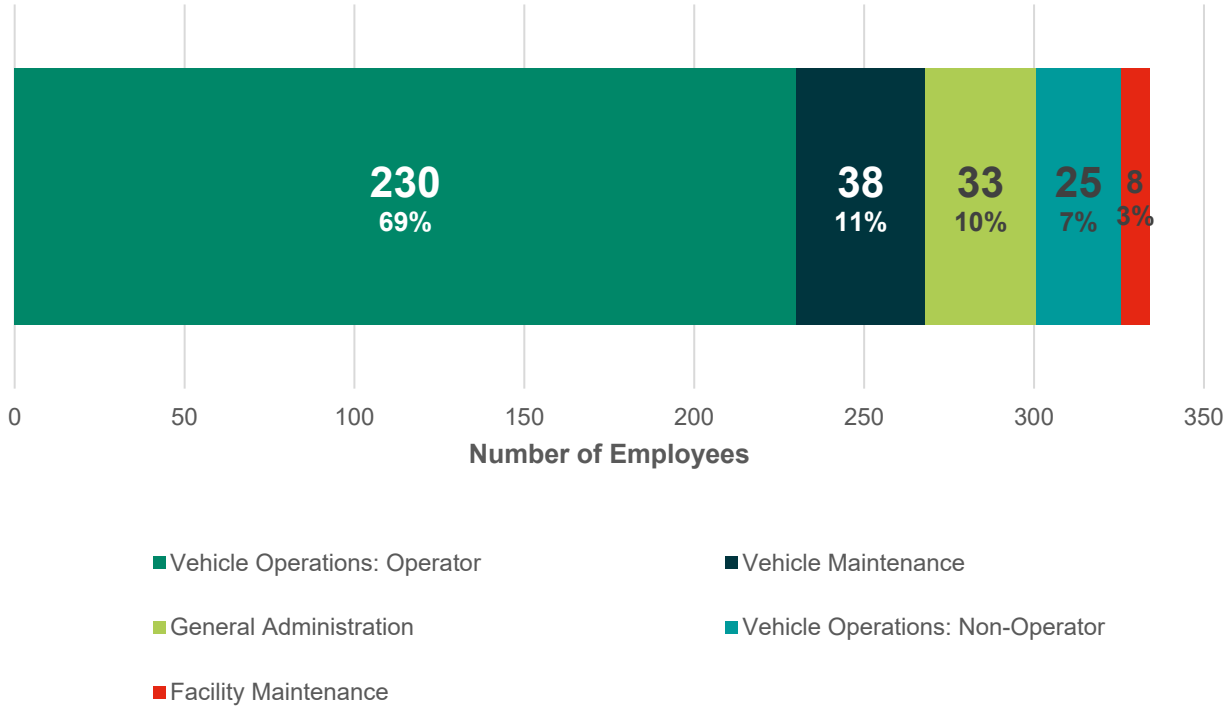
Source: The Rapid. Fall 2022

** Table only includes non-contracted routes*

Staff Capacity

In Fiscal Year 2022, The Rapid employed 334 individuals to deliver directly operated (non-contracted) services[24] (Figure 52). Over two-thirds (69%) of these employees were vehicle operators while approximately 10% provided general administration functions. Based on these employee counts reported to the National Transit Database (NTD), the operator to general administration employee ratio is 7.1 indicating that The Rapid employs one general administration employee for approximately every seven operators in order to provide directly operated services.

Figure 52: Directly Operated Fixed Route Employees by Function (FY2021)



Source: FY2022 Transit Agency Employees (2022 NTD Submittal)

[24] Note: The Rapid's directly operated services reported to the NTD include demand response, bus, rapid bus, and vanpool services

Cost Effectiveness

Fall 2022 fixed route cost effectiveness is summarized using two metrics: operating costs per passenger and per revenue mile.

Top Performers & Key Findings:

- The most cost-effective routes per passenger are GVSU North Campus, the Laker Line, and GVSU South Campus
- The FSU Shuttle is more than three times as expensive per passenger as the next most costly route but is the least expensive route per revenue mile
- Contracted routes are generally more expensive per revenue mile than directly operated (non-contracted) routes but less expensive per passenger
- The most cost-effective directly operated (non-contracted) routes per revenue mile are Routes 7, 8, 24, 27, and 44.

Operating Cost per Passenger

Operating Cost Per Passenger is calculated by dividing the monthly operating costs (fuel, wages, etc.) by the total number of monthly passengers.

As shown in Figure 53, the average operating cost per passenger is approximately $3.58 greater for directly operated (non-contracted) routes. Notably, however, the FSU Shuttle is more than three times as expensive to operate per passenger as the next most costly route. Aside from the FSU Shuttle, routes with the highest operating costs per passenger include Routes 27, 24, 44, and 28. Overall, the four least costly routes per passenger are all contracted routes (GVSU Apartment Connector and North and South Campus routes as well as the Laker Line BRT) which coincide with several of The Rapid's highest ridership corridors.

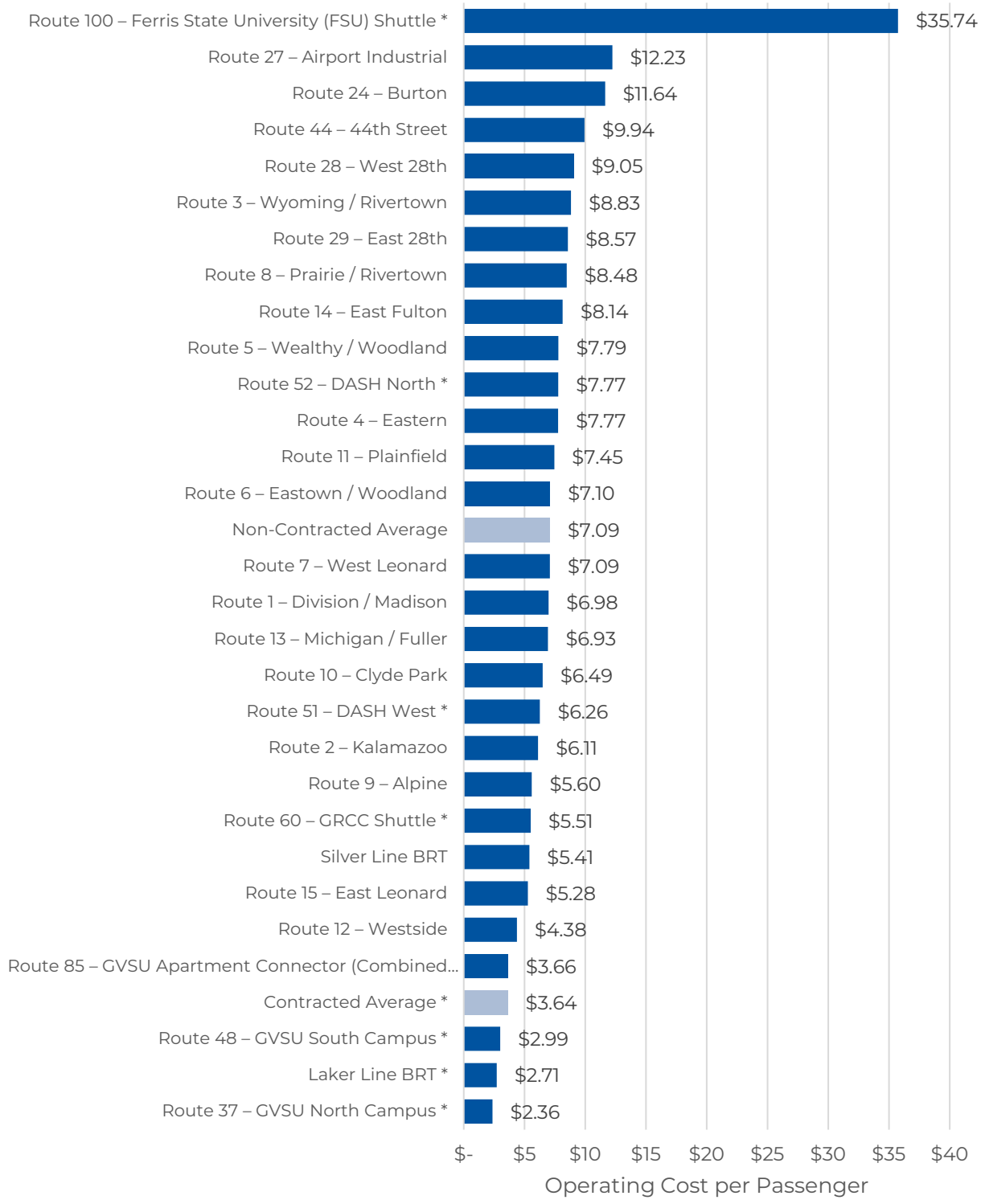
Operating Cost per Revenue Mile

To supplement the operating cost per passenger metric and normalize for routes of shorter or longer length, the operating cost per revenue mile is calculated by dividing the monthly operation costs (fuel, wages, etc.) by the amount of monthly revenue miles.

As shown in Figure 54, contracted routes are, on average, 10 percent (+$0.72) more expensive per revenue mile than directly operated (non-contracted) routes. In fact, the top four most expensive routes per revenue mile are all contracted services. The only contracted route with operating costs per revenue mile below the non-contracted average was the Laker Line BRT and the FSU Shuttle, the longest route in the system.

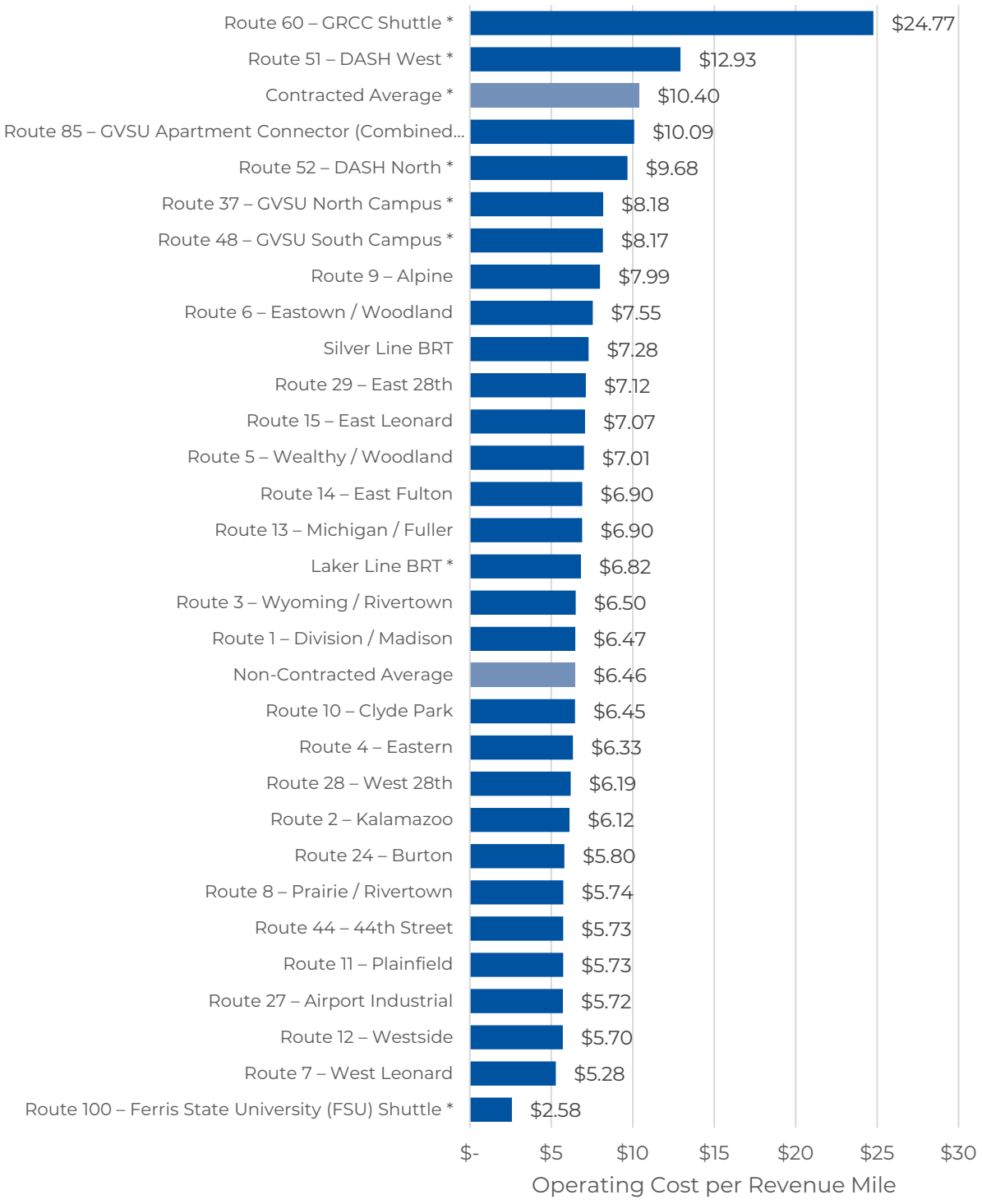
The three most costly non-contracted routes are Routes 9, 6, and 15. Conversely, the three most cost-efficient directly operated routes are Routes 7, 27, 44, 24, and 8 all of which are more than $0.80 less expensive per mile than the average non-contracted route.

Figure 53: Operating Cost per Passenger by Route (October 2022)



Source: The Rapid, October 2022 Monthly Report
Note: Assumes a $97.94 operating and maintenance cost per revenue hour. Non-Contracted and Contracted averages are calculated as weighted averages.
** Contracted services denoted with an asterisk*

Figure 54: Operating Cost per Revenue Mile by Route



Source: The Rapid, October 2022 Monthly Report
Note: Assumes a $97.94 operating and maintenance cost per revenue hour. Non-Contracted and Contracted averages are calculated as weighted averages.
** Contracted services denoted with an asterisk*

Fixed Route User Experience

This section assesses the existing user experience of The Rapid's fixed route system by reviewing passenger perceptions, fare and ticketing policies, information availability, and the physical environment of existing bus stops.

Passenger Perceptions

78% of on-board survey respondents had a favorable view of The Rapid's performance in 2022, however Silver Line performance is viewed less favorably (68% positive job rating)

Since 2000, The Rapid has conducted on-board surveys on a semi-annual basis to assess passengers' satisfaction with The Rapid's fixed route system. In the most recent iteration of this survey conducted in spring 2022, 78% of survey respondents had a favorable view of The Rapid's performance, a five-to-eight-point increase over previous surveys conducted in 2019 and 2021, respectively. Compared to regular bus (non-BRT) services, passengers' perception of the Silver Line was markedly lower with 68% of respondents having a favorable impression down from 81% of respondents in 2021. Overall, on a 1-to-10-point scale, 49% percent of respondents scored their likelihood of recommending riding The Rapid to a friend or neighbor as either a 9 or a 10. Areas with the most interest for service expansion included Alpine Township (13% of respondents) and Plainfield Township (11%) with a plurality (25%) indicating that the existing coverage was "fine as is."

A majority of surveyed riders say The Rapid's services have improved over the past few years

Among regular bus (non-BRT) riders, a majority (52%) of respondents indicated that services had "improved over the past few years" while 37% indicated that service "remained about the same." When asked how aware they were of the COA service changes implemented in fall 2021, approximately 81% of respondents were somewhat or very aware of the changes while most had positive or neutral thoughts about the changes. In particular:

- 87% of regular bus riders thought service had either improved or stayed the same;
- 84% felt that the routes provided by The Rapid and the destinations those routes served had either improved or stayed the same;
- 87% thought that service frequency improved or stayed the same; and
- 42% said that The Rapid's service hours met their needs

In addition to systemwide performance, survey respondents were also asked to evaluate The Rapid's performance across 11 service attributes. The majority of respondents rated all 11 of these attributes favorably ranging from 57% of respondents who agreed that The Rapid "*has bus stop extras, such as shelters or benches*" and that bus service is "*on time and on schedule*" to 79% of respondents who agreed that The Rapid "*provides information needed to ride the system*" and "*provides service to useful/important destinations*." The only attribute with a less favorable perception in 2022 than in 2021 was The Rapid "*is on time and on schedule"* which decreased by two percentage points from 66% to 64%, respectively. The most common difficulties surveyed regular bus passengers faced were "*buses not keeping to their published schedules*" (39% of respondents), "*too long to wait between bus pickups*" (36%), and "*too many people riding the bus during peak riding periods*" (32%).

Information Availability and Rider Tools

To make riding the bus easier and more intuitive for its passengers, The Rapid provides a wide variety of resources including travel training, online trip planning tools, as well as automated public service messages and route alerts delivered via text message or email.

Travel Training

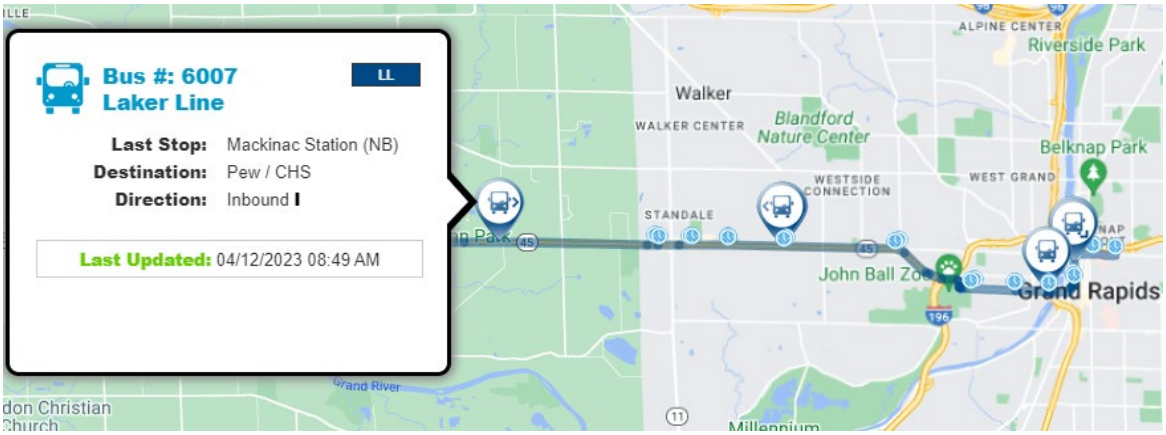
A variety of travel training programs are offered to any individuals or groups who may require further assistance before riding The Rapid's buses.[25]

- The Rapid offers short-term individualized **One-on-One Travel Training** on how to travel safely and independently aboard fixed-route buses to seniors or persons with a disability. During these custom training sessions, a travel trainer will plan out a trainee's route and ride with them during the training. After the training, the travel training will stay in touch with the trainee to monitor their progress
- For larger groups, The Rapid offers **Group Travel Training: Bus 101** where individuals can learn the benefits and advantages of The Rapid's services via a custom presentation delivered at a location of the group's choosing.
- **Vehicle Familiarization Training** provides practical experience in boarding a fixed-route bus for individuals who use a mobility device.
- **Wave Card Training** offers additional information about using a Wave Card and how to quality for reduced or student rates.

Trip Planning and Website

Several trip planning and rider tools are located prominently on The Rapid's website (ridetherapid.org) including an interactive system map as well as links to third-party apps to track The Rapid's fixed route buses. The interactive system map has several features including a trip planner, route and stop finders, the ability to set custom alerts to receive up-to-date route information and/or public services messages, and bus tracking so that riders can know the location of a bus in real-time (Figure 55). As of December 2022, The Rapid has also partnered with the Transit app to offer features to help new and existing customers better understand traveling by bus. As part of this partnership customers can plan trips with multiple route and transportation options including biking and walking and access all upcoming bus departures, route maps, and track bus locations all in one mobile application.

Figure 55: Interactive System Map (Real-time Bus Tracking)



[25] Source: Travel Training, The Rapid

Fares and Ticketing

The Rapid offers a variety of fare types with different purchase options when using the fixed route system (Table 19).[26] Passengers can either pay in cash or use a Wave Card or contactless payment. Single fixed route rides cost $1.75, senior/reduced fares cost $0.85 with proof of eligibility, and children under 42 inches travel free if accompanied by a fare-paying adult. If a passenger lives more than one-third of a mile from a bus line, they can use the Passenger Adaptive Suburban Service (PASS) feeder shuttle to connect to the nearest bus stop for $3.50. PASS fares include a transfer to the fixed-route system and must be purchased with exact change.

Table 19: Wave Card Types and Fares

Fare Type	Fare or Cap Increment	Single-Day Max	Calendar Month Max
Adult	$1.75	$3.50	$47.00
Youth	$1.25	$2.50	$33.75
Reduced	$0.85	$2.25	$30.00
Partner	$1.25	$2.25	$33.75
ADA	$0	—	—
10-Ride*	$13.50	—	—

** 10-Ride Wave cards do not feature fare capping or auto-load*

Source: The Rapid

Wave Card

As a faster and convenient alternative to cash fares, riders can purchase bus fares with a Wave Card. Wave Cards can be purchased online, at Rapid Central Station, or one of more than 60 retail locations for a onetime fee of $3. After purchasing a Wave Card, riders simply tap the card to the fare reader when boarding or transferring. After this initial tap, riders have a 1 hour and 45-minute transfer window during which all subsequent taps are free. Free transfers are not provided when paying with cash fares.

Benefits of the Wave Card include:

- **Free Transfers**
- **Pay-as-You-Go Fare Capping System** with single-day and calendar month maximum spend amounts. After hitting the fare cap, passengers receive unlimited subsequent rides for free.[27] Day passes are earned after riding twice in one day, while monthly passes are earned after riding twice a day for 20 days within a calendar month.
- **Ability to load funds anywhere and anytime** either online, at a retail location, or by visiting the Information Center at Rapid Central Station.[28]

[26] Source: Tickets and Fares, The Rapid
[27] Note: Fare capping automatically resets on the first day of every month
[28] Source: Wave Card Benefits, The Rapid

Contactless Payments

Recently, The Rapid also began accepting contactless payments as bus fares including Visa, Mastercard, Discover, Apple Pay, Samsung Pay, and Google Pay. To use this form of payment riders simply tap their contactless device on the reader when boarding a bus. Like the Wave Card, when using contactless payments riders receive a transfer and earn daily fare capping when using the same card/device for each trip.

Physical Environment

The locations of existing fixed route bus stop infrastructure as well as shelter improvements planned through FY24 were mapped in Figure 56 to assess bus stops' physical environment and identify areas lacking amenities where The Rapid can further improve the customer experience in the future. Each amenity corresponds with a different sized/colored circle so that stops with multiple amenities can clearly be identified. Due to data availability, this analysis only considers bus stops along regular Fall 2022 bus routes excluding BRT stations or bus stops that only serve DASH shuttles. As BRT stations contain all four amenity categories listed below in addition to real-time arrival information, amenity coverage for the full bus system exceeds the values presented below.

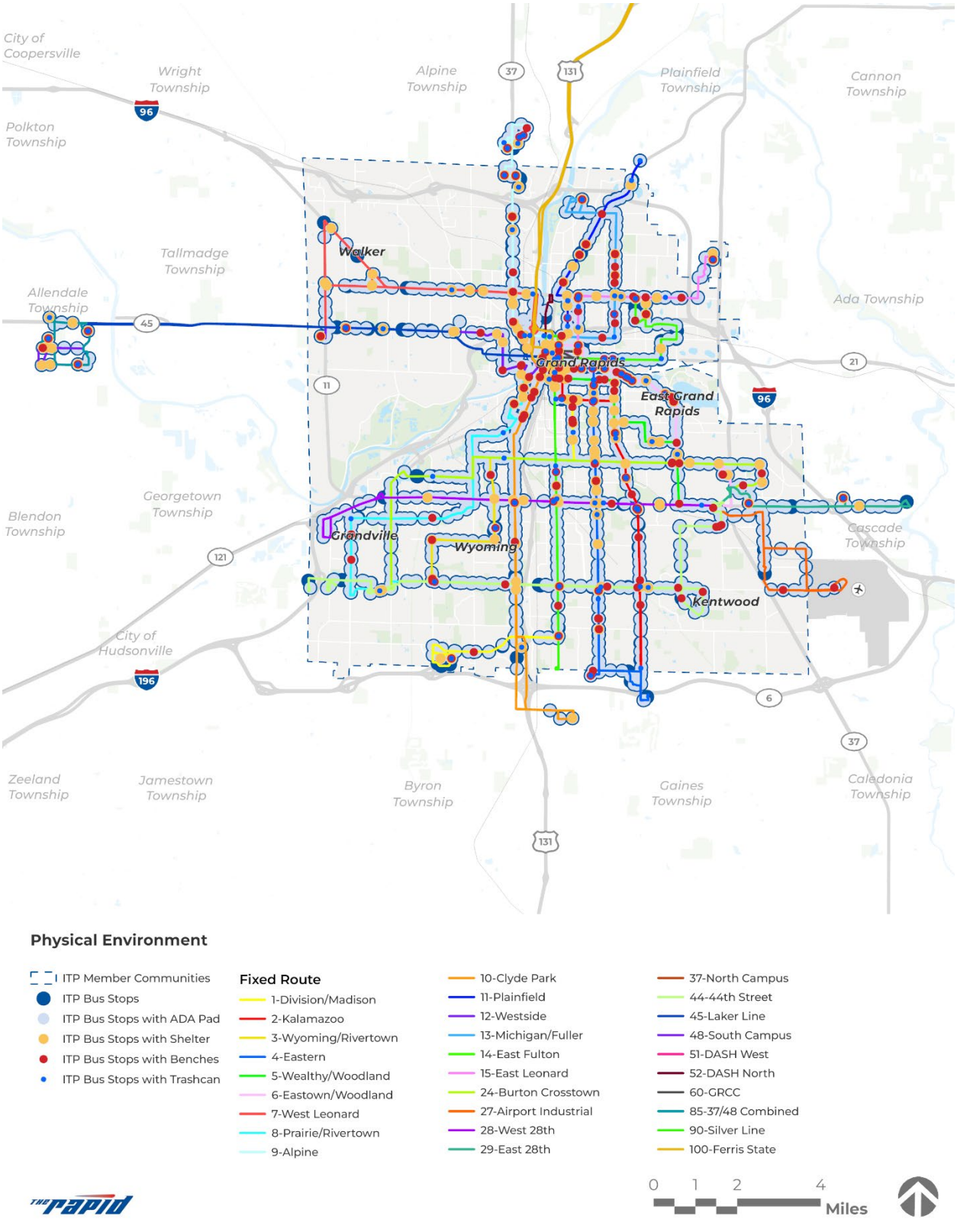
As highlighted in Figure 56, most bus stops with both shelters and benches are located within downtown Grand Rapids and at key transfer locations where multiple routes intersect. In general, the amount of bus stop amenities decreases with greater distance from the downtown core.

Based on The Rapid's bus stop dataset as of May 2023:

- 13% of bus stops (36% of weekday stop activity) have a Shelter
- 11% of bus stops (19% of weekday stop activity) have a Bench
- 92% of bus stops (92% of weekday stop activity) have an ADA Pad
- 8% of bus stops (20% of weekday stop activity) have a Trashcan

According to the passenger survey, about 57% agreed the bus stops have extra amenities, such as shelters and/or benches, while 25% disagreed.

Figure 56: Physical Environment (Fall 2022)



Source: The Rapid, Stop Database, May 2023

Rapid Connect On-Demand Service

Launched in January 2022, Rapid Connect is a new on-demand service that provides a flexible curb-to-curb mobility option within two service areas located in Kentwood and Walker that have been historically underserved by public transportation (Figure 57)

Operating Hours:
Weekdays: 6 AM – 10 PM

Fare Structure:
Cash: $1.75 per adult
Wave Card: $1.75 per adult*

**Includes a transfer to bus routes and other Wave Card benefits*

The **Walker Service Area** serves the Three Mile Road and Remembrance Drive areas with bus connections at two hubs: Walker Village and the Alpine Meijer. The **Kentwood Service Area** serves the Broadmoor area with bus connections at two hubs: Kentwood City Hall and Kentwood Station/Woodland Mall.

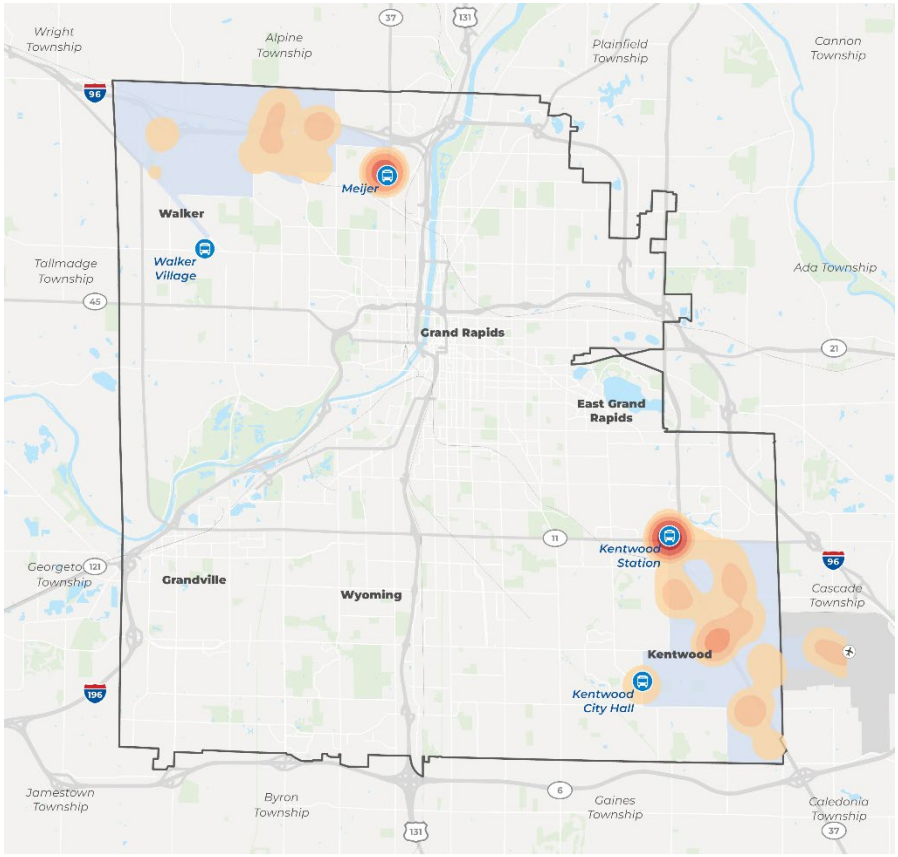
Rapid Connect trips must travel within one of the service areas in either Walker or Kentwood and Rapid Connect services cannot be used to travel between Walker and Kentwood without transferring to the fixed route bus system. Much like ride hailing services such as Uber and Lyft, Rapid Connect customers book rides via a mobile app in real-time or up to up to 7-days in advance. Rapid Connect service is provided via ADA accessible vans and costs $1.75 per adult passenger. In 2022, approximately 92 percent of 2022 Rapid Connect passengers used a Wave card to pay for their trip and were therefore eligible to use the free transfer to traditional bus routes as well as other Wave Card benefits.

Where are people traveling to and from with Rapid Connect?

Most Rapid Connect trips have a pickup or drop-off location at either the Alpine Meijer (Walker) or Kentwood Station/Woodland Mall (Kentwood) hubs (Figure 57). Although the Kentwood City Hall (Kentwood) hub also has a concentration of pickup and drop-off locations surrounding it, the fourth hub located at Walker Village, has relatively low ridership activity (pickups or drop-offs). Aside from the hubs, other areas of elevated ridership activity include near the Bissel and Meijer Corporate Campuses, at the intersection of Three Mile Road and Walker Avenue in the eastern half of the Walker Service Area, as well as along Broadmoor Avenue and at the Gerald R. Ford International Airport.

Figure 58 combines the pickup and drop-off locations visualized in Figure 57 to identify key bidirectional travel flows. Within the Kentwood Service Area, all but one major travel flow (100+ trips in calendar year 2022) serves Kentwood Station/Woodland Mall. The exception is the connection between the Kentwood City Hall and the area surrounding the intersection of 52nd Street and Broadmoor Avenue which includes employers such as Lacks Enterprises, Steelcase, Roskam Baking Company, and SnackCraft. Key linkages with Kentwood Station/Woodland Mall include the area surrounding the intersection of 44th Street and Broadmoor Avenue, the Gerald R Ford International Airport, and the East Paris neighborhood. All major travel flows in the Walker Service Area connect to the Alpine Meijer Hub linking this key location to other nodes including the Bissell and Meijer corporate offices as well as the corporate headquarters for S. Abraham & Sons further to the west. Unlike the Kentwood Service Area, major travel flows are primarily constrained to the eastern half of the Walker Service Area.

Figure 57: Rapid Connect On-Demand Pickup and Drop-offs (2022)

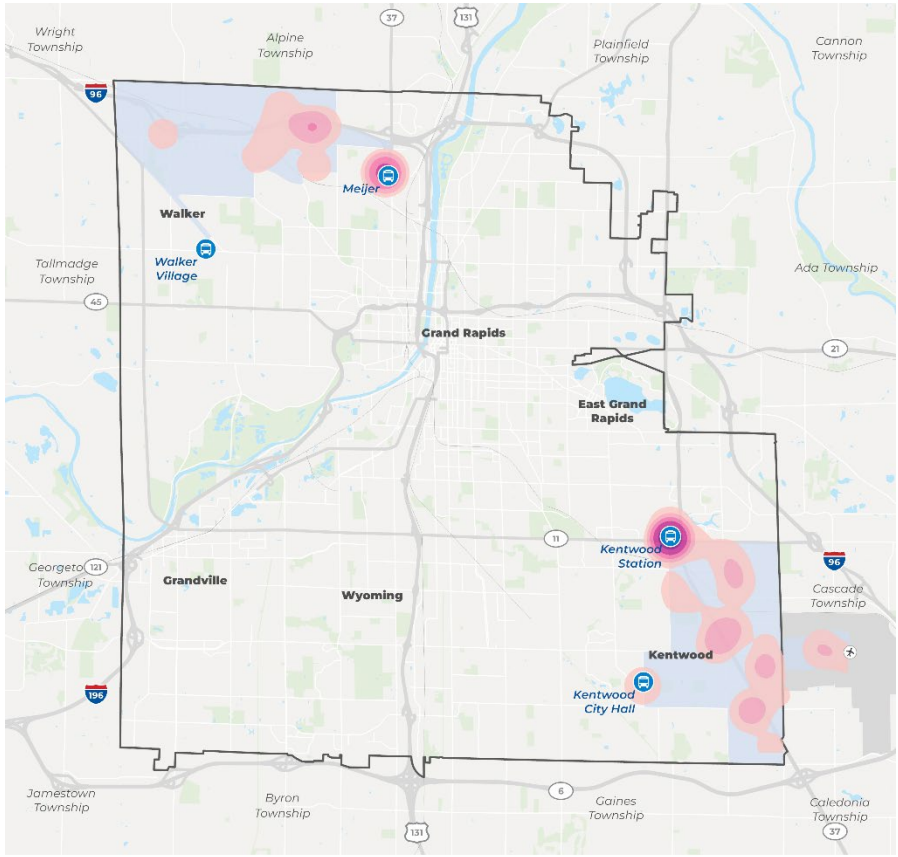


Rapid Connect Pickups (2022)

ITP Member Communities
Rapid Connect Service Areas
Pickup/Dropoff Hub

Pickup Locations
Fewer
More

0 0.75 1.5 3 Miles



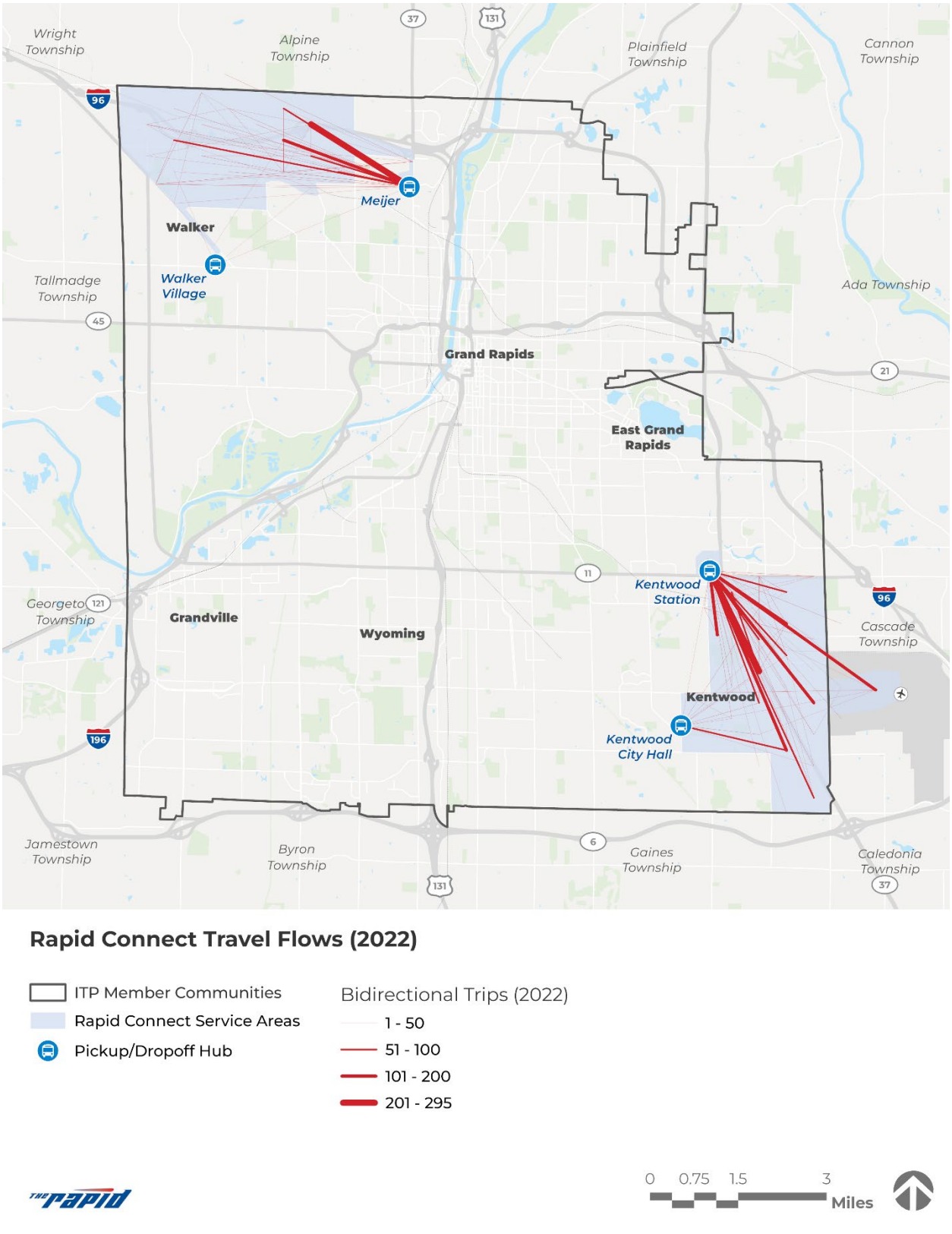
Rapid Connect Drop-offs (2022)

ITP Member Communities
Rapid Connect Service Areas
Pickup/Dropoff Hub

Drop-off Locations
Fewer
More

0 0.75 1.5 3 Miles

Figure 58: Rapid Connect On-Demand Travel Flows (2022)



Source: The Rapid, Rapid Connect Archive Trips file generated January 5th, 2023

Performance Assessment

This section assesses the Rapid Connect service performance by evaluating and summarizing ridership and trip length/duration trends as well as wait time, productivity, and cost effectiveness metrics. Table 20 summarizes Rapid Connect performance metrics for Fall 2022 (first quarter of FY2023).

Table 20: Summary of Rapid Connect Performance Metrics (October - December 2022)

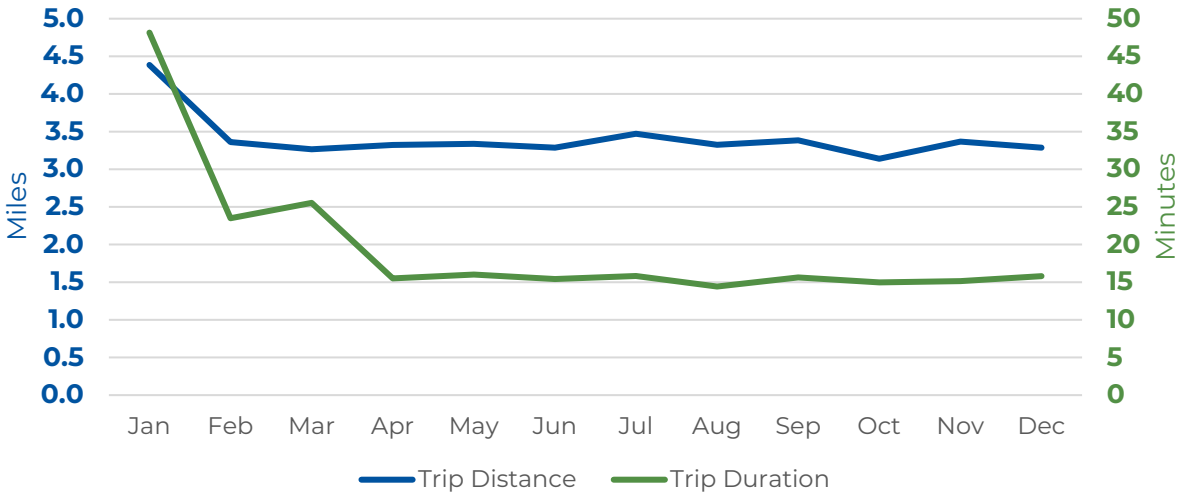
Metric	Value
Ridership	1,981
Cancelations	10%
No-Shows	4%
Passengers per Revenue Hour (PPH)	1.8
Passengers per Revenue Mile (PPM)	0.3
On-Time Performance*	86%
Average Customer Wait Time	3 minutes
Operating Cost per Passenger	$61.80
Operating Cost per Revenue Mile	$9.85

Source: The Rapid
**On-time defined as arriving to the pick-up location less than 5 minutes late*

Trip Characteristics

In the first three months of operation, the average Rapid Connect trip was between about 3.0 to 3.5 miles in length but took more than 25 minutes from pickup to drop-off (Figure 59). Since March, however, trip lengths have stabilized at about 3.25 miles while average trip durations have improved to just 15 minutes per trip. Overall, most scheduled Rapid Connect trips are completed with 4% of trips being canceled while 10% were no-shows.

Figure 59: Rapid Connect Trip Distance and Duration Trends (2022)

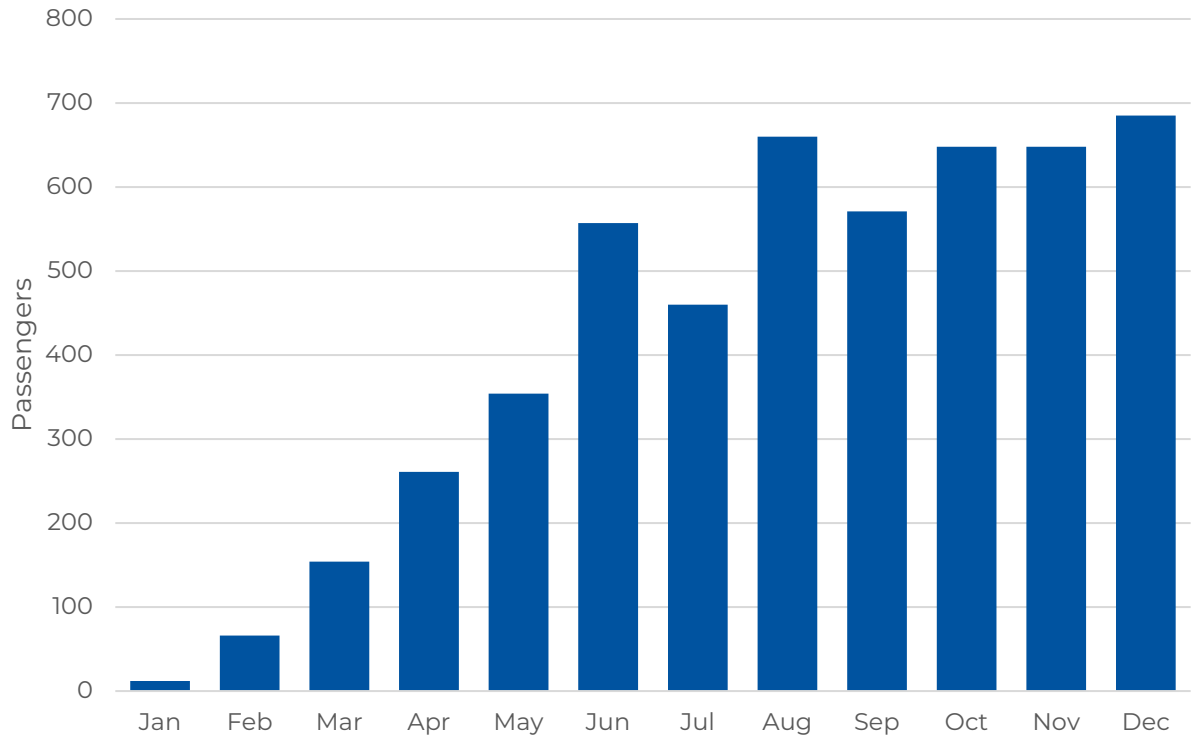


Source: The Rapid, Rapid Connect Archive Trips file generated January 5th, 2023

Ridership

In 2022, nearly 5,100 passengers, across approximately 4,800 trips, utilized the new Rapid Connect service. From its inception in January 2022 through June 2022, monthly ridership steadily increased from just 12 passengers per month to more than 550 in June. Following a brief decline in July, monthly ridership stabilized in the latter half of 2022 averaging between 600 to 700 passengers (Figure 60).

Figure 60: Rapid Connect Ridership Growth (2022)



Source: The Rapid, Rapid Connect Archive Trips file generated January 5th, 2023

Service Effectiveness

Like fixed route bus service, Rapid Connect service effectiveness (productivity) is measured by passengers per revenue hour (PPH) and passengers per revenue mile (PPM). Between October and December 2022, the combined Rapid Connect system (Walker Zone plus Kentwood Zone) served an average of 1.8 passengers per hour and 0.3 passenger per mile, significantly lower than the average fixed route bus productivity of 16.2 passenger per hour and 1.4 passengers per mile in October 2022. In general, the Kentwood Zone is slightly more productive than the Walker Zone as it serves an additional 0.34 passengers per hour (1.05 versus 0.71) and a comparable number of passengers per mile (0.31 versus 0.31).

Reliability

On average, Rapid Connect trips have similar reliability to fixed route trips as 86% of October-December 2022 Rapid Connect trips were on-time compared to the average fixed route which had an on-time performance of 84%-91% in Fall 2022. Wait times are very short for Rapid connect customers with the average customer waiting just 4 minutes, well below the target of 15-minute or less wait times. Overall wait times are slightly shorter for the Kentwood Zone than then Walker Zone (4 minutes versus 6 minutes).

Cost Effectiveness

Operating Cost per Passenger

Between January 2022 and February 2023, Rapid Connect services cost an average of $61.80 per passenger. This is in stark contrast to fixed route services where directly operated routes have an average cost of $7.09 per passenger and contracted routes cost $3.64 per passenger. Rapid Connect services are significantly more expensive than fixed route even when compared to the FSU Shuttle ($35.74) and Route 27 – Airport Industrial ($12.23), the costliest contracted and directly operated fixed routes in October 2022.

Operating Cost per Revenue Mile

Between January 2022 and February 2023, Rapid Connect services cost an average of $9.85 per revenue mile. Like the cost per passenger metric, Rapid Connect's cost per revenue mile is higher than average fixed route services. The difference in costs between the two services, however, is much smaller as directly operated routes have an average cost of $7.20 per revenue and contracted routes cost $7.93 per revenue mile. On a cost per revenue mile basis, Rapid Connect services are less costly than three fixed routes all of which are contracted services: GRCC Shuttle ($24.77/revenue mile), DASH West ($12.93/revenue mile), and the GVSU Apartment Connector ($10.09/revenue mile). Notably, Route 27 which has significant overlap with the Kentwood Rapid Connect Zone cost $6.15 per revenue mile in October 2022, $3.70 per revenue mile less than Rapid Connect.

Passenger Adaptive Suburban Service (PASS)

The Rapid's Passenger Adaptive Suburban Service (PASS) is a suburban feeder shuttle that transports passengers within the ITP-member communities from their curb to The Rapid's fixed route bus system. PASS services are not offered within the downtown Grand Rapids area bounded to the north by Leonard Street NE, to the east by Fuller Ave NE, to the south by M.L.K. Jr St SE and to the west by Alpine Ave NW. PASS fares are $3.50 and include a transfer to the fixed route system. Passengers must have exact change or purchase a PASS ticket in advance.

Operating Hours:
Weekdays: 5:15 AM – 11:45 PM
Saturdays: 8:00 AM – 9:45 PM
Sundays: 8:00 AM – 7:00 PM

Fare Structure:
$3.50 per trip*

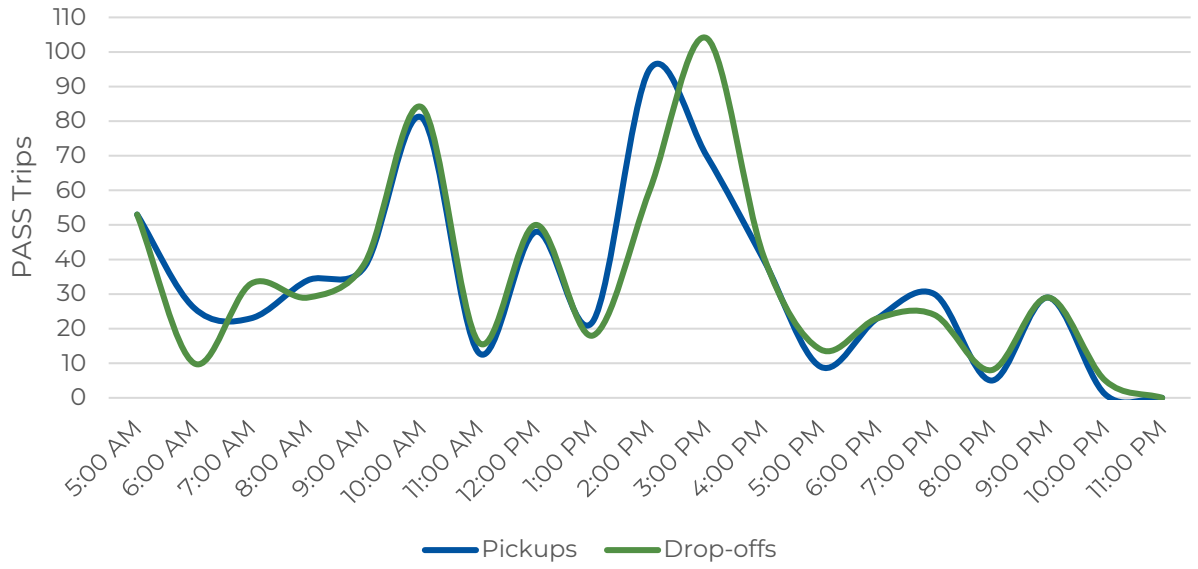
**Includes a transfer to bus routes*

In order to use PASS services, passengers must first register for PASS edibility. The only eligibility requirement is that the passenger's origin, destination, or both, must be at least one-third of a mile off a bus route. After PASS Eligibility has been granted passengers book a trip by calling The Rapid no later than 4:30 PM the day before the trip and no sooner than 15 days in advance. Ride scheduling is first-come, first-served.

Trip Characteristics

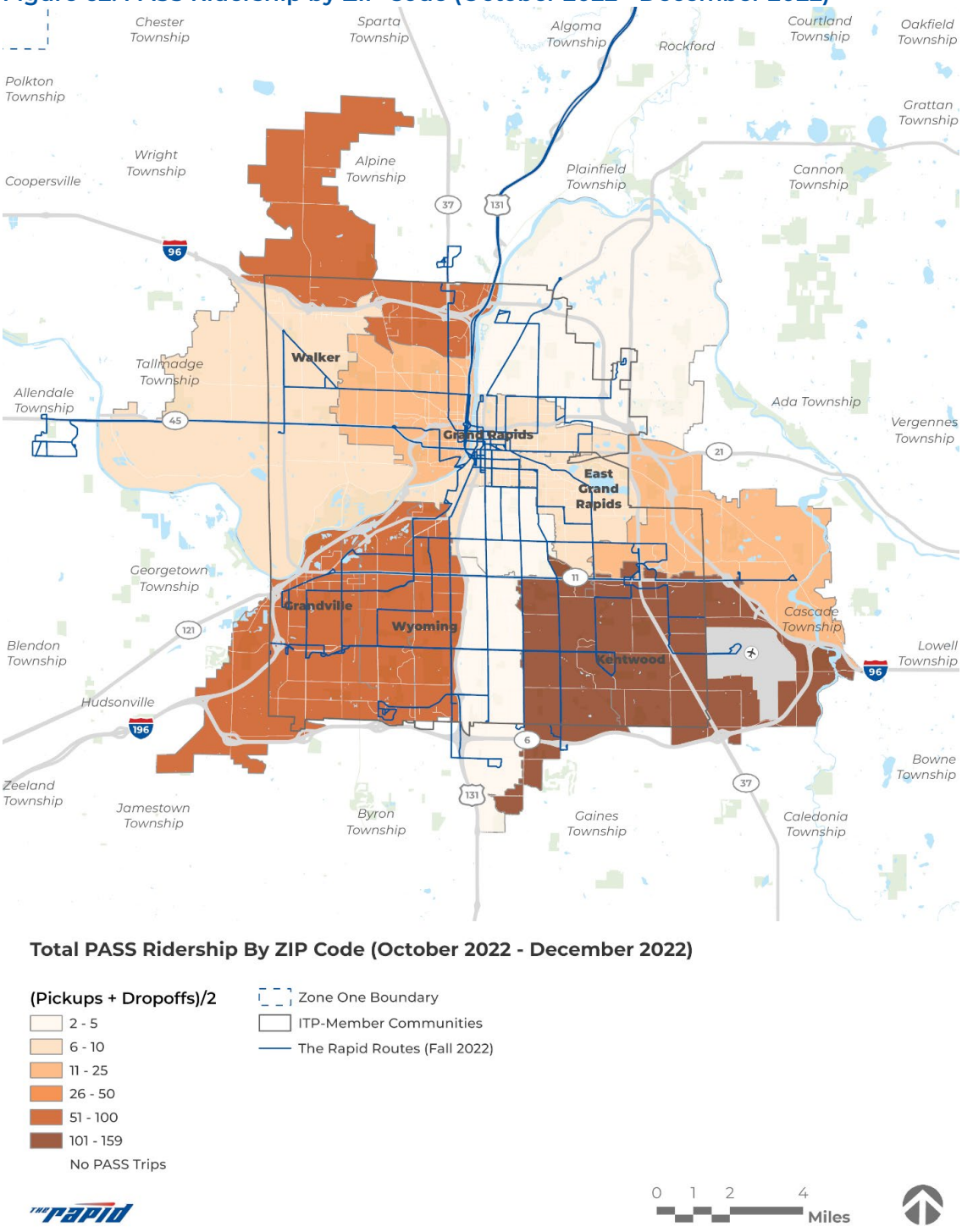
Between October 1, 2022, and December 31, 2022, a total of 640 PASS trips were provided. PASS trips averaged about 3.3 miles in length with an average duration of approximately 14 minutes from reported pick-up to drop off times. Although PASS service is offered on weekends, 96% of trips were taken on weekdays. PASS trips were more common in the early part of the week, peaking at an average of 12 trips per Tuesday before declining throughout the rest of the week down to an average of 8 trips per Friday and two per Saturday. As depicted in Figure 61, Weekday PASS trip pickups and drop-offs are heavily peaked during the 10:00 AM and 3:00 PM hours.

Figure 61: Weekday PASS Trips by Time of Day (October 2022 - December 2022)



As shown in Figure 62, the majority of PASS ridership[29] activity occurs in the southeast portion of the ITP-member communities (ZIP Codes 49508 and 49512) in and around Kentwood where fixed route densities are less prevalent. Other concentrations of PASS activity are in the southwest and northwest corners of the ITP-member communities.

Figure 62: PASS Ridership by ZIP Code (October 2022 - December 2022)



Source: The Rapid, PASS Archive Trips file generated June 2, 2023

[29] Note: Ridership calculated as the total number of pickups plus the total number of drop offs, divided by two

Go!Bus Paratransit Service

The ADA (Americans with Disabilities Act) requires transit agencies to provide comparable services to fixed route service for users with disabilities that prevent them from using the fixed route buses.[30]

Metrics
October – December 2022

- **On-Time Performance:** 53%*
- **Operating Cost per Passenger:** $40.19
- **No-Shows**: 3%
- **Cancellations**: 5%

**On-time defined as arriving to the pick-up location less than 15 minutes late*

Go!Bus is a door-to-door ADA paratransit service intended to provide this comparable level of transportation to The Rapid's fixed route buses. Go!Bus service is provided within the 180 square mile service area and provides rides even if a fixed route service isn't offered in that area. Riders traveling generally in the same direction and time share the same trip. Individuals with disabilities must apply through a written application process to receive eligibility. Paratransit service is provided to "any individual with a disability who is unable, as the result of a physical or mental impairment (including a vision impairment), and without the assistance of another individual (except the operator of a wheelchair lift or other boarding assistance device), to board, ride, or disembark from any vehicle on the system which is readily accessible to and useable by individuals with disabilities."[30]

Go!Bus service is available during The Rapid's regularly scheduled bus service. For weekdays, the earliest trip can be scheduled at 5:00 AM but all trips must be completed no later than 10:10 PM. Saturdays offer the earliest time slot at 5:13 AM with the last trip completed by 7:20 PM, while Sunday has the earliest trip at 7:00 AM and last at 7:20 PM. For Grand Valley State University, Go!Bus times change according to the University's schedule to offer students rides to and from campus. All reservations must be made by 4:30 PM the day before. Services are not available on New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas Day, in addition to same day reservations.

Trip Characteristics

Between October 1, 2022, and December 31, 2022:

- Nearly 43,200 Go!Bus trips were completed.
- The most common trip purposes were rides to work (45%), other (16%), recreation (8%), and shopping (7%).
- The average operating cost per Go!Bus passenger was $40.19, about 5.7 times higher than the directly operated (non-contracted) fixed route average of $7.09 but approximately two-thirds the Rapid Connect operating cost per passenger of $61.80.
- GO!Bus on-time performance (53%) was markedly lower than for the average fixed route (84%-91%) and Rapid Connect (86%) services. More recent data from January – June 2023 indicates that while Go!Bus on-time performance continues to be relatively low (77%), it is becoming more comparable with fixed route and Rapid Connect services.
- Go!Bus trips had comparable cancelation rates with Rapid Connect services (5% versus 4%) but significantly lower no-show rates (3% versus 10%).

[30] Source: Go!Bus Guide, The Rapid, 2019

Fares and Ticketing

Fares for Go!Bus services must be paid when boarding the vehicle, either in exact cash or with the correct ticket as Go!Bus does not utilize the Wave Card. Tickets are sold online on The Rapid website. The following one-way fares are for qualified riders and their companions:

- ADA-eligible individuals with disabilities: $3.50
- Companion for ADA-eligible individuals with disabilities: $3.50
- Non-disabled individuals over 65: $8.00
- Companion for non-disabled individuals over age 65: $8.00
- Personal care attendant (PCA) may travel with an ADA-eligible passenger at no charge
- Service animals may ride with passengers at no cost

Go!Bus tickets can also be purchased for $35 dollars for a total of ten tickets, while tickets for disabled senior citizens can book a total of four for $32. In addition to purchasing online tickets, riders can also purchase tickets at D&W food stores, Meijer stores, and Rapid Central Station.

CONCLUSION

SWOT Assessment

Based on the key findings of the previous sections of this report, strengths, weaknesses, opportunities, and threats were identified for The Rapid in Table 21. This SWOT Assessment includes both internal elements specific to The Rapid as well as externalities which impact the environment in which The Rapid operates. Definitions for each type of factor are outlined below.

- **Strengths** are available and valuable assets of The Rapid's existing conditions that should be preserved or improved on.
- **Weaknesses** are drawbacks or short-term challenges of The Rapid's existing conditions that need to be addressed so they do not cause long-term problems.
- **Opportunities** are long-range positive trends affecting The Rapid as well as the positive paths it may follow.
- **Threats** are long-term weaknesses that can undermine attempts to meeting The Rapid's goals.

Table 21: SWOT Assessment

	STRENGTHS	WEAKNESSES
Community	Broadly shared prioritization of improved regional transit connectivity and broadly shared support for maintaining and expanding transit services Momentum built for investment and paradigm shifts through current coordinated jurisdictional planning efforts and State government Compared to Grand Rapids metro regional averages, The Rapid provides service to areas with greater concentrations of people who are a minority race/ethnicity, are in poverty, or live in zero-vehicle households	Lack of awareness of The Rapid and the transportation options it provides amongst the community Mismatch between residential density and employment density locations (people don't live near where they work)
Growth	Have established agreements with targeted locations outside the ITP-member communities to provide transit service to various institutions and key employment, shopping, and residential activity centers in adjacent townships	Recent and planned urban growth is mostly in outlying areas instead of the urban core, exacerbating pressure on limited resources Current operating funding limitations preclude The Rapid's ability to sustain existing services and expand services to accommodate regional growth both within and outside the current service area
Convenience	Have implemented two BRT lines Have implemented streamlined route design on-demand service within two major employment centers based on COA recommendations. Have invested in more frequent routes. Have partnered with third party trip planning applications to help new and existing customers better understand traveling by bus Pay-as-you-go fare capping system allows passengers to receive unlimited subsequent rides for free after hitting Single-day and/or calendar month fare caps	Long travel times and low frequencies make transit a much less convenient option than traveling by personal vehicle Insufficient weekend service (system is heavily reliant on weekday ridership) Go!Bus ticketing system and on-time performance The majority of existing bus stops do not have amenities such as shelters or benches or real-time arrival signage and displays.

Workforce	Strong leadership with proven track record of transit investment, commitment to safety, equity, and sustainability. Strong technical staff exist to plan and implement transit investment strategies.	Demand for transit service is greater than human resources can supply (nationwide driver shortage) Current vacancies as presented in the organizational chart Sufficient levels of operations and maintenance staff to provide future levels of service.
Adaptability	Applied lessons learned from the Silver Line to the Laker Line Already using smart cards and contactless payment for fares Implemented microtransit service after the last COA Have adopted a Climate Action Plan and Zero Emissions Bus Plan	Outside externalities including supply chain constraints and the lack of widespread industry adoption of zero-emission and autonomous vehicle technologies limit The Rapid's current ability to implement emerging vehicle technologies at a large scale The Rapid's ability to alter service in reaction to newly emerging demands is limited by The Rapid's current Collective Bargaining Agreement which precludes The Rapid from altering service outside of the three established periods (late August, early January, mid-May) Operating funding constraints limit The Rapid's ability to adapt and add new service
	OPPORTUNITIES	**THREATS**
Community	Increasing community awareness of The Rapid and the transportation options it provides Developing new partnerships with outlying areas to expand service and generate new revenue Potential for new West Michigan Express Service that will support and strengthen the core system and expand the network. Opportunity for stronger coordination with local area municipalities when planning for future growth	Potential general lack of understanding and support of the value and relevance of transit amongst the community may impede growth Broader community may be unaware of transit investment and expansion's return on investment for the entire community Community support may be negatively impacted if The Rapid is unable to provide new and/or expanded services outside the six-city are due to funding, policy, and workforce constraints

Growth	Expanding transit service into new areas, including in Ottawa County Continued investment in productive and frequent routes in the core system. Identifying Equitable Transit Oriented Development (ETOD) projects such as dense and affordable housing and matching the service to the travel patterns of these communities.	Cannot rely on current level of federal operating assistance; economic recovery from the COVID pandemic will reduce this funding Additional local and/or state operating funding is needed to support existing and expanded transit services into the future Growth in outlying areas has potential to exacerbate the issue of demand for service outstripping available resources Unknown travel patterns in a post-COVID era. Displacement of existing populations to suburban/exurban areas who utilize transit services will require additional resources to provide commensurate levels of service. Current internal governing policies requiring funding from outside entities to fund expanded service levels outside the six-city area limits the ability to respond to growing service demands and relying on outside funding may not be sustainable and reliable in the future.
Convenience	Building on successful innovation with additional BRT lines and Rapid Connect zones More transit-supportive land uses and walkable urban design are planned for the future Increasing the share of jobs and residences that can walk to a bus stop Potential to improve service reliability and convenience by implementing variable scheduling, enhanced transit signal priority, dedicated lanes, and/or increasing real-time information availability Continuously expanding the availability of technologies and amenities for improved customer experience	Tradeoff between coverage and frequency as the region grows and outlying areas demand new transit service if no new operating sources are identified As growth and congestion occur throughout the region, The Rapid's ability to provide reliable, timely service may be impaired if transit supportive infrastructure such as dedicated lanes or enhanced transit signal priority are not implemented

Workforce	Long-term planning for the kinds of departments and skillsets that will be needed into the future will be conducted through this TMP process	Challenge in transferring current skills and organizational structure to accommodate new and/or innovative roles and initiatives (*e.g.,* automation, zero-emission transition, TOD/real estate/joint development opportunities) Limited number of existing administrative staff impairs The Rapid's to pursue, manage, and implement grant opportunities will hinder The Rapid's ability to achieve desired outcomes. Limited existing administrative staff capacity reduces The Rapid's ability to conduct outreach and provide timely communications to bring awareness to newly-implemented services.
Adaptability	Continued monitoring of emerging and proven vehicle technologies across the industry Future collaboration to extend micromobility services to other jurisdictions in tandem with Rapid Connect to achieve desired outcomes and service effectiveness	Future technologies may worsen existing transportation challenges or contribute to new ones if not planned for or adapted to effectively Not addressing the aforementioned weaknesses will cause The Rapid to stagnate

APPENDIX A: COMPOSITE SCORE METHODOLOGY

Breakpoints used to develop the composite indices for *Existing Transit Demand, Composite Transit Propensity Index,* and *Composite Trip Generation Potential Index* are detailed below.

Existing Transit Demand Index

As highlighted in the *Transit Demand* section, the existing transit demand index is developed based on two measures: (1) existing population density from 2021 ACS 5-year estimates, and (2) existing employment density from the most recent 2019 LEHD LODES dataset. The index utilizes breakpoint thresholds outlined in The Rapid's recent Comprehensive Operational Analysis (COA) published in 2021 and reproduced below in Table 22 to indicate what levels of transit service may be supported throughout the Zone One Study Area for each of these two metrics. The composite transit demand index is calculated as the maximum (most frequent) level of transit service that could be supported by the existing population or employment density in each block. For example, a block group with a population density of 10 persons per acre (supportive of 60-minute fixed route service) but an employment density of 17 jobs per acre (supportive of 15 minute or better fixed route service), would have a "15 minutes or better" composite transit demand index.

Table 22: Transit Supportive Population and Employment Density Thresholds

Service Frequency	Population per Acre	Employment per Acre	Buses Per Hour
Very low demand	Less than 2.5	Less than 2	0
Less than 60 minutes	2.5 – 8	2 – 4	0.5
60 minutes	8 –16	4 –8	1
30 minutes	16 – 31	8 – 16	2
15 minutes or better	More than 31	More than 16	4 or more

Composite Transit Propensity Index

As introduced in the *Transit Propensity* section, a block group's composite transit propensity index reflects the combined scores of eight equally weighted population/household characteristics. Each characteristic was grouped into five categories based on naturally occurring breaks in the Zone 1 data. For legibility, these breakpoints were typically rounded to the nearest 1,000 for large values or nearest 50 for smaller values. In limited instances where this rounding produced categories of nearly equal range (*i.e.,* each category increases by 200 in value) these equal steps were used. Each of the block group's eight characteristics were scored from 1 (lowest propensity) to 5 (highest propensity) and then summed together to produce a composite index with a maximum possible value of 40. Breakpoints for each characteristic are presented below in Table 23. Based on the distribution of block groups total propensity score, block groups were categorized into five composite groups with from "Very Low" to "Very High" transit propensity.

Table 23: Composite Transit Demand Index Scoring Methodology

Component	Greater Than	Less Than or Equal To	Associated Score	Max. Possible Score
Minority Density *(Persons per Sq. Mi.)*				**5**
	0	1,000	1	
	1,000	3,000	2	
	3,000	5,000	3	
	5,000	9,000	4	
	9,000		5	
Young Adult Density *(Persons per Sq. Mi.)*				**5**
	0	200	1	
	200	600	2	
	600	1,400	3	
	1,400	3,000	4	
	3,000		5	
Senior Density *(Persons per Sq. Mi.)*				**5**
	250	500	1	
	500	1,000	2	
	1,000	2,000	3	
	2,000	4,000	4	
	4,000		5	
People With Disabilities Density *(Persons per Sq. Mi.)*				**5**
	0	100	1	
	100	200	2	
	200	400	3	
	400	600	4	
	600		5	
Low-Income Populations Density *(Persons per Sq. Mi.)*				**5**
	0	250	1	
	250	1,000	2	
	1,000	2,000	3	
	2,000	4,000	4	
	4,000		5	
Zero-Vehicle Household Density *(Households per Sq. Mi.)*				**5**
	0	100	1	
	100	250	2	
	250	750	3	
	750	1,500	4	
	1,500		5	
Rental Unit Density *(Housing Units per Sq. Mi.)*				**5**
	0	250	1	
	250	1,000	2	
	1,000	2,000	3	
	2,000	3,500	4	
	3,500		5	
Existing Transit User Density *(Persons per Sq. Mi.)*				**5**
	0	50	1	
	50	150	2	
	150	300	3	
	300	600	4	
	600		5	

Composite Trip Generation Potential Index

As defined in the *Trip Generators* section, the trip generation potential index is composed of three individual metrics at the block-group level: the degree of existing and future (master plan) high intensity land uses most supportive of transit and the density of activity centers. Like the composite transit propensity index, each of these three metrics were grouped into five categories based on naturally occurring breaks in the data (Table 24).

Table 24: Composite Transit Generation Potential Index Scoring Methodology

Component	Greater Than	Less Than or Equal To	Associated Score	Max. Possible Score
Existing Land Use ***(% High Intensity Transit Supportive Uses)***				**5**
	0%	10%	1	
	10%	25%	2	
	25%	40%	3	
	40%	70%	4	
	70%		5	
Future (Master Plan) Land Use ***(% High Intensity Transit Supportive Uses)***				**5**
	0%	10%	1	
	10%	30%	2	
	30%	50%	3	
	50%	80%	4	
	80%		5	
Activity Center Density ***(Activity Centers per Sq. Mi.)***				**5**
	0	2	1	
	2	5	2	
	5	10	3	
	10	20	4	
	20		5	