METRO TRANSIT MASTER PLAN

Final Plan

Submitted to:
METRO RTA

Submitted by:
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Chapter 1 Executive Summary

METRO and Summit County are at a critical juncture in terms of growth and development and how residents interact with jobs and activities. A single generation has seen a dramatic shift in travel patterns. Before the 1960s the transportation system was oriented to bringing people to jobs and shopping opportunities in downtown Akron and the industrial belt that surrounded it. Since the 1960s the Summit County transportation network has been transformed into a grid of highways supporting an "everywhere-to-everywhere" travel pattern. The result has been a long-term bleeding of jobs and people from Akron's core. And not surprisingly, METRO ridership has suffered.

And yet, it is at this point in history where METRO has great opportunity. In 2008 the agency passed an additional 0.25% sales tax that has boosted its revenues and provided an opportunity to enhance public transportation in the region. The "Great Recession" that began in 2008 brought a halt to development in the Summit County area, slowing to a trickle the stream of residents and jobs from the inner areas of Akron to outer urban and suburban neighborhoods.

So, what can METRO do to seize this opportunity? This 20 Year Transit Master Plan was conducted in order to answer that very question. The purpose of this Transit Master Plan was to make transit recommendations while examining the broader market context in which METRO will be operating over the next 20 years.

The plan has six chapters that each represents a key step in the development of the Transit Master Plan. The first three chapters represent an analysis of existing and projected conditions within Summit County. The final three chapters work through recommendations for the METRO system.

Chapter 2 Public Involvement details the meetings and outreach conducted in developing the recommendations. Input from the public (both riders and non-riders) as well as other stakeholders, helped solidify METRO's priorities for the next twenty years. Comments received generally expressed satisfaction with the performance of the transit system and transit facilities, with some requests for additional service. Inner city residents complained of overcrowding on their buses, while suburban leaders asked for more service to their growing commercial and industrial areas.

Chapter 3 Existing Conditions is an analysis of METRO's existing transit system and the existing demographics of Summit County. These set the baseline from which recommendations for future services were made. Demographically, Chapter 3 showed that development patterns, population and employment densities and concentrations of demographic groups that are most likely to use transit are located in the Akron-Cuyahoga Falls-Barberton core of the region. Chapter 3 also showed some potential issues with the existing transit service, including unproductive service on several routes and a high cost per revenue hour for the system compared to other similar sized agencies in the Industrial Midwest.

Chapter 4 Future Conditions is an analysis of potential future conditions and is divided into two parts. The first is an assessment of projected demographics that shows the expected change in the region if development patterns remain as-is. These projected growth patterns (established before the Great Recession) show a continued outward march of population and jobs into the second ring suburbs of Stow, Hudson, Bath Township, Norton, and Copley. The second section is a transit propensity analysis that uses Summit County's regional travel demand model to predict where transit ridership may increase if services are provided in the future. The results of this analysis show the potential for local travel in growing areas like Fairlawn-Copley as well as crosstown travel between southeast and southwest Akron.

Chapter 5 Transit Network Development is the first chapter that deals with the plan's recommendations. This chapter makes transit recommendations based on three land use scenarios, *Back to the City*, *Suburban Villages*, and *Business as Usual*. *Back to the City* assumes new jobs and population collect within the city of Akron and transit recommendations are concentrated within the Akron core. *Suburban Villages* assumes a balanced development pattern between suburban TOD sites and the city of Akron. Transit recommendations for Suburban Villages are balanced between the core and the developing portions of Summit County. Finally, *Business as Usual* assumes development continues to move outward within Summit County, with transit improvements focused on serving these residents as they move further and further from the core.

Chapter 6 Recommended Transit Network focuses on the transit recommendations from the Suburban Villages land use scenario, which was the land use scenario selected by METRO staff. The recommendations from Chapter 5 are described in greater detail, including capital and operating cost estimates for all recommended portions of the plan. Key recommendations include upgrading several existing METRO routes to 15 minute peak period service, implementing a "BRT-type" Premium Transit Corridor service on five corridors in the Akron core, developing transit centers at suburban village locations, and developing three commuter rail corridors.

Chapter 7 Implementation and Financial Analysis compares the costs for the Transit Master Plan improvements described in Chapter 6 to METRO's financial resources and other likely sources of funding. The chapter actually includes three financial scenarios, one with full implementation without additional revenues, a second with partial implementation without additional revenues, and a third with full implementation and additional revenues. These scenarios were developed because the twenty year local cost of the full recommended Transit Master Plan is $135 million, which far exceeds the amount of funds that METRO is likely to have available over the next twenty years, assuming current funding programs and levels.

Returning to the original question, "What can METRO do to seize this opportunity?" the Transit Master Plan answers with a clear vision in which Summit County residents begin to adapt to a new way of living, working and traveling in the 21st Century. The plan recommends a future in which development is balanced between key suburban areas with redevelopment in some of Akron's most dynamic corridors. Such a development pattern would create "suburban villages" in the center of Akron's fastest growing suburban areas, while revitalizing some of Akron's vibrant, historic neighborhoods. METRO's transit services and infrastructure would be implemented to take advantage of and support these new, pedestrian friendly and transit supportive development patterns. The result would be a better integration between the transportation system and the land uses that it serves, with METRO transit services providing a viable, even preferable alternative to the automobile for a far greater percentage of the population, and would provide new higher density, walkable neighborhoods, work-live space and other new housing types that will help the Akron area attract the young, educated workforce it needs to continue its development in the 21st Century.

Chapter 2 Public Involvement

Two rounds of public meetings were held throughout Summit County in order to gather opinions and receive input from residents, businesses, community leaders, and METRO transit riders to find out how METRO could better serve the City of Akron and Summit County. This chapter summarizes the findings of the public involvement process that aided in the development of this master plan and addresses four primary components including: notes from the public meetings, stakeholder interviews, and the results of a mail-back survey and an employer survey.

Public Meetings

The consultant team held two rounds of public meetings for the master plan. The first round of public meetings consisted of six sessions and locations were carefully selected to represent different geographic areas of the county; all locations were public venues and with transit access. The sessions were as follows:

- May 25, 2011 at the Akron Transit Center from 8am to noon.
- May 25, 2011 at the Chapel Hill Mall from 1pm to 5pm.
- May 25, 2011 at the Main Summit County Library from 6pm to 8pm.
- May 26, 2011 at the Barberton Library from 10am to noon.
- May 26, 2011 at the Cuyahoga Falls Natatorium from 1pm to 3pm.
- May 26, 2011 at the Twinsburg City Hall from 6pm to 8pm.

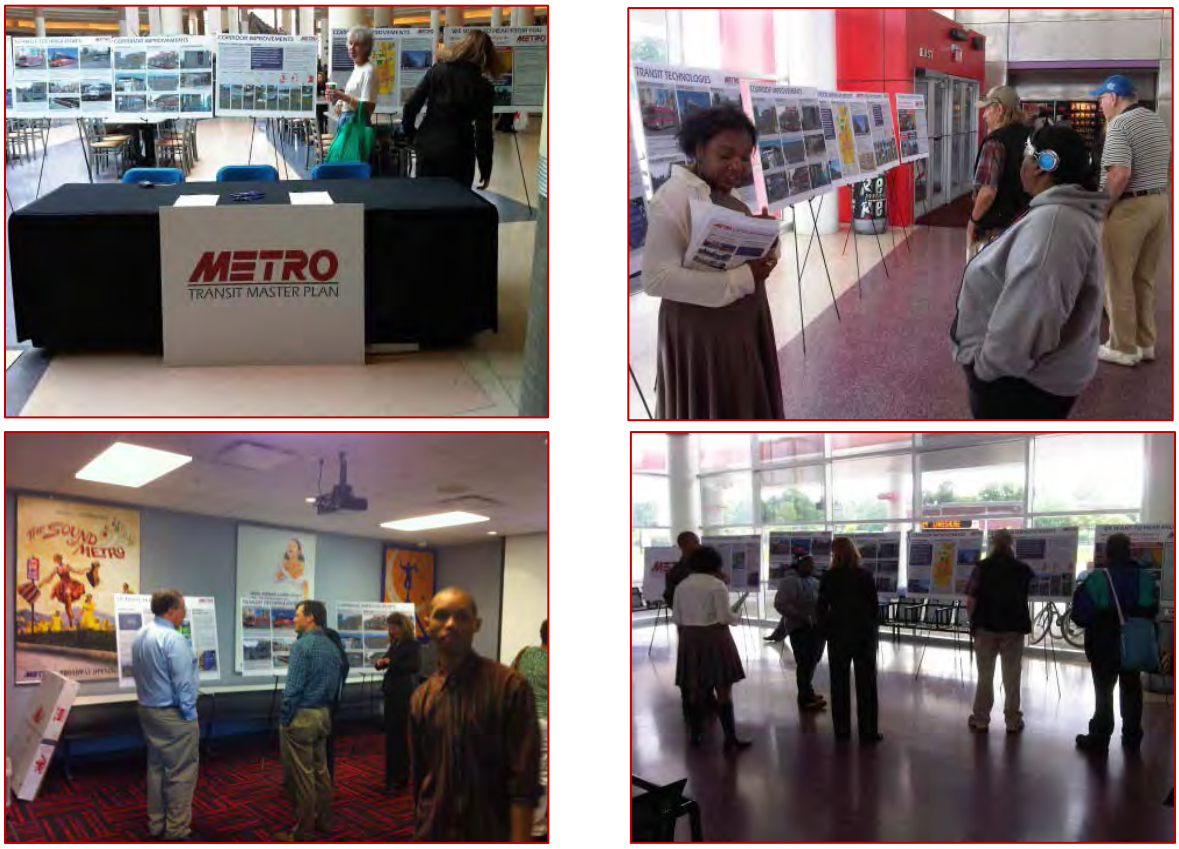
Meetings were advertised through a number of media including press releases, METRO's website and other links to other websites and notices posted on buses. The focus of the first round of public meetings included:

- Purpose of the master plan and its process;
- Review of transit technologies including: queue jump, transit signal priority, smart cards, and NextBus technology and what they mean from the perspective of users;
- Review of express transit services, including limited stop bus, express bus, rapid bus, bus rapid transit, light rail, and commuter rail;
- Review of transit oriented development (TOD), including the Transit-Land Use Connection, the definition of TOD, the Six Elements of TOD, and TOD Community Benefits;
- Review of corridor-based amenities, including bus shelters, branding (image), and other amenities such as shelters, bike kiosks and lockers, and electronic signage in shelters.

The consultants were responsible for engaging the public at each meeting in a visioning exercise that targeted on the role of METRO's future and led to a concluding discussion on where METRO should focus its resources in the next 20 years. The consultant team fielded a series of questions and comments which generally focused more on transit service than the more advanced transit oriented development concepts. The images in Figure 2-1 below were taken from the first round of public meetings.

Presentations and materials used for the first round of public meetings can be viewed in Appendix A.

Figure 2-1: METRO Transit Master Plan Public Involvement Meetings – Round 1



The second round of public meetings consisted of three sessions, which were held four months after the conclusion of the first round of meetings. The second round of sessions was as follows:

- September 14, 2011 at the Akron Transit Center from 2pm to 4pm.
- September 14, 2011 at the Barberton High School from 6pm to 8pm.
- September 14, 2011 at the Twinsburg City Hall from 6pm to 8pm.

The second round of public meetings was set-up to garner feedback from the proposals and scenarios that evolved from the first round of public meetings as well as input from analyses of demographics, employment, existing conditions, and transit propensity for the City of Akron and Summit County. With these data from background analyses, the second round was set-up to gather responses on three illustrative scenarios that would provide feedback on how METRO would serve the residents and riders of the city of Akron and Summit County and determines the recommendations that would ultimately be included in the master plan. The format was similar to the first round of meetings where display boards were set up in a viewing area showing the information being presented. The meetings began with a brief review of the information presented during the first round of meetings. Then, the consultant team facilitated a presentation that introduced the three illustrative scenarios that centered on alternatives for development for the county. These were the following:

- Scenario 1: Back to the City

- Scenario 2: Suburban Villages
- Scenario 3: Business as Usual

This was followed by a question and answer session that provided an opportunity for participants to comment on the presentation and scenarios. Public input indicated no specific preference but general appreciation for elements of all three scenarios. Key elements were extracted are included below in the following representative comments:

- Please focus on better serving employment locations. Not only are worker most inclined to transit, this presence expands opportunities for non-riders and raises market share.
- Go north! We need more routes, more coverage at bus stops at high schools or casino near Northfield.
- Great presentation and projection into the future!
- Keep option open to coordinate with adjacent county transit providers (i.e. Cleveland RTA, Medina County Transit) to truly create a regional transit network.
- Create routes to get workers to industrial areas; create routes to enable people to further their education.
- Create a multiple hub system to move people through zones more effectively.

Presentations and materials used for the second round of public meetings can be viewed in Appendix A.

Stakeholder Interviews

A major component of the public involvement process is interviews with individuals who are believed to be stakeholders in METRO. The purpose of these interviews was to gather input from a different perspective from the community. The interviews allow METRO to be better positioned to use its fiscal resources to better serve the organizational and business stakeholders. These include representatives of agencies and organizations such as:

- City of Akron
- Greater Akron Chamber of Commerce
- SCATS
- Akron Area Board of Realtors
- Stark Area Regional Transit Authority
- Summit County
- County of Summit MRDD
- Summit County Township Association
- Akron-Canton Airport
- United Way of Summit County
- Downtown Akron Partnership
- AMATS
- Akron Public Schools

These individual/stakeholder interviews were held in June 2011. Throughout the remainder of 2011, the consultant team had additional discussions with staff and other stakeholders, as identified along the process to supplement the master planning process.

Table 2-1 presents a summary of the findings through these interviews. As an overview, the people interviews had very positive views of METRO and they offered a number of forward thinking ideas. These include building on the relationship between the current bus system and the existing and/or available rail corridors that could link major cities in northeastern Ohio, more emphasis on the area's trail network to increase overall transportation access, and development of urban living to counter the existing sprawling trends of development.

Table 2-1: Summary of Stakeholder Interviews

Question	General Observations	Specific Observations
What is your impression of METRO?	• Good/favorable impression • Good community support • Loyal • Awesome • A leader in the community • Buses on time • A pretty good system • Friendly, safe system • Well-run agency	Good job of supporting Akron's downtown core; supports disabled with transportation to work; good, loyal transportation company; new tourist center is fantastic; serves the airport better; experience with *Rebuilding Together Downtown Akron*; Summit DD Board ticket purchase from METRO to distribute to clients; in-house evaluations done for disabled persons; they do all they can to encourage riding; wide variety of riders on board; For the size of the area, it's a pretty good system; repeat riders were noticed and acknowledged—they knew each other; a well-run agency but has challenges with services and hear complaints; all high schools should be served—that is the next target
What are the most pressing needs in your community/ organization for transit?	• Limitations to the service area • Enough transportation supplied • Better connections to suburbs • More service within neighborhoods • Better connection to U of Akron • Many people don't use the transit • More park-and-ride lots • Limited service in northern part of the county • Providing transportation to schools • Medical access • Making critical connections	Two major needs or challenges to the transit region: downtown distribution and limitations of the service area; lack of awareness about the downtown trolley also acts as a limitation; need more connections to places just beyond Summit County like Wadsworth and Kent as well as the need for transit connects to Cleveland for suburbs in the northern part of Summit County; better brochure with directions from Canton to Akron to Cleveland; narrow distribution and topography makes local transportation difficult; supply monthly pass for transfers; physical barriers (highways, railroad tracks, etc.) limit connectivity between neighborhoods; suburban area service is limited because of continued growth; some transportation areas are more oriented toward Cleveland than Akron; a lot of park-and-ride stops at Wal-Mart; many students ride from Akron to Stark State; Gilchrist Rd

		industrial park not served; many people used SCAT for going banking; DD is in a good spot for transportation; no foreseen growth; not enough of a consistent rider base; low-density population; in this area, many feel amenities are too far; METRO may need to help parents get children to school; high unemployment 5-10%; never sure of people's ability to get to places they need to reach; partnering with parents to supply some of the budget for school pick-up
How do you see METRO operating in 10 years?	• Development of a better connection between transit and land use • Developed master plan • Discussion about rail • Currently doing a good job • Not much to change • More inter-urban seamlessness • Regional organization • Economic development • Collaborative	Planning for future land use decisions in the region; working with other local transit studies to achieve successful decisions; laying out master plans for the future; higher gas prices should encourage development; DD will be renewing their 6 year levy; cannot spread web beyond Summit County; the large employers of the region have left and will not return; connection to Cleveland, toward KSU in Portage; more services will be required for baby boomers; regional organization, like Chicago; need to support routes that are serving schools; provide for those who do not have access; to use as a tool for economic development; need to cluster employers; using land development controls; a chance for services linkages
What about 20 years?	• See above • Smaller buses • Supporting more regional connections • Completely different • Collaboration	See above; 2030 land use and transportation plan is on the website; too many variables to determine; METRO could do something with school transportation; absent regionalism; Bath residents do not want to work with Fairlawn and Copley; now is the window for strategic planning; METRO is flexible to changes; electric vehicles or sustainable vehicles; maximizing efficiency and effectiveness; more collaboration as public resources get slimmer

What are your thoughts on Transit Supportive Development Patterns?	• More connections between transit and land use • Transit oriented development (TOD) • Transit hub • Walkable environments • Life for younger professionals • Long range plans • Not in favor of development • No clear development trends • Work force access to transit	Transit hub in the Cuyahoga Valley (no longer being considered, but some stakeholders are still interested); gaining a better understanding of opportunities for transit oriented development (TOD) in the region; walkable environment is a problem in the suburbs; there is slow growth sprawl north of Canton that limits transit opportunities; shows support through development of downtown housing; there are realtors that are banking on this becoming the way of life; people that come from bigger cities are amazed at how much people drive, and how little they walk; would help to retain young professionals in the area; METRO transit hub in Cuyahoga Valley is of continued interest in the community; Bath is almost built out; zoning will not loosen up; Springfield would welcome development; there are pockets of development here and there; may not have the growth to support this kind of development; must pay attention to where the high density projects are located and be sure to include key neighborhoods; should be a player, but not sure how large of a player
What are your thoughts about rail or high capacity transit that will require infrastructure changes? What streets or corridors do you think are most important? What communities should be connected?	• No opinion • Doubt for commuter rail or light rail in the region • Redevelopment and higher capacity services • Suburban transit • Bio Medical Corridor • Akron-Cuyahoga Falls-Kent corridor • I-77 is an important W-S connection for the community • Towpath Trail • No rail	Some have offices in the suburbs and had no opinion of high capacity transit; best solution right now are limited stops, bus and bus rapid transit are the best solutions for Akron; Akron-Cuyahoga Falls-Kent corridor (an old interurban line) has potential for redevelopment; would like to see METRO increase frequencies on high performing routes; TOD discussion for Mahoning Rd; Towpath Trail seen an entertainment, not transportation; used to go to bars; it seems like the right way to go; love the Towpath Trail; look for a 30 minute commute; lose airplanes; low-density areas and would need development density; surprised to see it in the area; travel time is short; could not afford a light rail on Market Street; not getting industries with high employment numbers; the challenge will be to change perceptions; locating incubator businesses; must be responsive to workforce and access to jobs; no office towers, but clusters; might see more of that; trend,

		especially with urban development
Do you think the community would support additional local funding for a major transit improvement?	• Perceived potential for additional community support • No community support; • Support for TOD • People get negative about downtown • No • Look to agencies • Must be of regional benefit	Asking for funding would need to be framed the correct way; what would be the return for the community?; people's expectations for the transit were very high and went unmet; need a serious mind set; higher gas prices; there are many leaning in the direction of support for TOD; show the stats for Euclid Corridor--$5 billion--people get negative about downtown; DD board has no opinion; No, look at how much money they have; No, not a good tax climate ; must look across agencies; Do something with sales tax; may take state law changes; using the right work force to leverage the funding—companies may be more willing to locate here; all depends on the level of requests of the riders; if the market is there, they can entertain the idea
Other thoughts?	• Connection to the airport • Potential for true regional transit • Problems with current funding • No need for other agencies • Regional paratransit system • Downtown trolley expanded • System is a real asset	Airport connection would be faster and more frequent with transit; problems with existing transit extending beyond county lines; more needs to be done to encourage agencies to share operating expenses for services that cross county lines; how are you going to sell it?; downtown rates have gone down--lower than in 1991; Goodyear site will include thousands of people and will need more service; Wolf Ledges cannot take advantage of downtown amenities--would like trolley line expanded;

Surveys Distributed to Project Participants

Another component of the public involvement process involved surveying METRO riders. The consultant team distributed surveys instruments throughout the public involvement process. People were also able to access the survey through the webpage (http://www.surveymonkey.com/s/metro-mester-plan) available on the METRO website (www.akronmetro.org). Sixty-two surveys were gathered and analyzed. Generally, the respondents were transit riders who frequently used the bus system. Most used the bus for a variety of trip purposes indicating that transit was their primary source of transportation. In particular, respondents would like to see more service to the Twinsburg/Macedonia area as well as Green and Portage County.

There were a number of comments suggesting future rail connections and transit oriented development such as the following:

> *"Build a transit backbone with a train line that stops in the Valley and can connect up to Hudson/Macedonia and commuter down to Canton. Stops at CAK, Goodyear, Northside, CF, why not a stop in Kent as well.. This would allow more people to travel freely to places they want to go and live without needing a car. A BRT to Summit Mall wouldn't be a bad idea from Northside. Put a half cent sales tax levy up for a vote to test the waters with the public to implement train service."*

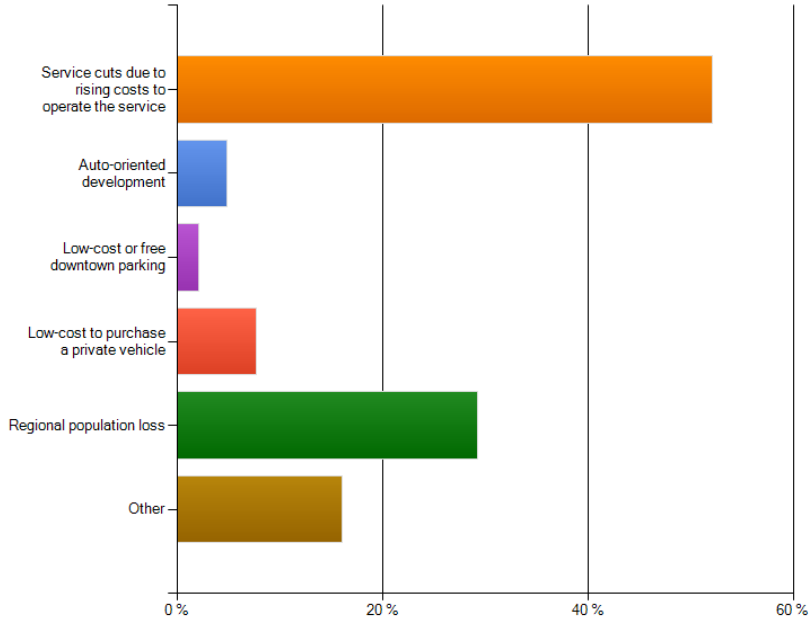
> *"If you make the stops and units (buses, etc.) look better (similar to GCRTA Euclid corridor) more middle income riders will follow. Unfortunately Metro has the reputation of only attracting the lower income crowd. Additionally more innovative transit concepts such as BRT, and streetcars would pull more people (such as tourists) to the system. Also if Metro would find a developer to develop TODs near the city center, or even in areas such as Firestone Park, and Goodyear Heights which were once transit oriented I believe that it would be positive not only for Metro but the greater Akron area."*

> *"Serve outside of Summit County especially the border areas of Cuyahoga AND/OR have a reciprocal relationship with the RTA if traveling to Cleveland to have bus routes and times coordinated if a rider needs to use both services."*

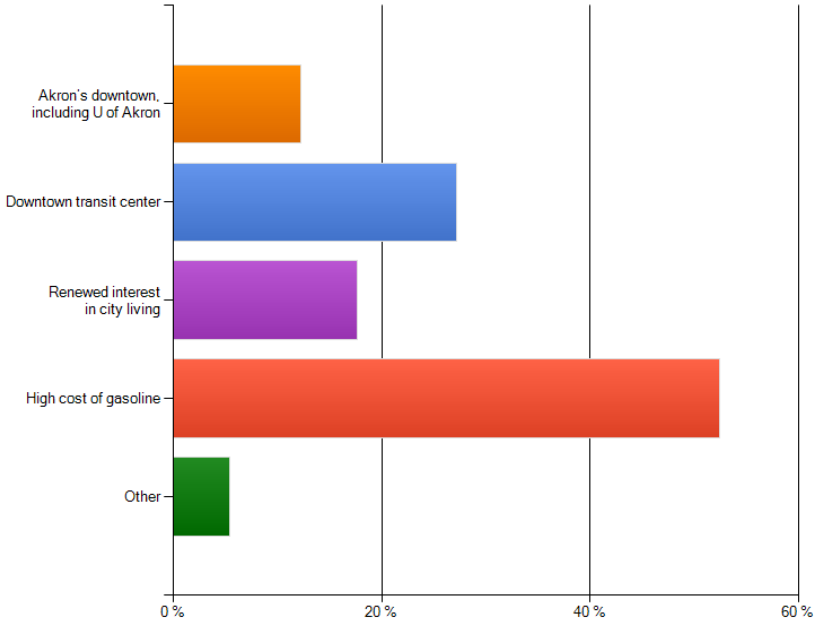
The full survey and results of the general public survey can be viewed in Appendix A and also at http://www.akrommetro.org/Data/Sites/2/Assets/PDF/metrotmpsurveyresults_062711.pdf.

A summary of the survey results are presented below:

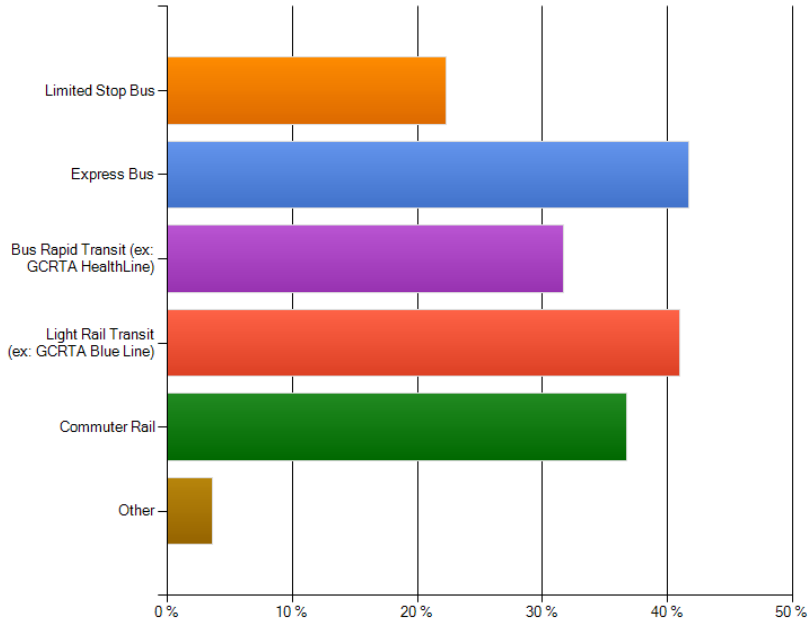
1. What is the greatest threat to METRO's ridership?



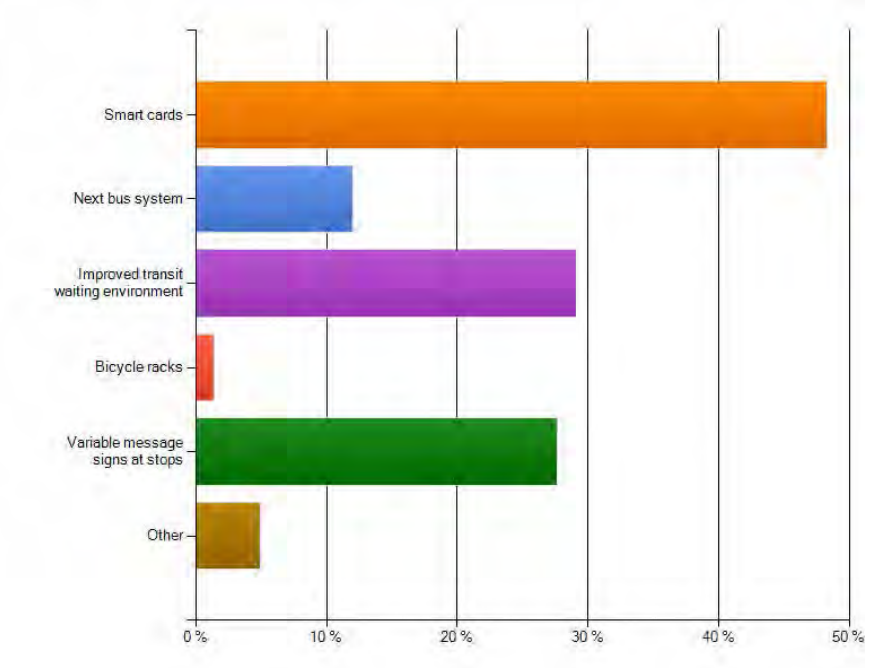
2. Where do you think is the greatest source for ridership growth?



3. What modes should METRO implement over the next 20 years?



4. What amenity would most improve your METRO experience?



Employee Survey

The consultant team also conducted a survey of METRO employees as part of the outreach effort. This was completed to gain an internal perspective on the current and future operations of METRO. The survey was tailored to ask the same questions that were included in the general public survey but also included employee-based questions.

The survey resulted in 156 responses. Nearly 50 percent of the respondents had worked at METRO for more than ten years. Sixty-five percent worked in operations and about 12 percent worked in customer service. Slightly less than 50 percent use METRO services, with 16 percent stating they use the service regularly.

Employees were also asked about their thoughts on ways to improve METRO service. A sample of responses is presented below.

- *Put some restrictions on stroller sizes and types*.*
- *Security for driver and passengers, transit police.*
- *Better buses, cleaner buses.*
- *SCAT service - all areas 6 AM to 6 PM*
- *We need get rid of the stigma of riding the bus. Example - poor, must have had DUI, would not be caught dead on bus.*
- *Lower cost of labor in order to add more service.*
- *Increased communication with ridership, e.g. Next Bus alerts, system delay/detour updates, contests, promotions, etc.*

**The most frequent response to this question was commentary related to the safety issues and time travel problems created by large strollers/passengers not folding up strollers.*

As with the public survey, the consultants continued to interact with staff throughout the duration of the planning process.

The full survey and results of the METRO Employee Survey can be viewed in Appendix A.

Chapter 3 Existing Conditions

This chapter presents a review of existing conditions, including the existing demographic and development patterns of Summit County, and a review of METRO's existing transit system and how its performance compares to peer agencies.

Development and demographic patterns are an important component of the existing conditions analysis because they demonstrate the market for transit within Summit County. Population density, employment density and distribution of major activity centers indicate where the majority of transit users begin and end their trips. Other demographic patterns show where populations who tend to use transit in greater numbers live within Summit County. Together these development and demographic patterns serve as market indicators of demand for METRO services.

The review of METRO's existing system provides a summary of the types of service provided, service characteristics, and productivity of individual routes in the system. A peer analysis concludes the review of the existing system, providing a comparison of METRO's performance to similar agencies based on a number of key service characteristics and performance measures.

Development Patterns

Roads, transit, and other transportation investments influence development patterns by increasing accessibility and facilitating new development. Conversely, development patterns also have a significant impact on travel patterns. A dispersed pattern of low-density development can make using transit a challenge, while the separation of land uses common in low density development can make driving a necessity. Alternatively, denser development patterns can combine different land uses in closer proximity, encouraging greater transit usage.

Population and Household Density

Population density and household density are important indicators of potential transit use because the overwhelming majority of trips originate (transit and non-transit alike) at home. Densities are used for this analysis instead of total population or total households because residential density is a better indicator of potential transit use. High density neighborhoods are often characterized by multi-family housing or single family housing on small lots coupled with less parking and smaller setbacks than traditional lower density suburban-style neighborhoods. Higher density areas also often have commercial uses along main thoroughfares; creating a more walkable environment that is conducive to transit use. These design features all contribute to more people choosing to use transit. In addition, higher density areas by definition will have more people living within walking distance of a transit stop than in lower density areas, further increasing the potential for transit ridership.

Population density can also be used to indicate the level of transit service that is most appropriate for an area. Although many factors influence service levels, a good rule of thumb is that an area with a population density above 5 people per acre can support hourly bus service, and an area with a population density above 10 people per acre can support bus service with a frequency of 13-30 minutes.

Figures 3-1 and 3-2 illustrate population and household densities for the years 1990, 2000 and 2010. The series of maps demonstrate a couple of key population characteristics. First, population and household density is highest within the City of Akron, with Cuyahoga Falls and Barberton also indicating areas of higher density. This is not surprising given that these areas experienced rapid population growth in the early decades of the twentieth century, when streetcars and later buses were the primary forms of local transportation, and thus have denser neighborhoods of small houses and apartment

buildings. The maps also demonstrate the role that topography has played in the development of the region, with the low density Cuyahoga Valley separating the higher density residential areas of the Akron region.

The other important point demonstrated in the series of maps is the loss of population within Akron's core and the growth in surrounding suburban areas from 1990 to 2010. However, the change in household density within the City of Akron is not as pronounced, particularly over the past 10 years, indicating that population loss is more likely the result of shrinking household size than large scale housing vacancy or abandonment. Suburban areas in Fairlawn, Copley Township, Portage Lakes, Tallmadge, Stow, and Hudson each show significant growth in this 20-year period. Similar population growth has occurred in the far northern part of the county in Twinsburg and Macedonia, which has experienced growth coming outward from both the suburbs of Akron and Cleveland. In both areas, this growth is generating development at a fairly low density, with many block groups shifting from 0-3 people per acre to 3-5 people per acre. These new growth areas are unlikely to be able to support high frequency transit service due to the low density development patterns.

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Figure 3-1: Summit County Population Density, 1990-2010

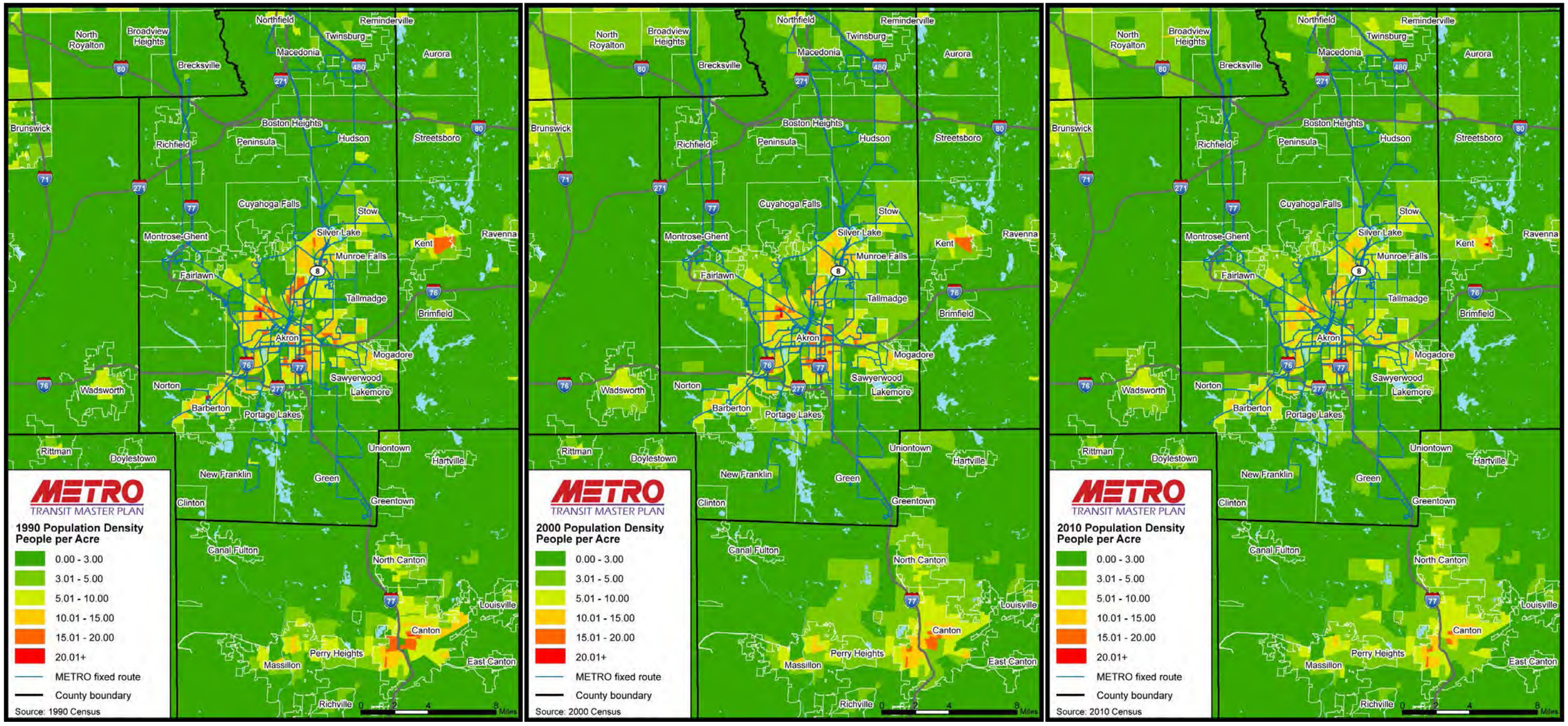
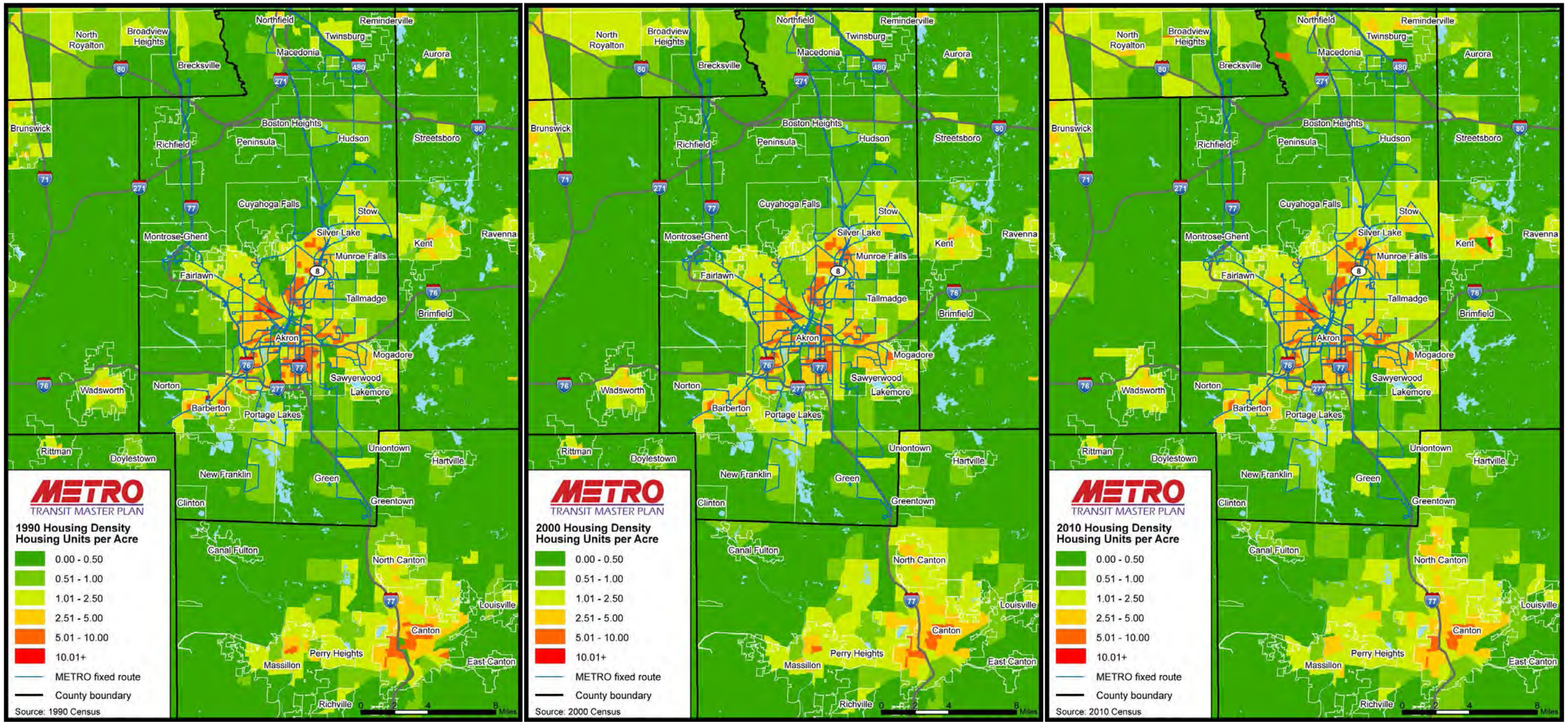


Figure 3-2: Summit County Household Density, 1990-2010



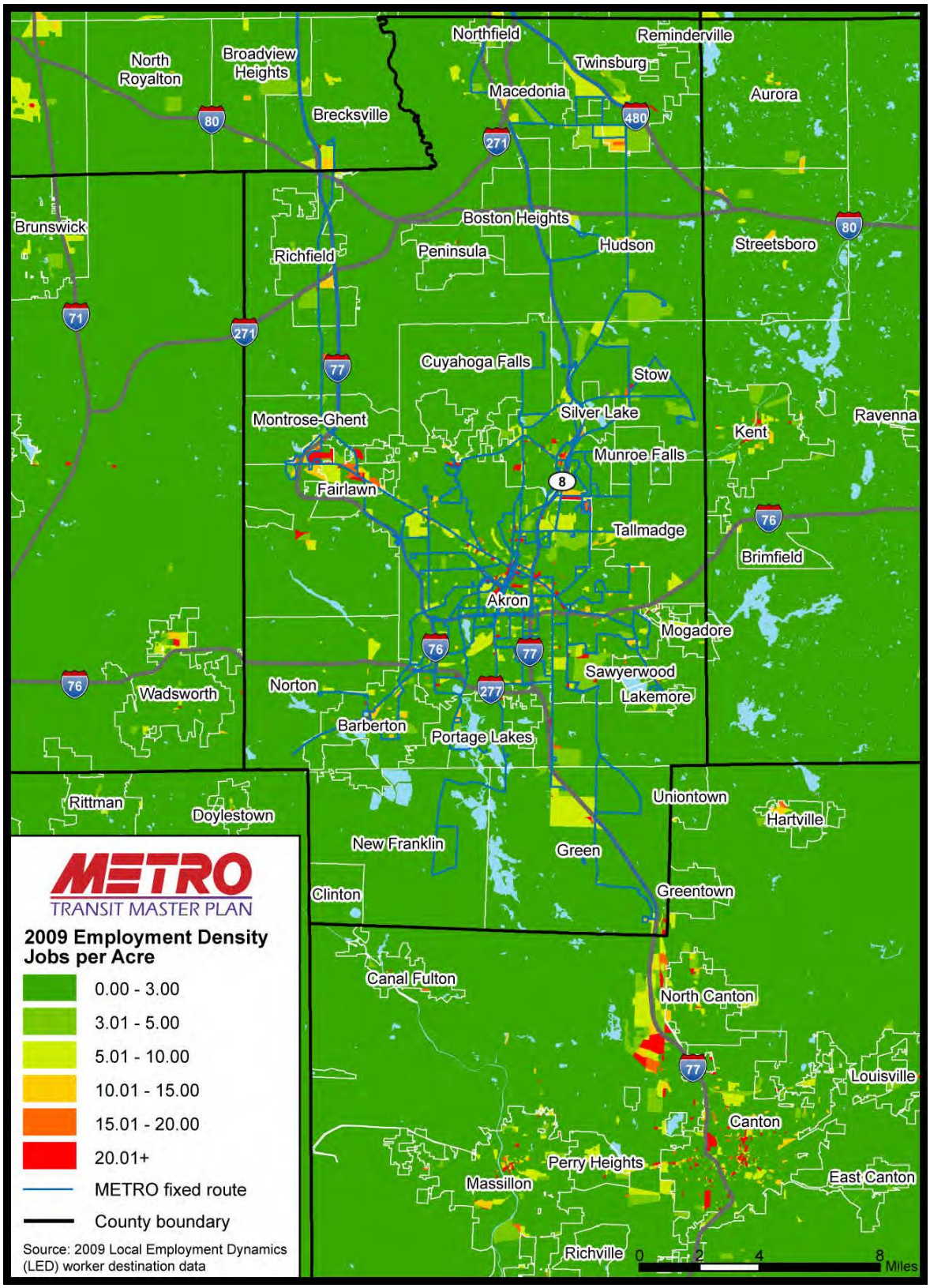
Employment Density

Employment density is also an indicator of potential transit use because of the high number of trips destined for employment centers. Similar to areas of high population density, higher density employment areas tend to have more congestion and constrained parking, which can result in more people choosing to use transit.

Figure 3-3 shows 2009 employment density by Census block. Census blocks are often very small in size, which creates a fine-grained picture of employment centers in Summit County. The majority of the county is shown in dark green, indicating little or no employment in those areas where residential and agricultural land uses are most prevalent.

The map also shows numerous census blocks depicted in red which indicate the locations of high density employment in the county. The major employment centers are largely aligned in two major corridors which form an X in downtown Akron. One of the corridors is aligned northeast to southwest; creating development patterns parallel to the Ohio and Erie Canals, representing the historic development pattern within the city. The other corridor is aligned northwest to southeast along Market Street from Fairlawn through the east side of Akron. Other individual high density employment areas include downtown Akron, University of Akron, Summit Mall, Chapel Hill Mall, Barberton, I-77/Massillon Road, and Twinsburg.

Figure 3-3: Summit County Employment Density



Population + Employment Density

As home and work are the two most common origins and destinations for transit trips, a combined map of population and employment density can be used as a proxy for expected transit demand and service levels. Typical development intensity thresholds and corresponding transit service include the following[1]:

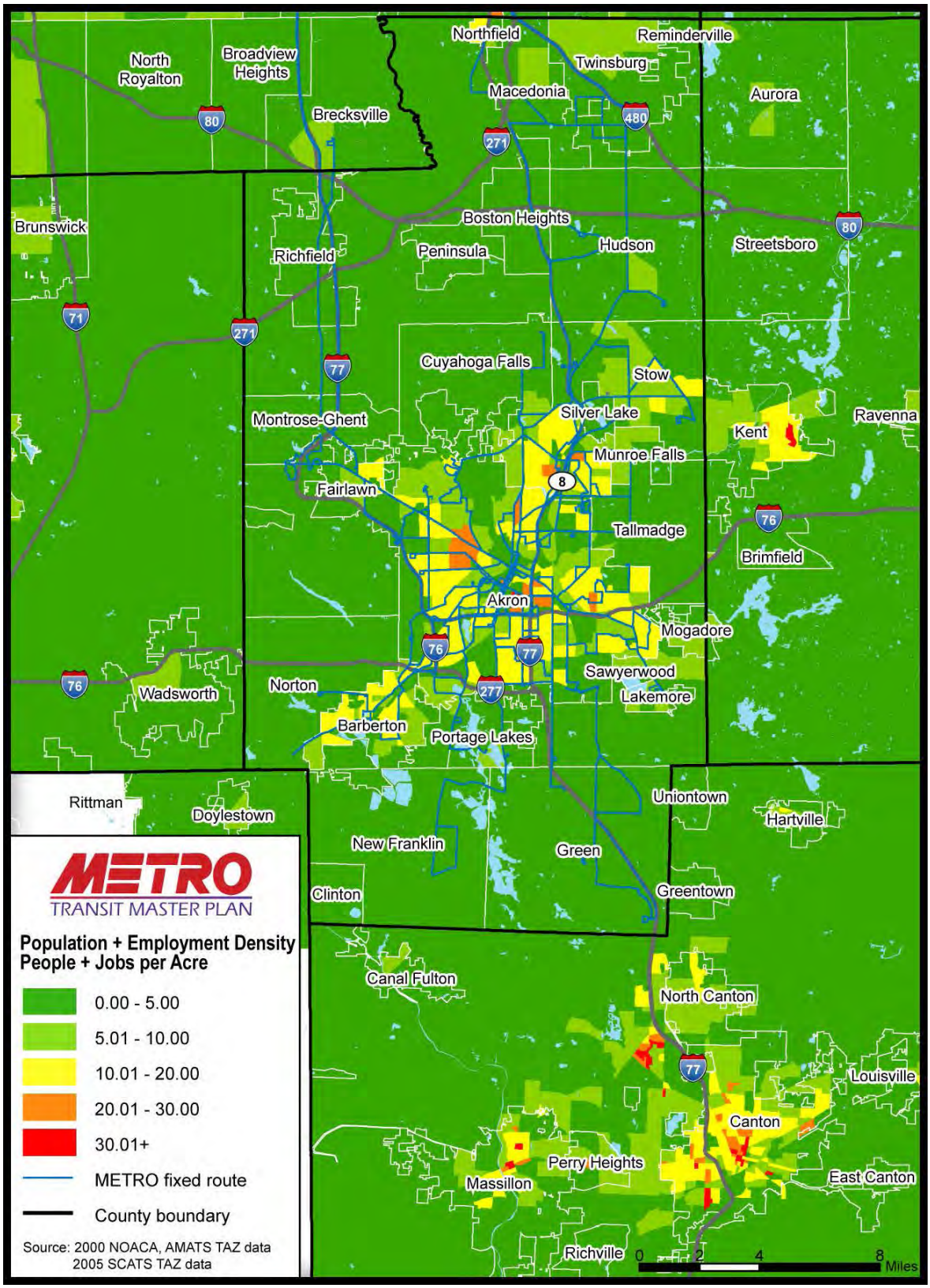
- **3-10 jobs + residents per acre** represent typical low-density suburban development. Most transportation trips occur using the automobile, with bicycle and walking used primarily for recreation. Transit is typically bus based, designed to maximize coverage, with hourly frequencies.
- **10-25 jobs + residents per acre** represent typical urban neighborhoods comprised of compact single-family homes with adjacent commercial districts. Fixed route bus service can be supported, typically with 30-60 minute frequencies, but single occupancy vehicles are still the dominant form of transportation.
- **23-40 jobs + residents per acre** represent denser residential areas and commercial districts. While driving is still the dominant mode choice, the shortage and price of parking, as well as the closer proximity of transit stops in a denser environment, make transit and other modes of transportation an attractive alternative. Fixed route bus service with 10-20 minute frequencies can be supported in these areas.
- **40 jobs + residents per acre** represent a densely developed residential or commercial district. Non-vehicular modes are increasingly more prominent; modes of transportation such as bicycle, walking, and transit are used more frequently and there is a marked decrease in the number of single occupancy vehicles. Typically higher quality transit (such as BRT or streetcar) can be supported with this development intensity.

Figure 3-4 maps combined population and employment density for Summit County. The results show the areas with the highest intensity are located within the city of Akron, in and around downtown, as well as the Highland Square neighborhood. This finding corresponds to the existing level of service, with downtown Akron served by most fixed routes in the system and the connections between Highland Square and downtown Akron provided by the high frequency #1 route and augmented by the #28. Other high intensity areas include Barberton, Cuyahoga Falls, and the area surrounding Summit Mall in Montrose. Each of these areas is also served by multiple METRO routes.

Beyond Akron the map shows a more typical pattern for a medium-sized metropolitan area, with suburbs in the outer parts of Summit County having development intensities between zero and ten jobs + residents per acre. This means these outer areas should be served by fixed routes designed for coverage with lower frequencies than the Akron core.

[1] Thresholds were estimated using data from *Urban Development Intensities in the Washington DC Metropolitan Area (2007)* by Terry Holzheimer and residential densities from *Public Transportation and Land Use Policy (1977) by Jeffery Zupan and Boris Pushkarev.*

Figure 3-4: Summit County Population + Employment Density



Activity Centers

Activity centers are defined as places of concentrated activity, and typically include retail centers, education facilities, hospitals, recreation facilities, and social services. Activity centers generate trips, and followed by home and work, activity centers are the next most common origins and destinations for transportation, and thus transit, trips.

Figure 3-5 shows many of Summit County's activity centers are clustered around and within downtown Akron. In addition, most activity centers are centered on the aforementioned Ohio and Erie Canal axis representing the historic connection between Cuyahoga Falls, downtown Akron, and Barberton. Activity centers outside of Canal axis are mainly retail-oriented, and represent the growth in newer, auto-oriented suburbs, including Wadsworth, Fairlawn, Macedonia, and Stow.

Akron Metropolitan Housing Authority Public Housing

The Akron Metropolitan Housing Authority (AMHA) manages numerous low-income and senior housing sites as shown in Figure 3-6. AMHA sites typically include more transit users than the general population because of the number and concentration of lower income residents, which correspond with lower than average percentages of private vehicle ownership and higher than average percentages of mobility-related disability.

The map reveals that AMHA housing is located primarily in Akron, but also includes sites in Barberton, Cuyahoga Falls and Twinsburg. In addition, AMHA housing is distributed on all sides of the metropolitan area, although there are few sites in the far northwest or in southern Akron in the area bounded by I-77, I-76 and I-277. METRO's bus network, shown in blue, serves all of AMHA's housing sites in Summit County.

Figure 3-5: Summit County Activity Centers

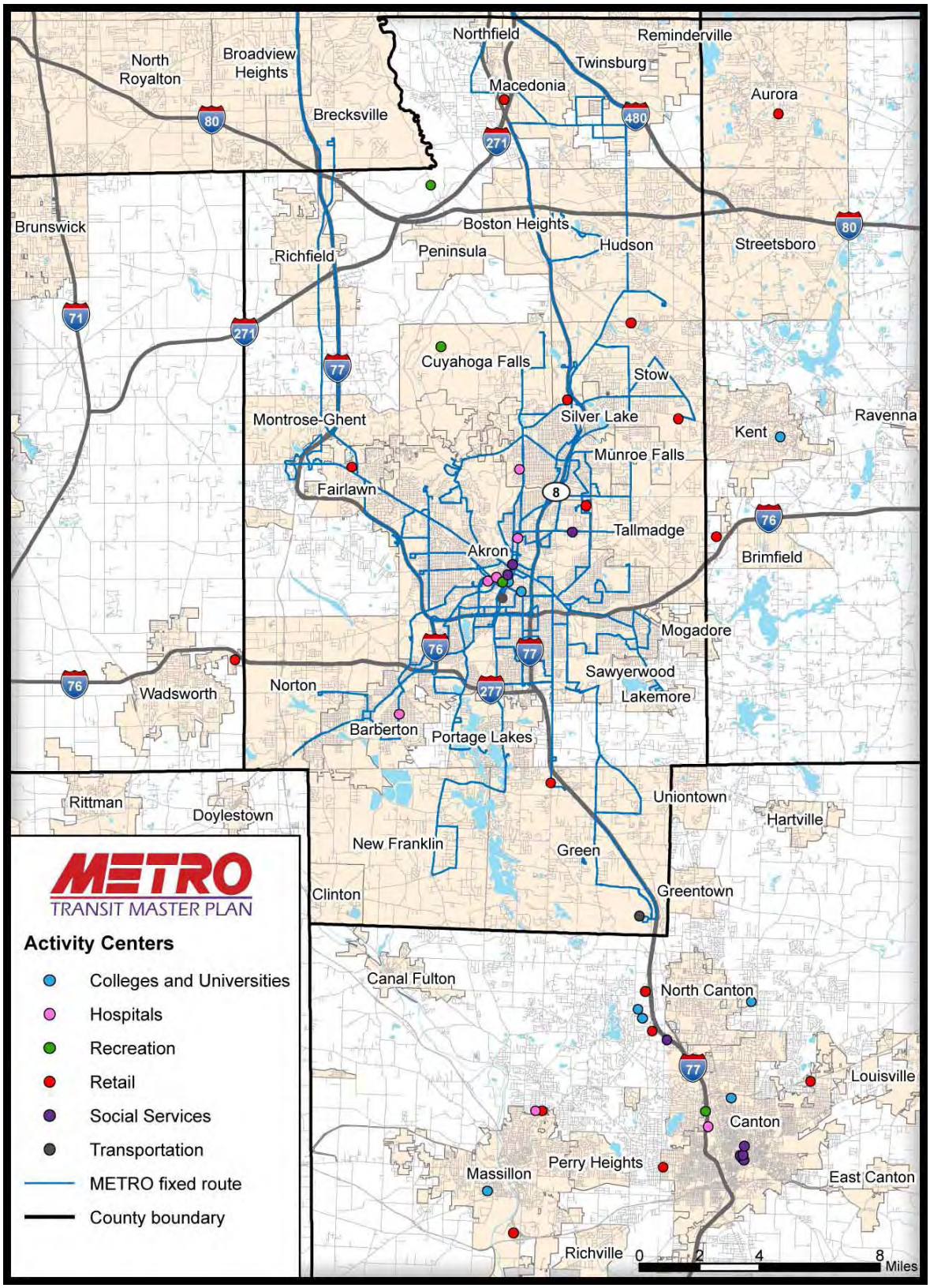
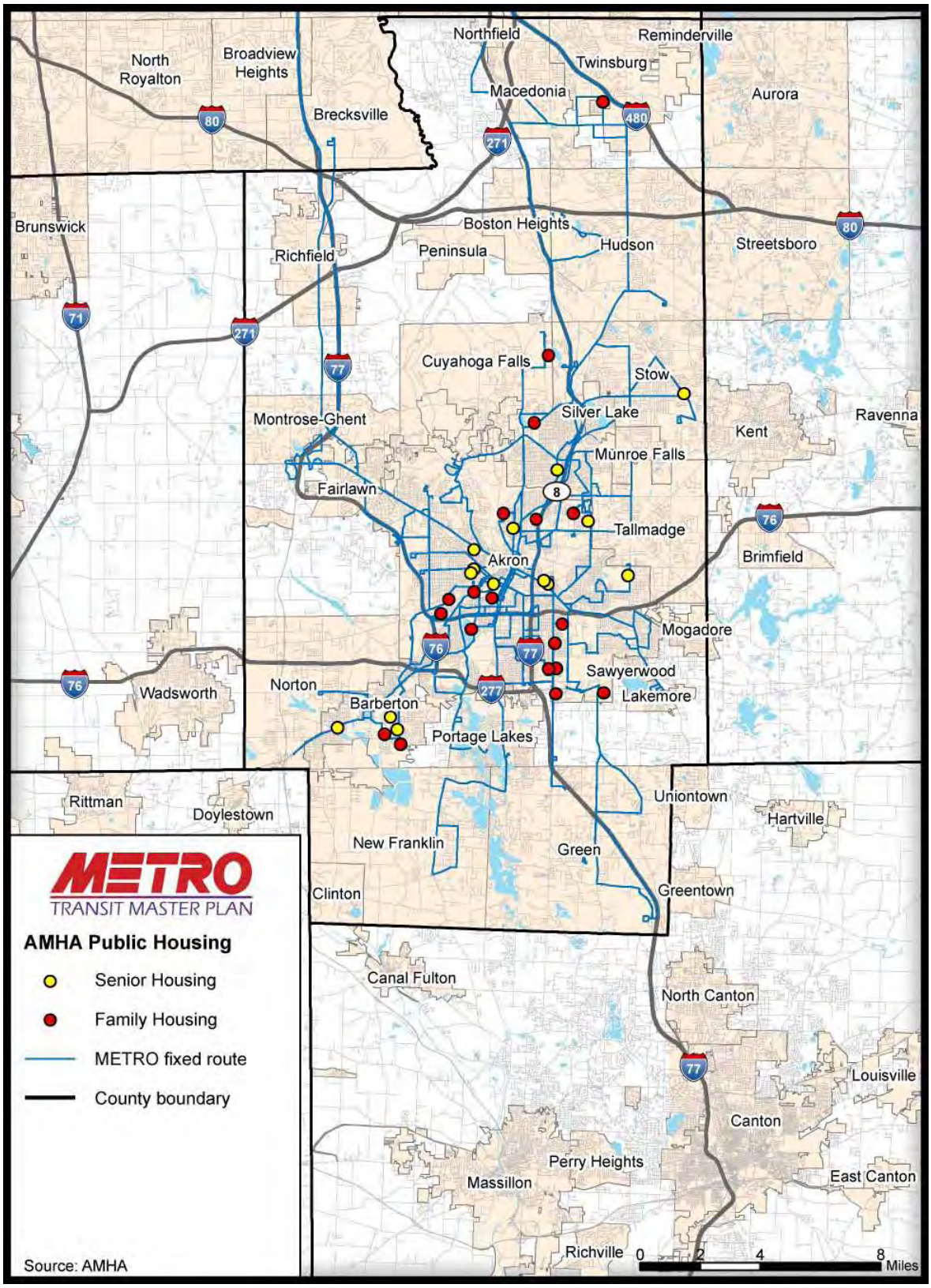


Figure 3-6: AMHA Public Housing



Demographic Analysis

Certain demographic groups tend to use transit more frequently than the general population, including seniors, low income populations, households without private vehicles, and minorities. The locations of concentrations of these groups are mapped within this section to indicate where concentrations of potential transit users live within Summit County.

Median Household Income and Zero Vehicle Households

Median household income and zero vehicle households are each used as indicators of propensity to use a private automobile as a primary means of transportation. Figure 3-7 shows median household income for Summit County and Figure 3-8 shows the percentage of households with no available vehicles.

These indicators are important for two reasons. First, areas with low household income and/or a high percentage of zero vehicle households are likely to include METRO riders. Therefore, these maps can be used to show the areas where METRO transit ridership is likely to be strong due to the distribution of transit-dependent populations. Not surprisingly, both indicators are strongest in the City of Akron. Lower income populations and higher percentages of zero vehicle households are also located in portions of Barberton and Cuyahoga Falls.

The second use for these indicators is to show places with higher household incomes and a high percentage of zero vehicle households. These are places where people are choosing to not own a car despite having the means to do so. Parts of Summit County where this trend is evident include the Market Street corridor, Fairlawn near I-77, and neighborhoods in Stow adjacent to Kent. These areas indicate concentrations of choice riders. The references to transit dependency or choice riders are typically used to relate nature and level of transit service with the needs and expectations of its patrons. This context becomes more important in planning for future transit.

Figure 3-7: Summit County Median Household Income (2009$)

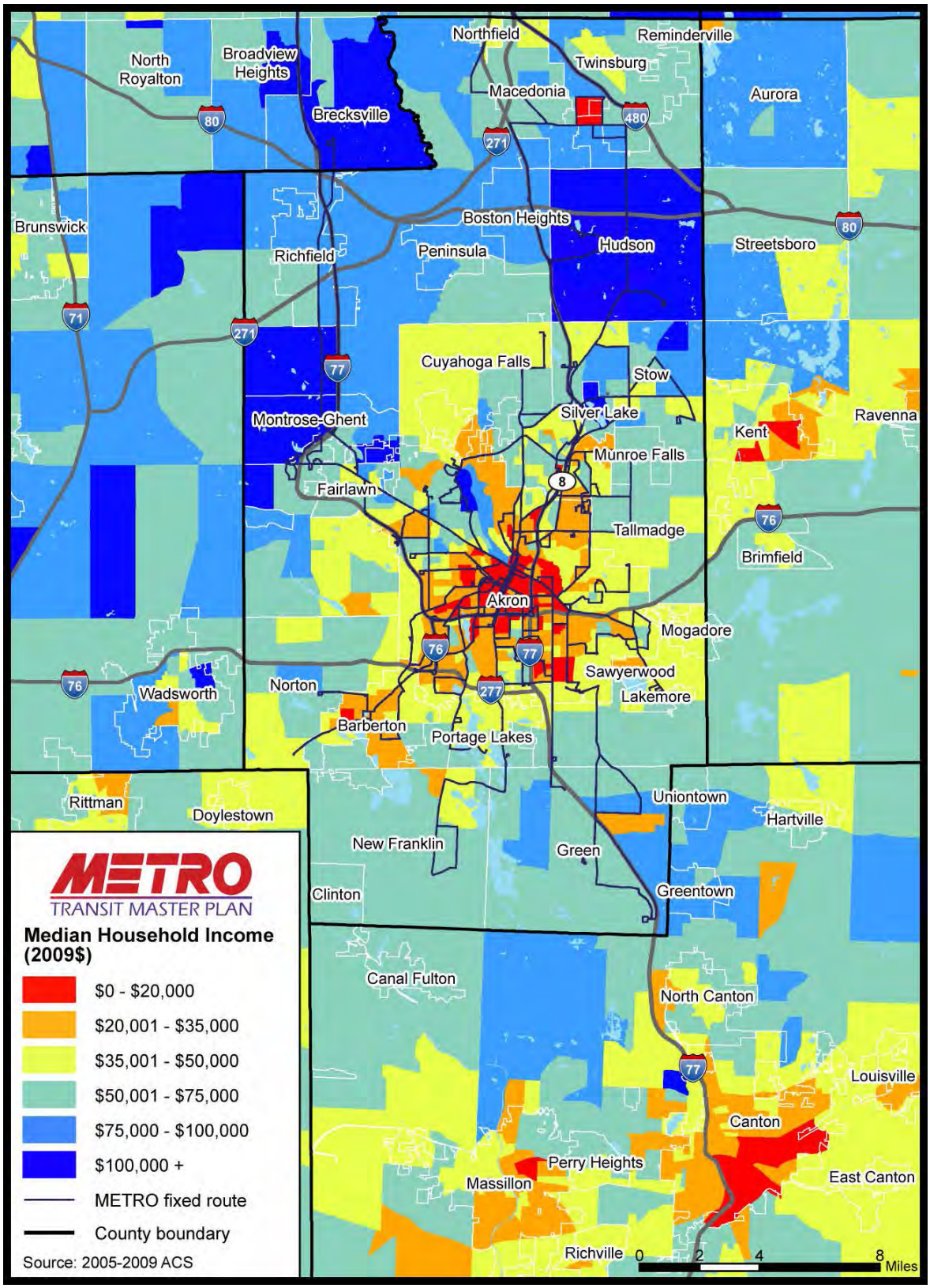
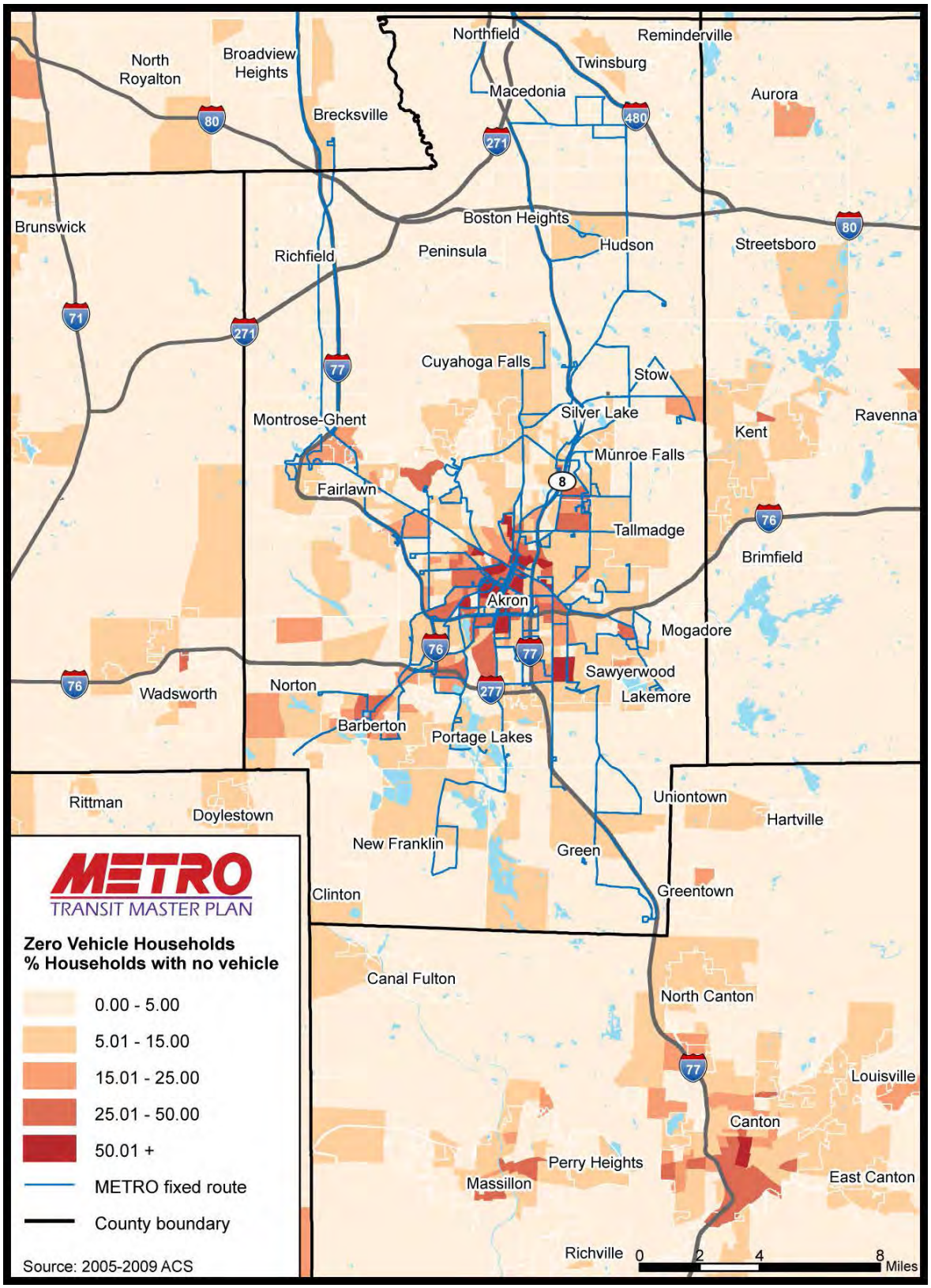


Figure 3-8: Summit County Zero Vehicle Households

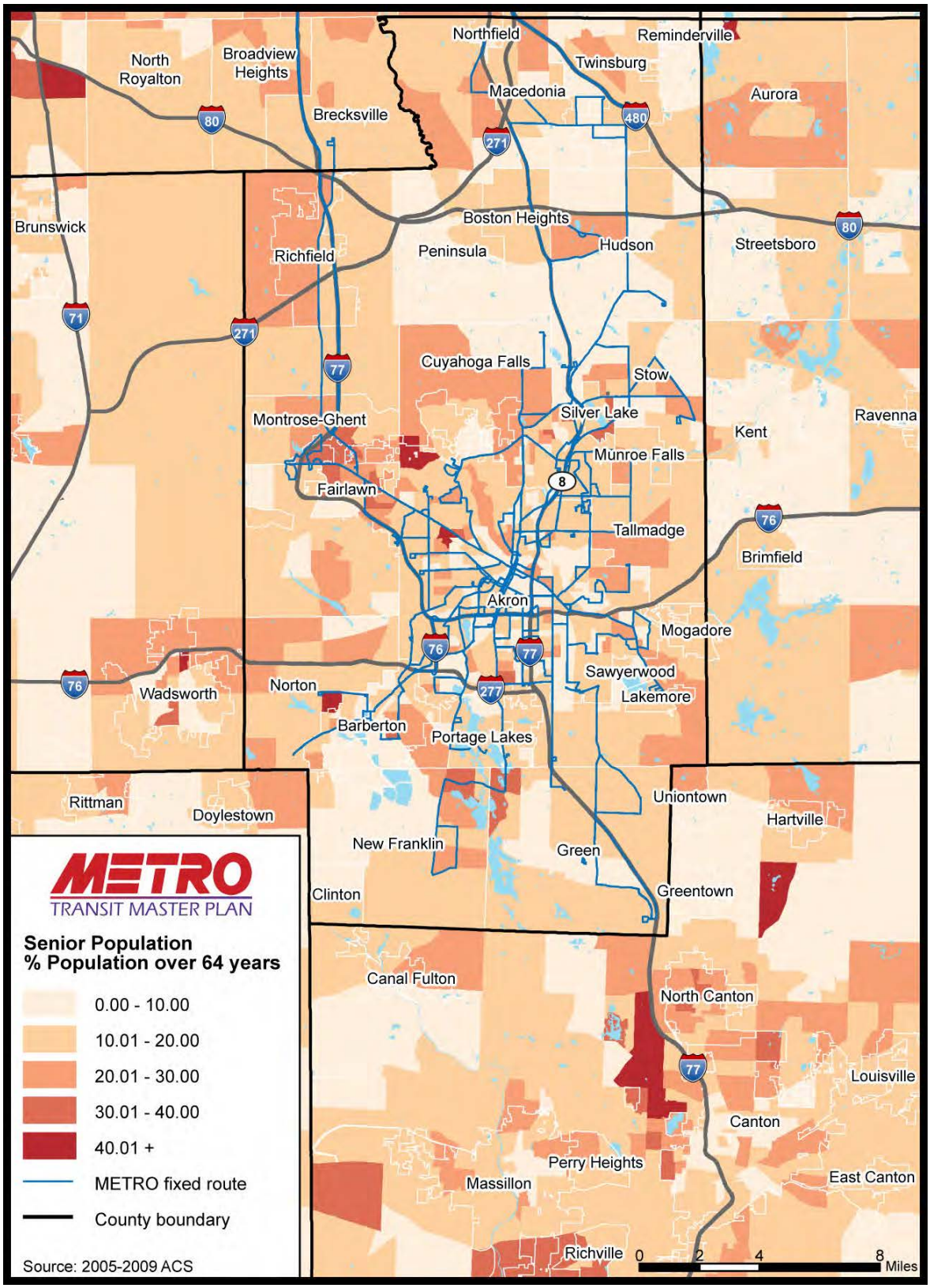


Senior Population

The senior population is another potentially captive market for transit use. Many seniors live on fixed incomes which can reduce their ability or desire to own and operate a private vehicle. In addition, aging can reduce eyesight and slow reactions, which can make some seniors reluctant to drive even if they have the means. Age also correlates with higher levels of physical disability that prevents driving. As a result, seniors use public transportation in larger numbers than the population at large.

Figure 3-9 maps the senior population in Summit County. In general, senior populations are higher in the inner suburbs of Akron, and lower within the City itself and the outer suburbs which are attractive to families with school-age children. The areas with the highest senior population include the Wallhaven neighborhood in Akron, along with the suburbs of Montrose, Ghent, and Fairlawn. It is likely these are areas that grew in population during the 1950s through the1970s, with some of the original residents now approaching old age. Portions of Barberton and Portage Lakes also show a high percentage of seniors.

Figure 3-9: Summit County Population Over 64 Years Old

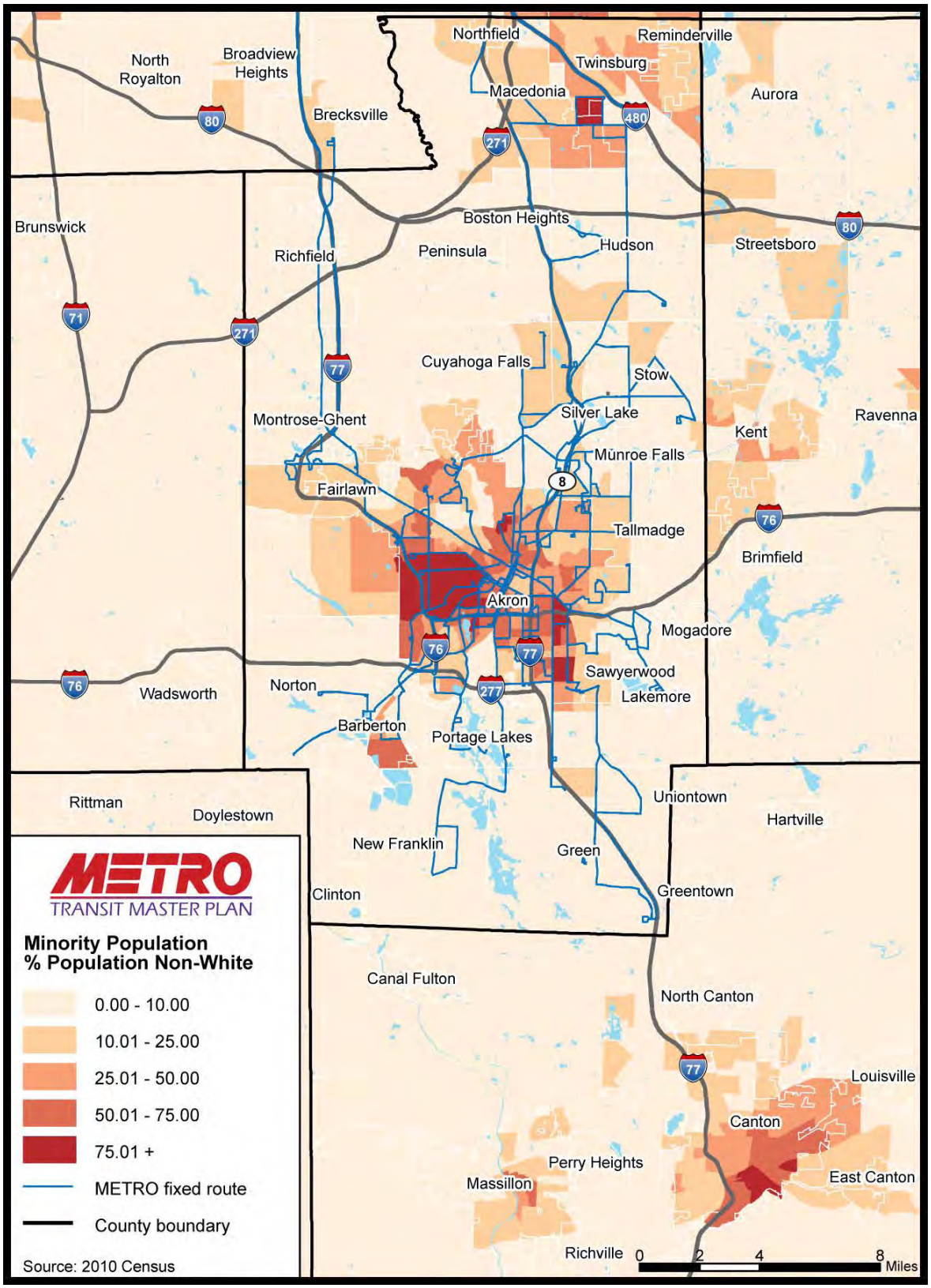


Minority Population

In general, minority populations tend to use public transportation in greater numbers than the white population, regardless of income or location, for reasons that have not been fully explained. Therefore, this demographic was mapped in order to show where the existing and potential minority transit market lives within Summit County.

Figure 3-10 shows the highest percentages of minorities live in Summit County's urban core, with a heavy concentration on the west side of Akron. Parts of Barberton, Cuyahoga Falls, Macedonia, and Twinsburg also have a high percentage of minorities, but there is a distinction between these two groups. Barberton and Cuyahoga Falls are part of Akron's older urban core and have lower household incomes. These areas are likely to represent a less affluent minority population. Macedonia and Twinsburg are newer suburbs with higher household incomes, and likely represent a more well-to-do or middle class minority population. The characteristics of the Twinsburg/Macedonia area – middle class incomes, access to private vehicles, and auto oriented development, may be locations where minorities do not necessarily use transit in greater numbers than whites.

Figure 3-10: Summit County Minority Population



Conclusions from Review of Existing Development Patterns and Demographics

Development patterns, population and employment densities and concentrations of demographic groups that are most likely to use transit all indicate that the Akron-Cuyahoga Falls-Barberton core is the strongest transit market in Summit County. This core is where land use intensity is highest and most activity centers, low income households and zero car households are located within the county. One notable exception is the high number of seniors living in the lower density suburbs outside of the aforementioned core. This will likely present a challenge for METRO in the future, as this group becomes be more difficult to serve with traditional fixed route due to their physical location respective to the core.

Existing Transit System

METRO RTA's existing bus network consists of 37 fixed routes. The routes are operated primarily within Summit County, with three routes crossing the Summit-Cuyahoga boundary to serve destinations in the Greater Cleveland region.

METRO's system is structured to include several route types: local routes, circulators, North Coast Express, 100-series routes (outer community service), grocery routes, and door to door services. In addition, METRO is also interested in adding downtown circulators into its service mix. The METRO route structure is shown in Figure 3-1, and each route type is described in greater detail below.

Local Routes

Local routes are numbered between #1 and #34 in the system. They provide service primarily in the city of Akron and the inner suburbs surrounding the city. Local routes tend to be operated along main arterials, with deviations to serve neighborhoods near the outer ends of the route.

Included within METRO's local routes are two routes with the "X" express designation, #14X and #31X. The #14X is an express version of the #14 that is operated directly between Barberton Hospital and the Transit Center for two inbound trips in the AM peak and one outbound trip in the PM peak. The recently implemented #31X operates directly between the Transit Center and Cuyahoga Falls via SR 8 before continuing on arterial roads to Stow.

Circulators

METRO operates two circulators, #50 Montrose and #59 Chapel Hill. Each of these routes provides circulation through a major retail area in suburban Summit County, as well as connections to other METRO routes. The circulator routes have service spans and frequencies similar to the local routes with which they connect.

North Coast Express

North Coast Express is METRO's commuter bus connection to downtown Cleveland, with two routes sharing the North Coast Express designation. Route X60 connects Chapel Hill Mall to downtown Cleveland via SR 8 and I-480. Route X61 connects downtown Akron to downtown Cleveland via Fairlawn and I-77. In addition to providing connectivity for northbound commuters, the North Coast Express also provides a limited number to trips for southbound Cleveland commuters to Akron. Service is provided during AM and PM peak periods only.

100-Series Routes (Outer Community Service)

METRO's 100-series routes include five routes that provide longer distance connections to Akron's outer suburbs, including Richfield, Green, Twinsburg, Stow, Hudson, and Portage Lakes. The service span on these routes is similar to the local routes, but the frequency is lower, with many (but not all) of the trips clustered around the AM and PM peak periods.

Grocery Routes

METRO operates five one-day-a-week grocery routes. Each grocery route serves a different part of the county on a different day. The routes are structured to pick up passengers at senior living centers and apartment buildings in the morning, giving them a 2-3 hour window to complete their shopping before being picked up and dropped off in the reverse direction in the afternoon.

Door to Door Services

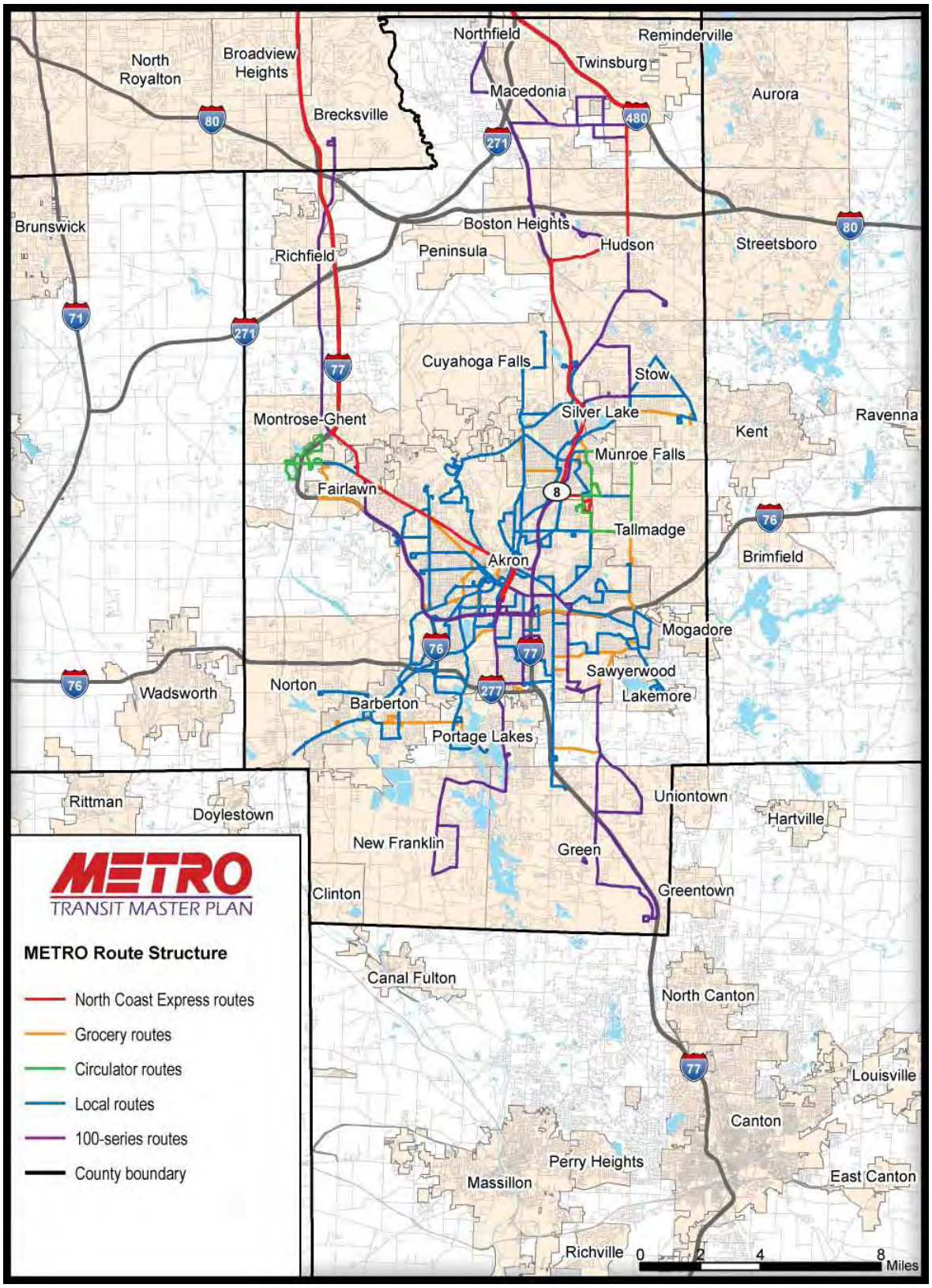
METRO supplements its fixed route bus network with SCAT, its door to door paratransit services in Summit County. SCAT can only be used by those who qualify, including seniors over the age of 62 years old or anyone with a disability that prevents them from using METRO's regular service. Unlike fixed route service, SCAT trips must be scheduled in advance.

METRO is currently evaluating an idea to expand its door to door services to include Dial-A-Ride in northern Summit County. Unlike SCAT, the Dial-A-Ride service would be open to anyone in the service area and connect to fixed route services as designated locations. No decisions have been made but the service could be implemented as early as Fall 2012.

Downtown Circulation

METRO is also studying the idea of downtown circulation routes, although none have been implemented at the time of this study. The circulators would collect and distribute passengers in the downtown area and could potentially help connect workers to remote parking lots if there are parking shortages as the downtown grows. It is unknown how the circulators would be funded, the frequency, the hours of operation, or the potential fare.

Figure 3-11: METRO Existing Route Structure



Service Characteristics

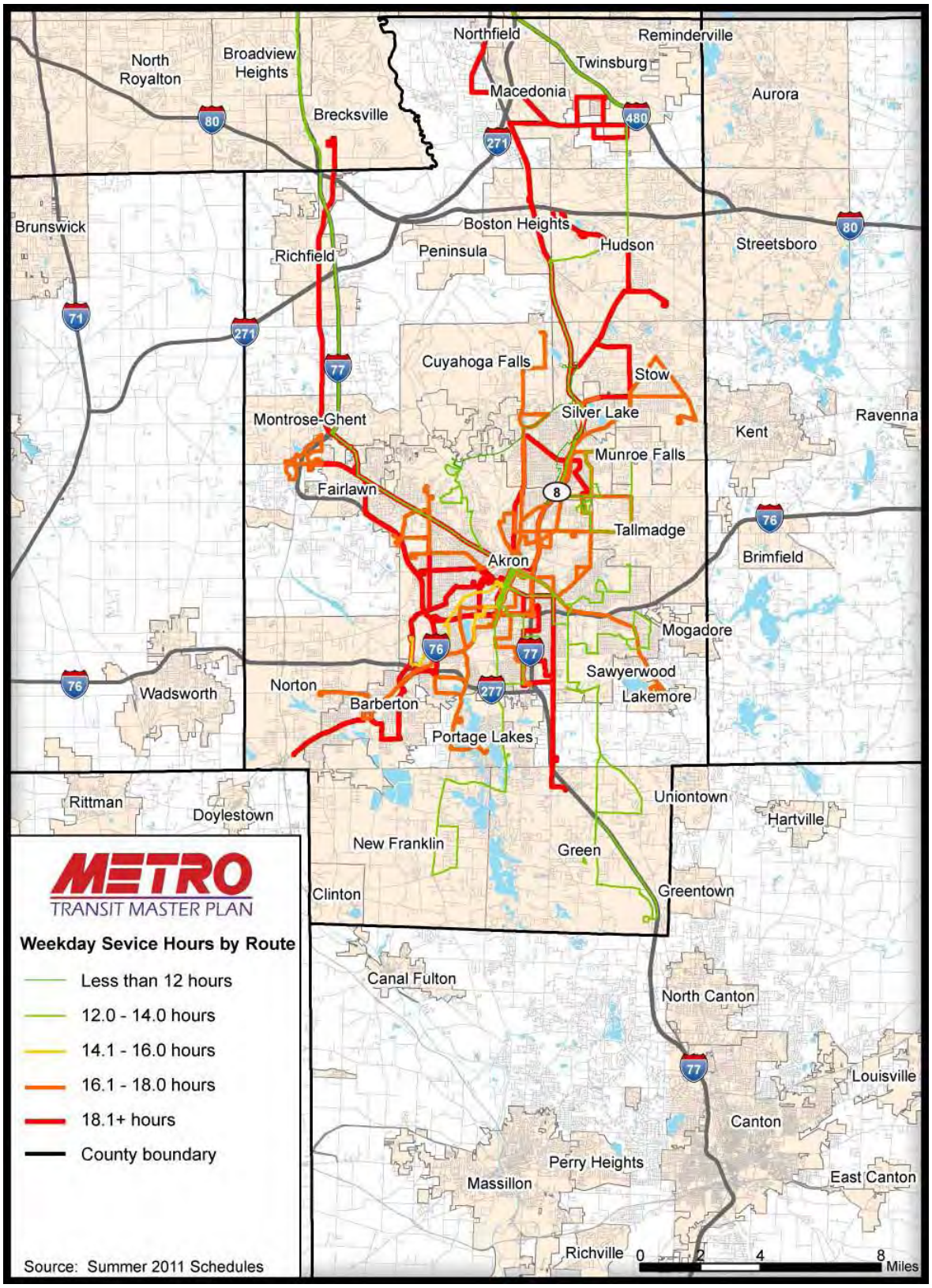
In general, a typical METRO route is operated between 5:30 AM and midnight, with daytime frequencies between 20-40 minutes and nighttime/weekend frequencies of 60-70 minutes. Most routes are operated seven days a week. Table 3-1 provides more detailed service characteristics for individual routes. Frequencies are given in ranges because most METRO routes are not operated with a consistent headway due to interlining and varying route patterns.

Figure 3-2 maps service span by route for the entire system. Routes in red have the greatest service spans while routes in green have the least. The map indicates that the routes with the longest service spans are located primarily within the city of Akron, although some do provide service to outer suburbs, notably the 100-series routes.

Table 3-1: METRO Service Characteristics by Route

Route	Peak Frequency	Off-peak Frequency	Begin Service	End Service	Service Span	Days of Operation
1	20-30 min	70 min	5:30:00	24:30:00	19.0	M - Sun
2	20-30 min	70 min	5:00:00	24:00:00	19.0	M - Sun
3	20-30 min	70 min	5:00:00	23:30:00	18.5	M - Sun
4	20-40 min	60-70 min	5:34:00	23:00:00	17.4	M - Sun
5	20-30 min	60-70 min	5:32:00	19:00:00	13.5	M - Sat
6	20-40 min	60-70 min	5:30:00	23:30:00	18.0	M - Sun
7	20-40 min	60-70 min	5:30:00	22:12:00	16.7	M - Sun
8	20-40 min	60-70 min	5:30:00	23:30:00	18.0	M - Sun
9	20-40 min	60-70 min	5:51:00	21:06:00	15.3	M - Sun
10	20-30 min	60-70 min	4:48:00	23:30:00	18.7	M - Sun
12	30-40 min	60-70 min	5:42:00	21:50:00	16.1	M - Sun
13	30-40 min	60-70 min	5:38:00	22:05:00	16.5	M - Sun
14	30-40 min	60-70 min	5:09:00	24:00:00	18.9	M - Sun
17	30-40 min	60-70 min	4:55:00	23:23:00	18.5	M - Sun
18	30-40 min	60-70 min	5:15:00	23:10:00	17.9	M - Sun
19	20-40 min	60-70 min	5:38:00	23:00:00	17.4	M - Sun
23	60-70 min	60-120 min	7:10:00	17:43:00	10.6	M - Fri
24	30-40 min	60-70 min	6:00:00	22:00:00	16.0	M - Sat
28	30-40 min	60-90 min	6:15:00	18:22:00	12.1	M - Fri
30	30-60 min	60-70 min	5:45:00	19:30:00	13.8	M - Sun
31	50 min	13 trips	6:30:00	23:00:00	16.5	M - Fri
33	5 trips	11 trips	6:15:00	23:12:00	17.0	M - Sat
34	30-40 min	30-60 min	5:34:00	21:50:00	16.3	M - Su
50	30-40 min	-	6:45:00	23:48:00	17.1	M - Su
59	50-70 min	-	8:20:00	20:32:00	12.2	M - Sat
60	5 trips	-	5:55:00	19:15:00	13.3	M - Fri
61	11 trips	-	5:55:00	19:30:00	13.6	M - Fri
101	35 min	2 trips	5:30:00	24:00:00	18.5	M - Fri
102	35 min	5 trips	5:30:00	24:30:00	19.0	M - Fri
103	25 min	7 trips	5:30:00	25:00:00	19.5	M - Fri
110	30 min	2 trips	6:15:00	19:30:00	13.3	M - Fri
111	37 min	8 trips	6:19:00	18:30:00	12.2	M - Fri

Figure 3-12: METRO Service Span



Productivity

Productivity, measured as passengers per revenue hour, is an important performance measure of how effective each individual route is within METRO's system. Weekday productivity for May 2011 is mapped in Figure 3-3. The map indicates that many of METRO's most productive routes are within the City of Akron, including routes #1, 2, 3, 8, 9, 13, 19 and 24. METRO's least productive routes serve the outer areas of the county, including Green, Twinsburg, Macedonia, and Richfield. The suburban nature of these areas tends to result in lower ridership.

Average daily weekday boardings, shown in Figure 3-4, show a similar pattern. Daily boardings are highest within the city of Akron and some adjacent suburbs, including Barberton, Fairlawn and Cuyahoga Falls. The map also indicates several areas with a consistently high number of boardings over the length of a corridor, including Main Street and the High/Broadway pair downtown, West and East Market Streets, West Copley Road, South Arlington Road and North Howard Street. In general, daily boardings fall sharply beyond the Akron city limits, indicating that even high productivity measures for routes like #18 and 33 are mostly due to of high ridership along segments within Akron.

Figure 3-13: METRO Weekday Productivity

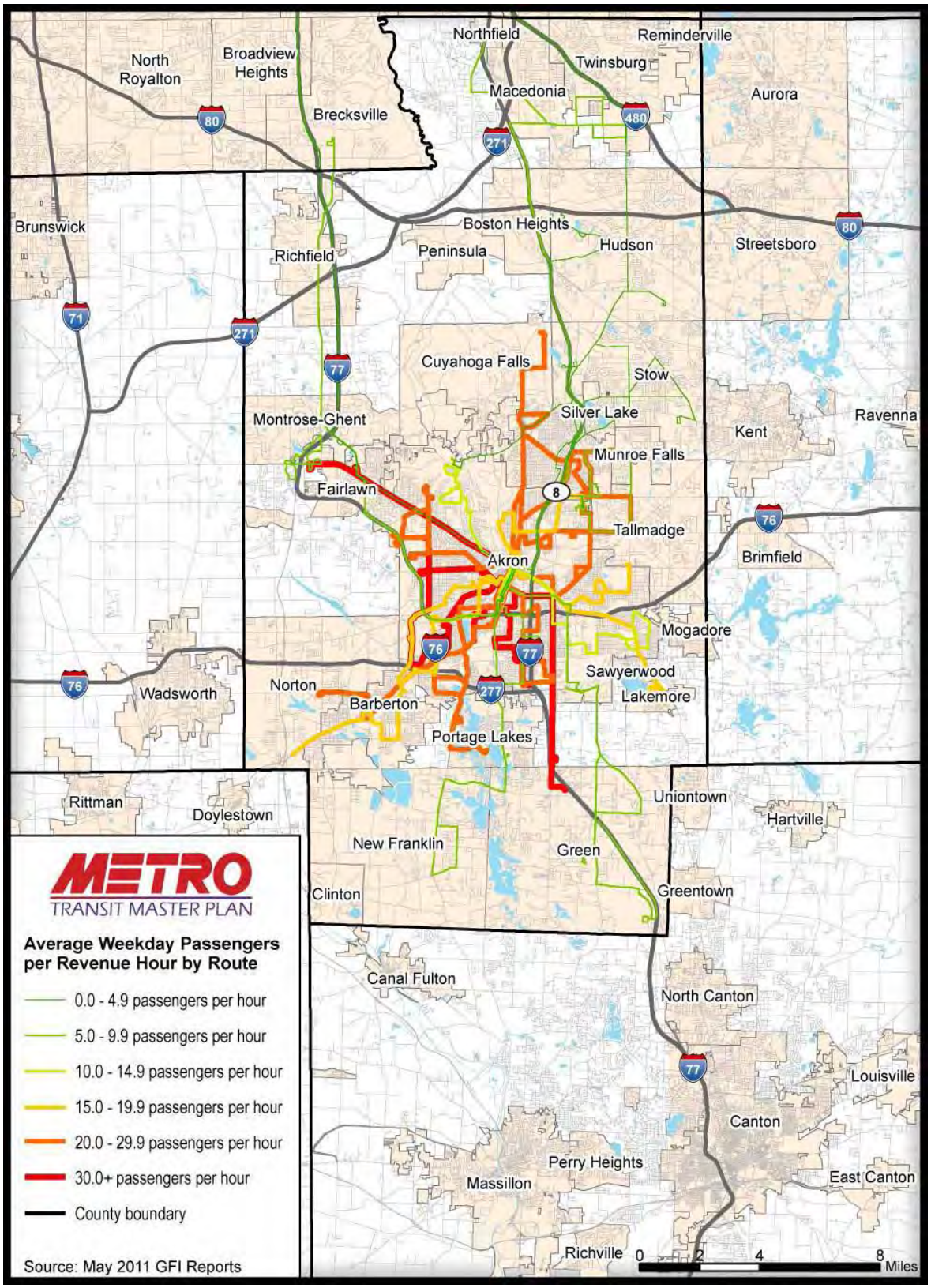
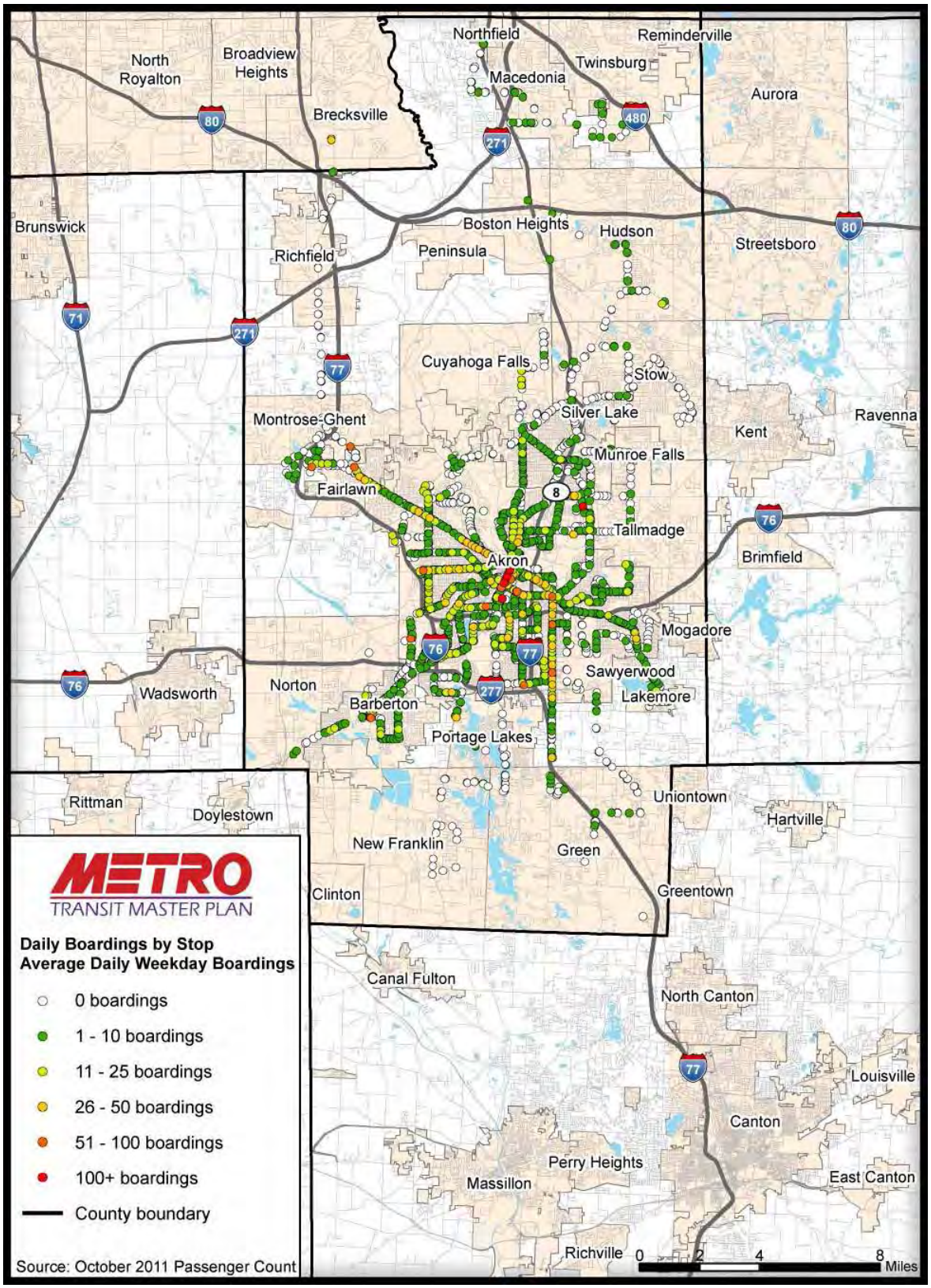


Figure 3-14: METRO Daily Weekday Boardings



Peer Analysis

A peer analysis was conducted in order to compare METRO's existing transit services to similar transit agencies in the Industrial Midwest. The data source used for this analysis was the National Transit Database (NTD). All agencies that accept Federal funds are required to report service statistics to NTD, which allows for a consistent comparison of data across various agencies. NTD data from 2010, the latest year available, was used for this analysis.

Seven agencies were selected as peer comparisons to METRO. These agencies are similar to METRO in both the size of the service area population and the amount of service operated by the agency. The peer agencies are also all located in the Industrial Midwest, and are therefore subject to similar weather constraints and general labor markets. The selected peer agencies are:

- Metro in Madison, Wisconsin
- CATA in Lansing, Michigan
- The Rapid in Grand Rapids, Michigan
- SARTA in Canton, Ohio
- WRTA in Youngstown, Ohio
- GDRTA in Dayton, Ohio
- TARTA in Toledo, Ohio

A brief introduction to the seven agencies selected for peer comparison is provided below:

Madison Metro Transit provides fixed-route bus and paratransit service to the Madison, Wisconsin area. The fixed-route system has a fleet of 204 buses and 31 regular routes with an additional 21 routes offered during peak times only. It also runs the University of Wisconsin-Madison's free campus shuttle with five routes. In 2010, the agency had a ridership exceeding 13.5 million trips based on a service population of 245,181 persons and a service area spanning only 72 square miles.

The Capital Area Transit Authority (CATA) provides fixed-route bus and paratransit service to the Lansing, Michigan area. The fixed-route system has a fleet of 107 buses and 33 routes with some routes operating during peak times only. In 2010, the agency had a ridership exceeding 11.3 million trips based on a service population of 277,316 persons and a service area spanning 136 square miles.

The Rapid operated by Interurban Transit Partnership provides fixed-route bus, paratransit, vanpool, and taxi service to the Grand Rapid, Michigan area. The fixed-route system has a fleet of 126 buses and 24 routes. In 2010, the agency had a ridership reaching almost 10 million trips based on a service population of 482,740 persons and a service area span of 185 square miles.

The Stark Area Regional Transit Authority (SARTA) provides fixed-route bus and paratransit service to the Canton, Ohio area. The fixed-route system has a fleet of 38 buses and 34 routes. It also provides commuter bus service between Canton and Akron. In 2010, the agency had a ridership of 2.1 million trips based on a service population of 378,098 persons and a service area spanning 567 square miles.

The Western Reserve Transit Authority (WRTA) provides fixed-route bus and paratransit service to the Youngstown, Ohio area. The fixed-route system has fleet of 48 buses and 15 routes. In 2010, the agency had a ridership of 1.1 million trips based on a service population of 288,870 persons and a service area of 433 square miles.

The Greater Dayton Regional Transit Authority (GDRTA) provides fixed-route bus, paratransit, and trolley bus service. The fixed-route system has a fleet of 117 buses and 23 routes. Its trolley bus service

provides service with six routes. In 2010, the agency had a ridership of over 8.8 million trips based on a service population of 559,062 persons and a service area of 274 square miles.

The Toledo Area Regional Transit Authority (TARTA) provides fixed-route and paratransit to the Toledo, Ohio area. The fixed-route system has a fleet of 122 buses and over 40 routes that provide regular, express, and call-a-ride fixed-route. In 2010, the agency had a ridership of over 3.5 million trips based on a service population of 407,784 persons and a service area of 149 square miles.

System maps of the seven peer agencies are included in Appendix I.

Operation statistics for both fixed-route bus and demand response paratransit service for METRO, the seven peer agencies and the peer mean are shown in Table 3-2.

The peer analysis was conducted for nine service statistics and performance measures. The first four statistics are basic measures of an agency: passenger trips, passenger miles, revenue hours, and revenue miles. The next two are measures of the agency's service efficiency: passenger trips per revenue hour and passenger trips per revenue mile. The final three measures are of financial efficiency: operating cost per passenger trip, operating cost per revenue hour, and farebox recovery. Together these performance measures illustrate METRO's strengths and weaknesses in comparison to its peers.

Table 3-2: 2010 NTD Fixed Route Service Statistics

Agency	*Metro*	*METRO*	*SARTA*	*GDRTA*	*TARTA*	*WRTA*	*The Rapid*	*CATA*	
City	Madison, WI	Akron, OH	Canton, OH	Dayton, OH	Toledo, OH	Youngstown, OH	Grand Rapids	Lansing, MI	*Peer Mean*
NTD Number	**5005**	**5010**	**5011**	**5017**	**5022**	**5024**	**5033**	**5036**	
Service Area (Square Miles)	**72**	**420**	**567**	**274**	**149**	**433**	**185**	**136**	
Service Area Population	245,181	542,899	378,098	559,062	407,784	288,870	482,740	277,316	
Unlinked Passenger Trips	13,623,461	4,792,127	2,025,920	6,960,449	6,984,265	1,687,118	8,865,687	10,884,977	6,978,001
Passenger Miles Traveled	47,226,936	19,519,863	10,149,079	31,924,216	27,415,051	4,949,715	32,891,699	33,612,809	25,961,171
Average Passenger Trip Length	3.5	4.1	5.0	4.6	3.9	2.9	3.7	3.1	3.8
Vehicle Revenue Hours	381,768	240,854	150,381	330,542	235,878	75,733	366,246	232,912	251,789
Vehicle Revenue Miles	4,810,956	3,020,176	2,324,370	5,189,349	3,657,896	880,984	4,458,613	3,085,967	3,428,539
Passenger Trips Per Revenue Hour	35.7	19.9	13.5	21.1	29.6	22.3	24.2	46.7	26.6
Passenger Trips Per Revenue Mile	2.8	1.6	0.9	1.3	1.9	1.9	2.0	3.5	2.0
Operating Costs Per Passenger Trip	$2.97	$6.22	$4.55	$4.60	$2.93	$4.30	$3.02	$2.54	$3.89
Operating Costs Per Revenue Hour	$105.91	$123.78	$61.29	$96.88	$86.79	$95.84	$73.04	$118.60	$95.27
Operating Expenses	$40,434,049	$29,812,667	$9,217,034	$32,022,539	$20,471,520	$7,257,879	$26,750,657	$27,622,938	$24,198,660
Fare Revenues	$10,737,634	$3,456,866	$1,319,214	$6,873,334	$4,885,299	$658,718	$4,404,701	$6,705,267	$4,880,129
Farebox Recovery	26.6%	11.6%	14.3%	21.5%	23.9%	9.1%	16.5%	24.3%	20.2%

Fixed Route Peer Comparison

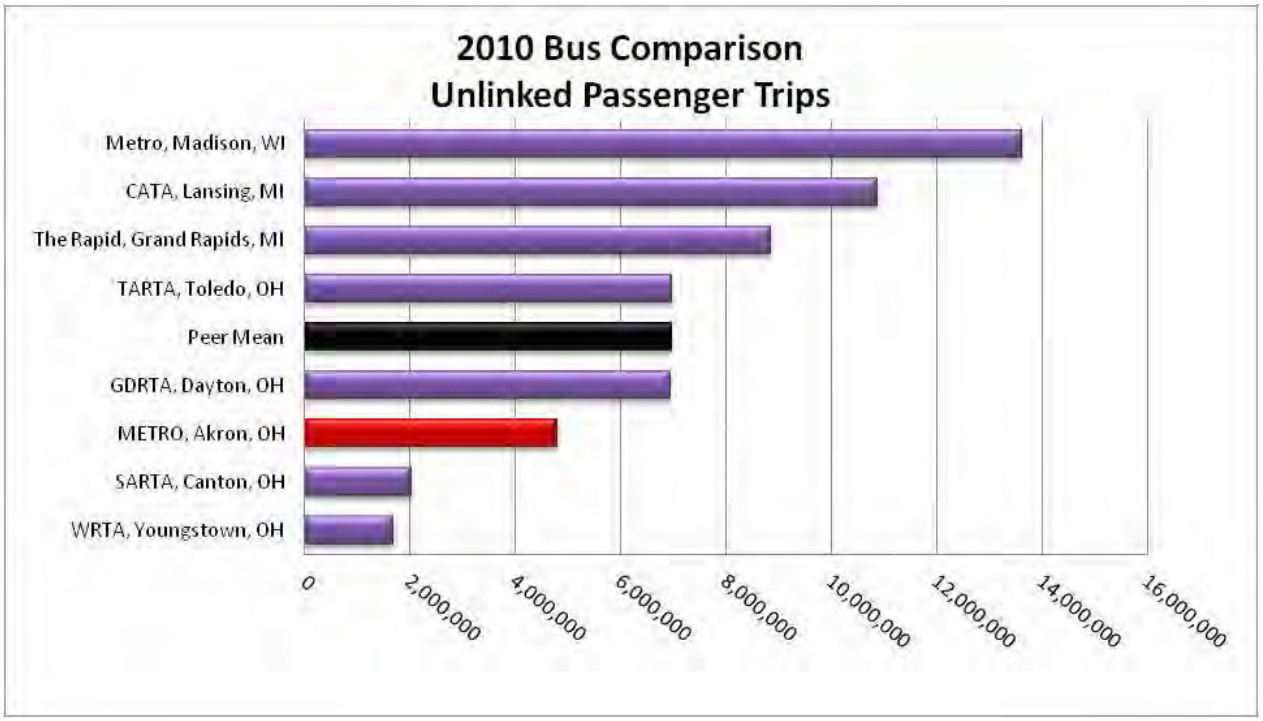
The following section compares fixed route service statistics amongst peer agencies.

Fixed Route Unlinked Passenger Trips

Unlinked passenger trips are a simple measure of how many passengers the agency is carrying in a year. METRO, with almost 4.8 million passenger trips in 2010, ranks sixth out of the eight agencies considered, with only SARTA and WRTA carrying fewer passenger trips. Madison Metro and CATA in Lansing have the greatest number of unlinked passenger trips, but both agencies operate service in a state capital with a large research university.

Figure 3-15 displays unlinked passenger trips for the eight peer agencies and the peer mean.

Figure 3-15: Unlinked Passenger Trip Peer Comparison

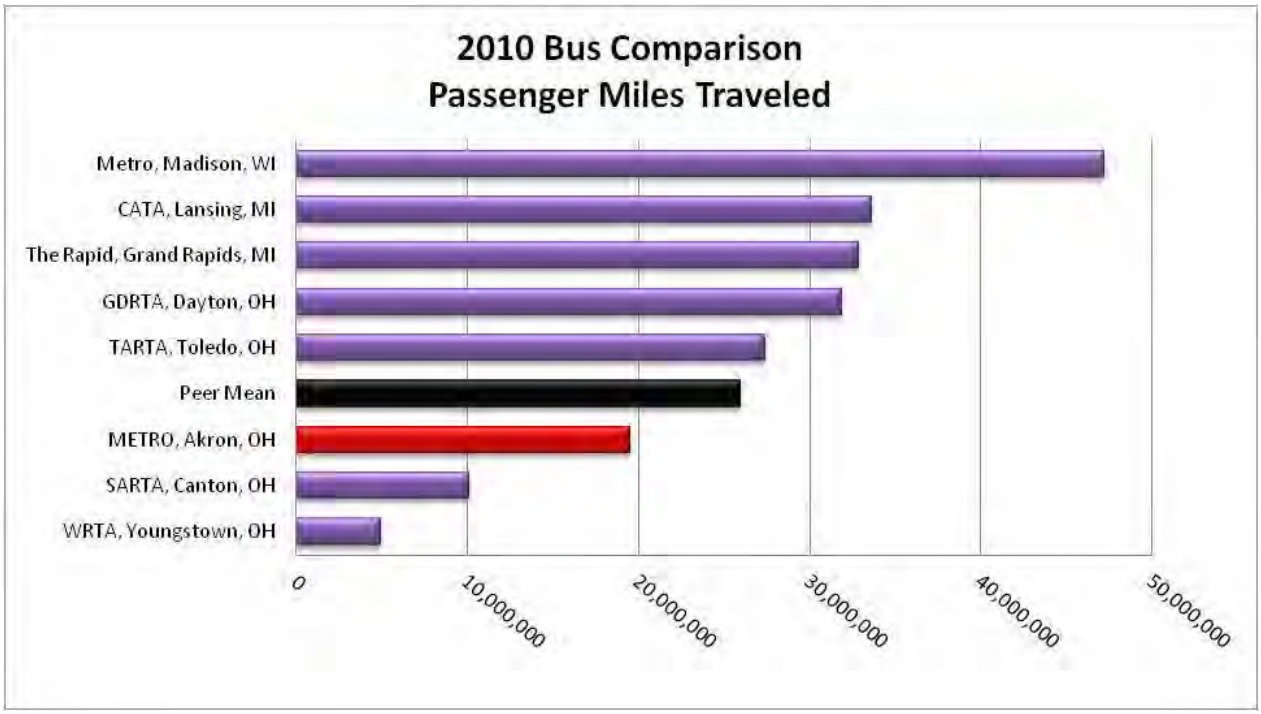


Fixed Route Passenger Miles Traveled

Passenger miles traveled are a function of two variables: total passenger trips and passenger trip length. Passenger miles increase with the number of trips operated by an agency. However, some agencies, such as those operating in a university setting, may operate many short distance trips, while other agencies may have longer distance trips due to a robust commuter bus service. METRO again ranks sixth out of the eight agencies considered. However, METRO's passenger miles traveled statistic is closer to the peer mean than unlinked passenger trips, indicating that METRO is carrying longer distance trips than many of its peers. Table 3-2 shows that METRO has the third highest average trip length (4.1 miles) of the peer agencies. Two factors probably explain this finding. First, METRO is among the few agencies to operate inter-city commuter service (SARTA, which operates bus service to Akron, is another). In addition, the great division in Cuyahoga County between Akron and its adjacent suburbs in the south of Summit County, and the band of suburbs in the north of the county, is a geographic division that few other counties have.

Figure 3-16 displays passenger miles traveled for the eight peer agencies and the peer mean.

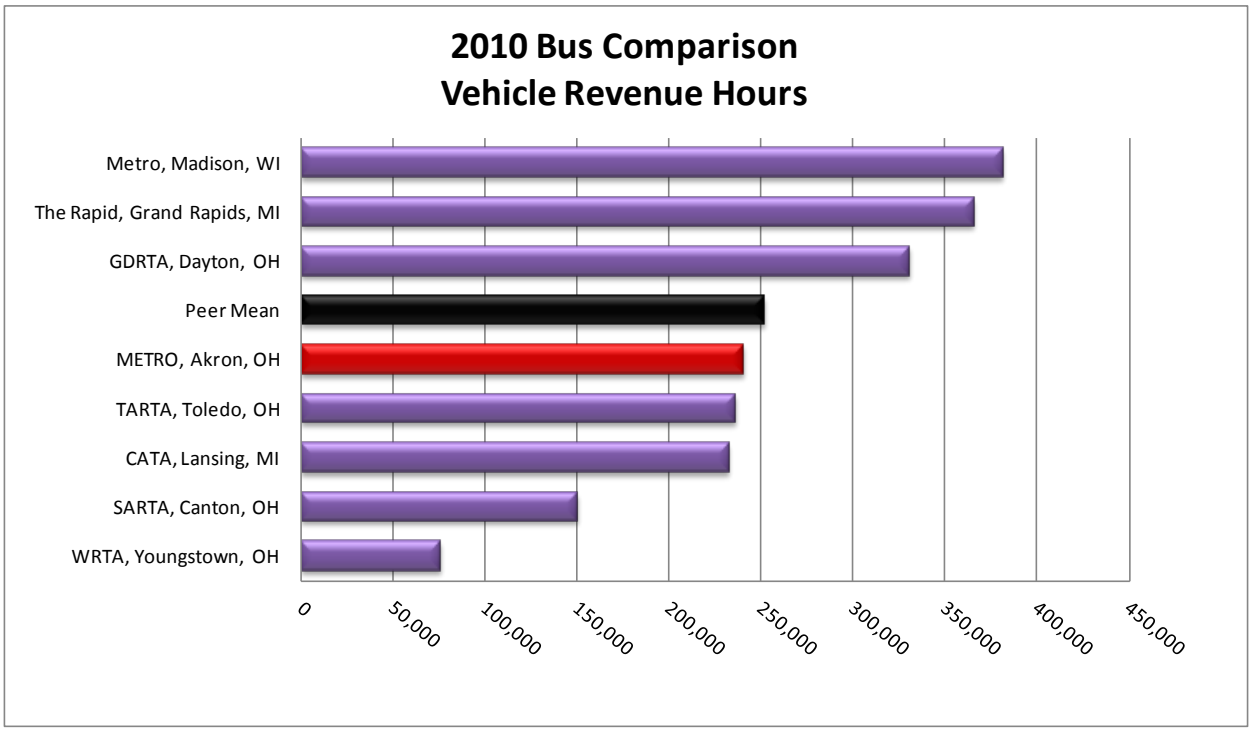
Figure 3-16: Passenger Miles Traveled Peer Comparison



Fixed Route Vehicle Revenue Hours

Vehicle revenue hours are a measure of the amount of service the agency is operating in terms of the number of hours the buses are operating in revenue service. METRO, which operates over 240,000 vehicle revenue hours, is ranked fourth of the eight peer agencies, and is very close to the peer mean. Figure 3-17 displays vehicle revenue hours for the eight peer agencies and the peer mean. The figure shows a clear distinction between the top three agencies (Madison Metro, The Rapid, and GDRTA) and the remaining five. It is also interesting that CATA carries the second highest number of passenger trips but only operates the sixth most revenue hours. This is indicative of CATA operating university based shuttles with large numbers of Michigan State students.

Figure 3-17: Vehicle Revenue Hour Peer Comparison

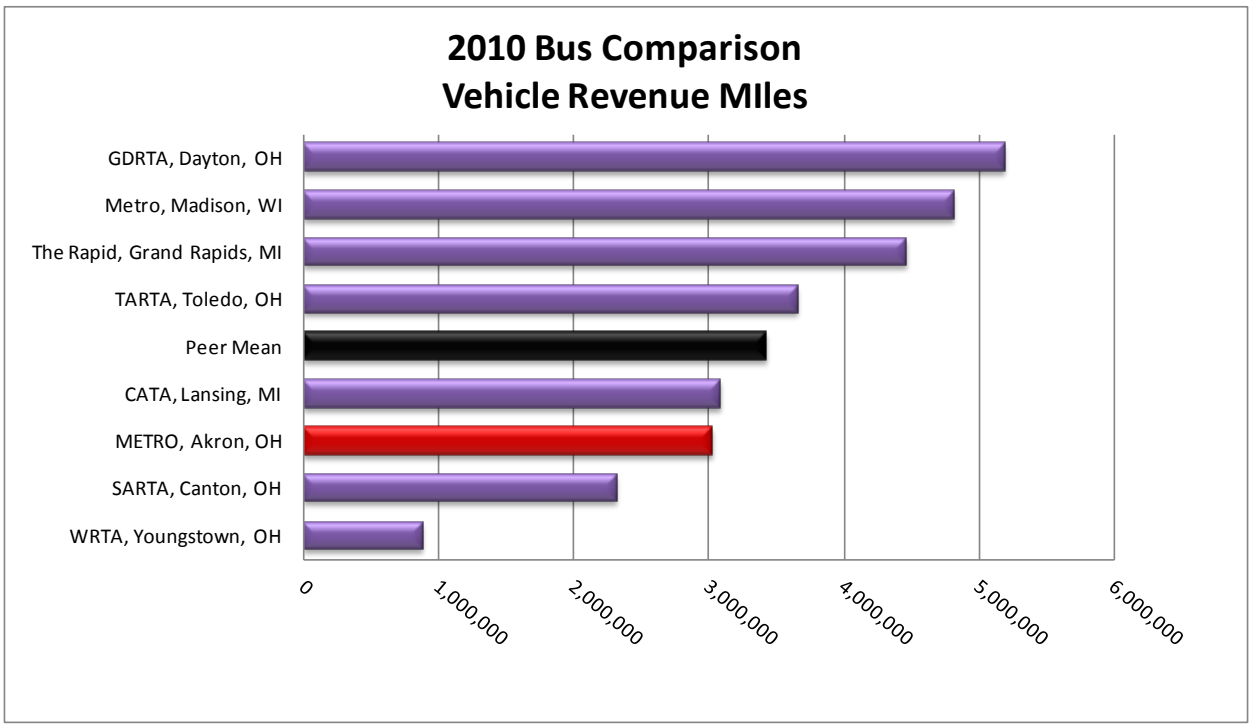


Fixed Route Vehicle Revenue Miles

Vehicle revenue miles are another measure of the volume of service an agency provides. Interestingly, METRO is ranked sixth out of eight agencies, two spots lower than their ranking for vehicle revenue hours. Thus, METRO's revenue hours are disproportionately greater than their revenue miles in comparison with the peer agencies. This could be related to the fact that most METRO routes deviate from the center of downtown Akron, to the transit center, which requires more revenue hours but provides few additional revenue miles of service.

Figure 3-18 displays vehicle revenue miles for the eight peer agencies and the peer mean. The top three agencies for vehicle revenue miles are the same as those for vehicle revenue hours: GDRTA, Madison Metro, and The Rapid.

Figure 3-18: Vehicle Revenue Mile Peer Comparison



Fixed Route Passenger Trips per Revenue Hour

Passenger trips per revenue hour are the number of trips the agency operates relative to the hours of service operated and are a measure of service efficiency. If an agency is operating short routes in a small, dense urban core, its efficiency will be higher due the large number of passenger trips relative to the number of hours it takes to serve the area. Conversely, an agency that operates in a predominately suburban or exurban area will have fewer passenger trips that require more service hours.

METRO, with an average of 20 passengers per revenue hour, is ranked seventh out of eight agencies. In short, most of the peers have more riders and/or are operating fewer revenue hours of service than METRO. CATA, Madison Metro, and TARTA perform the best of the peers. CATA and Madison METRO are serving populations with large universities with more concentrated destinations that allow them to maintain a higher number of passenger trips per revenue hour. Only SARTA in Canton has a lower average passenger trips per revenue hour. This finding may be related to METRO's relatively long service span, and provision of Sunday service. Figure 3-19 displays passenger trips per revenue hour for the eight peer agencies and the peer mean.

Fixed Route Passenger Trips per Revenue Mile

Passenger trips per revenue mile is a similar measure of efficiency, but considers the number of trips made relative to the number of miles, rather than hours, of service operated. Passenger trips per revenue mile are an indicator of the density of an agency's service area. An agency with a large, spread out service area may have a large number of passenger trips, but it would also be operating many revenue miles to serve those passengers.

METRO had an average of 1.6 passenger trips per revenue mile in 2010, which ranks the agency sixth out of the eight considered in this peer analysis. Only GDRTA and SARTA rank lower. CATA and Madison Metro rank the best of the eight, which is consistent with the other statistics considered in this analysis. Figure 3-20 displays passenger trips per revenue mile for the eight peer agencies and the peer mean.

Figure 3-19: Passenger Trips per Revenue Hour Peer Comparison

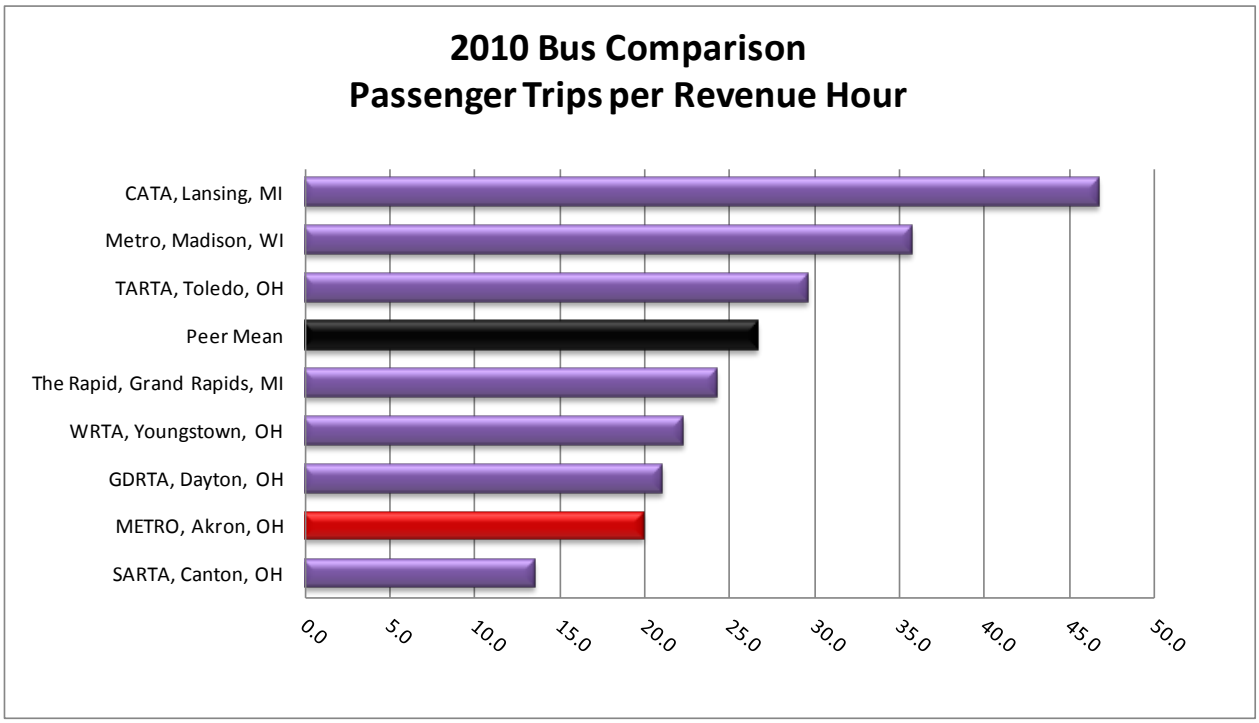
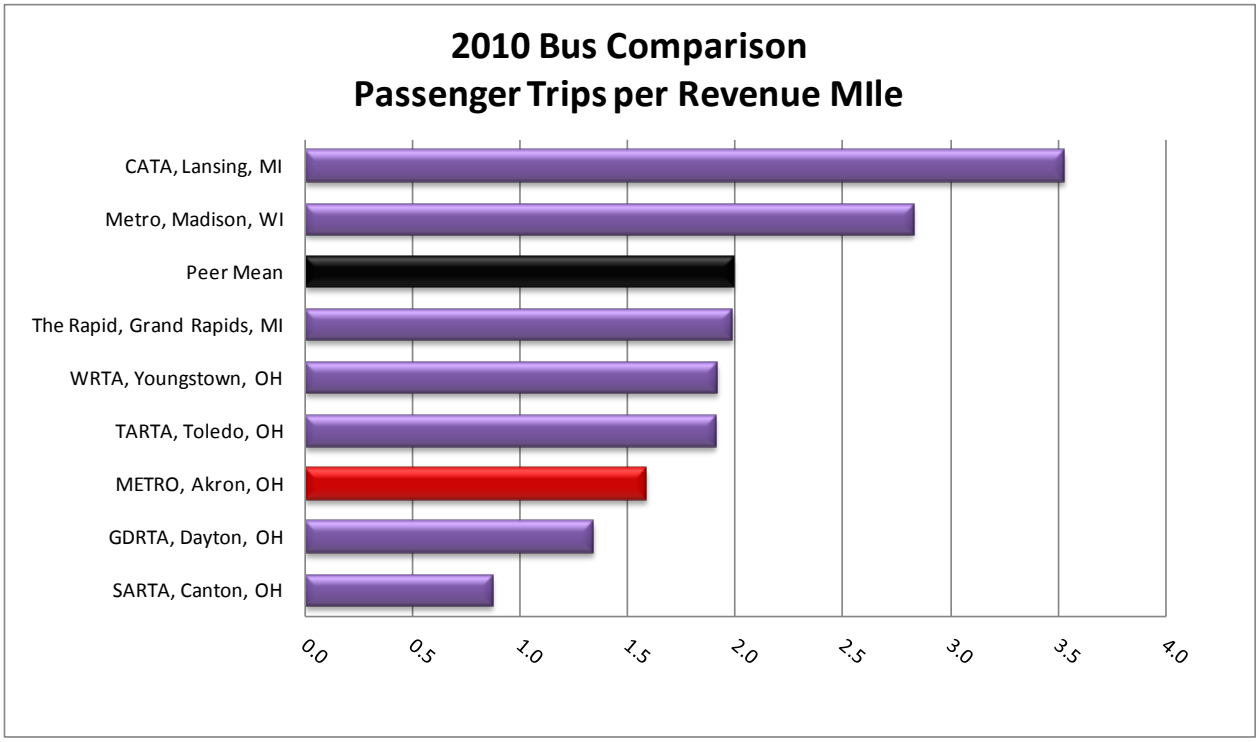


Figure 3-20: Passenger Trips per Revenue Mile Peer Comparison

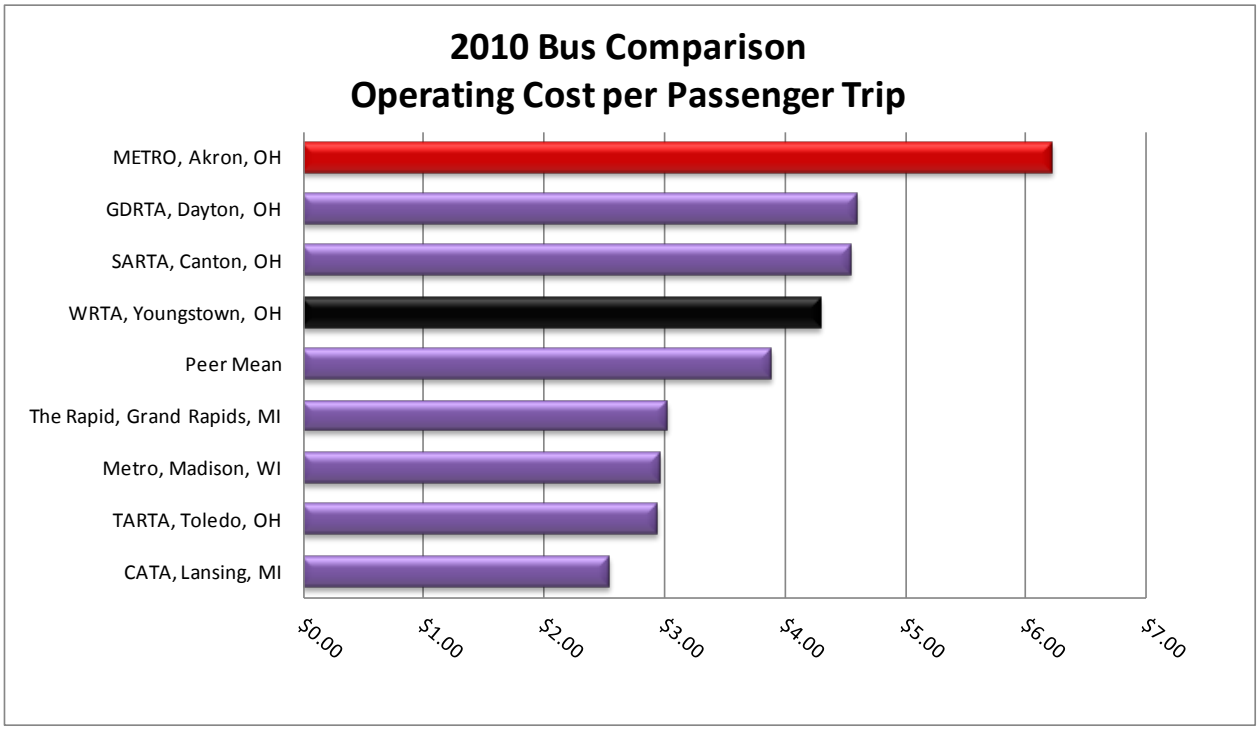


Fixed Route Operating Cost per Passenger Trip

The operating cost per passenger trip reflects how much an agency is spending relative to the number of riders using the system. METRO, with a calculated cost of $6.22 per passenger trip, has the highest cost per passenger trip of the eight considered agencies. This operating cost is 26 percent more than the second highest agency, GDRTA. This means that relative to its peers, METRO is spending more to carry fewer passengers than other comparable agencies.

It is also worthwhile to note the top four ranked agencies for operating cost per passenger trip in this analysis are from Ohio (METRO, GDRTA, SARTA, and WRTA). Table 3-21 displays operating cost per passenger trip for the eight peer agencies and the peer mean.

Figure 3-21: Operating Cost per Passenger Trip Peer Comparison

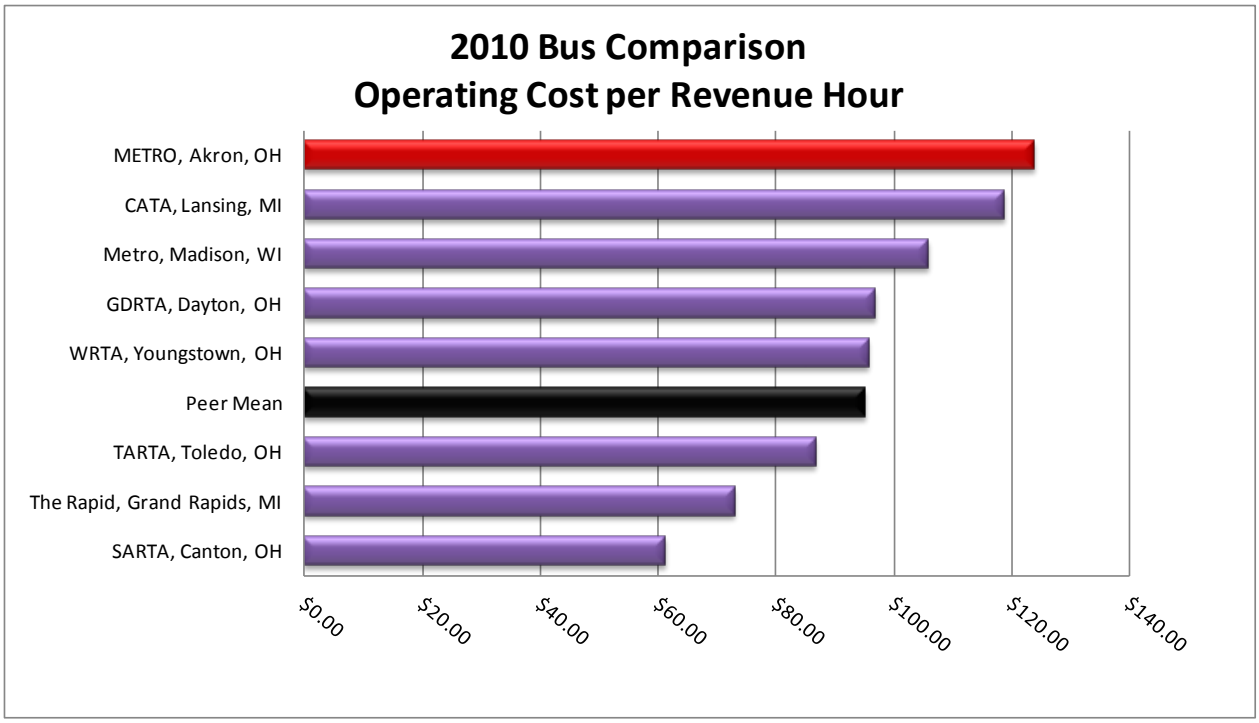


Fixed Route Operating Cost per Revenue Hour

The operating cost per revenue hour is a calculation of spending relative to the amount of service hours an agency is operating. Because the denominator is revenue hours in this calculation, this measure is related to the cost of labor required to operate the service. METRO, with a calculated cost of $123.78 per revenue hour, has the highest operating cost per revenue hour of the eight considered agencies. METRO's operating cost per revenue hour is four percent higher than the second highest agency, CATA.

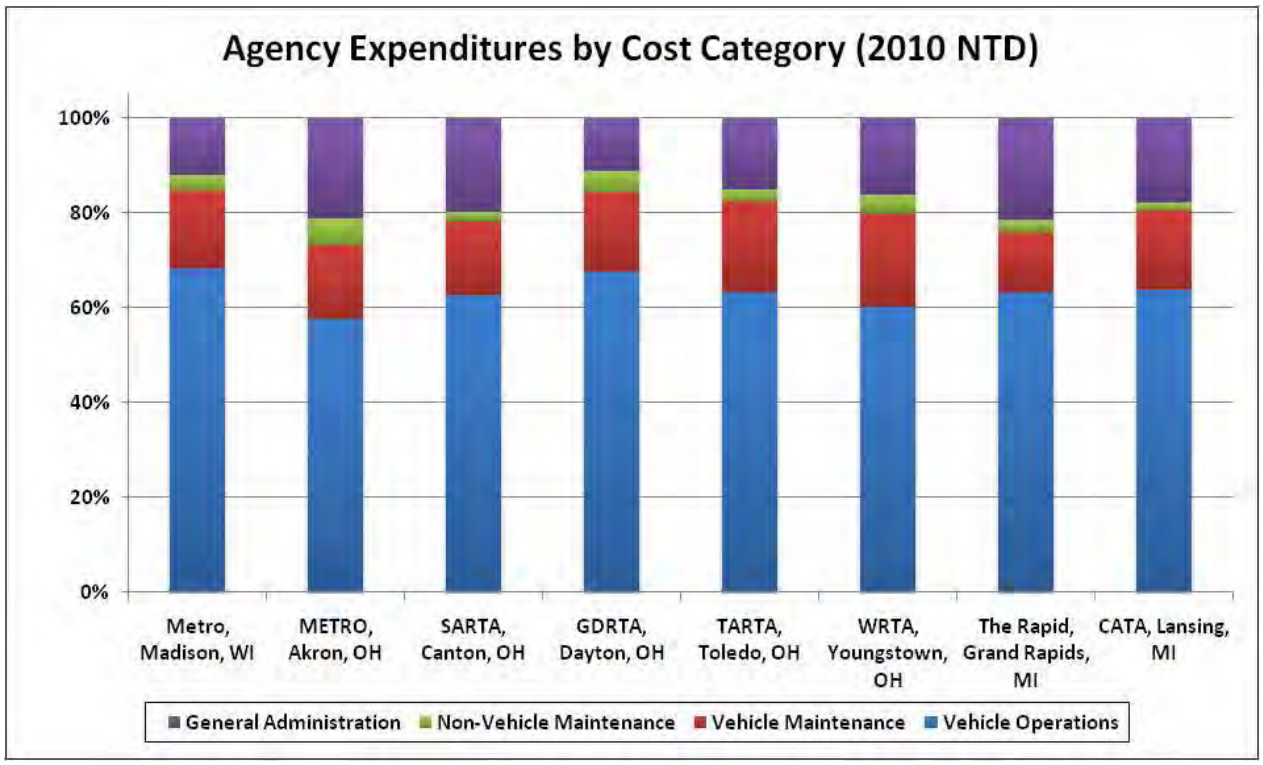
METRO's rank is expected given it also has the highest operating cost per passenger trip. The agency's costs are higher than its peers providing a similar amount of service.

Figure 3-22: Operating Cost per Revenue Hour Peer Comparison



A further analysis was conducted of each peer to determine why METRO's cost per hour is higher than all other peers. 2010 costs were analyzed by the four cost categories reported by NTD: vehicle operations, vehicle maintenance, non-vehicle maintenance, and general administration. The findings, displayed graphically in Figure 3-23, show that METRO spends a larger percentage of total expenditures on General Administration costs (things like executive, legal, IT, planning, finance). Conversely, METRO spends a smaller percentage of its total on Vehicle Operations (i.e., revenue hours). Thus, less service plus higher General Administration costs contribute to METRO's high cost per revenue hour. The cost category percentages by agency are shown in Table 3-3.

Figure 3-23: Cost Category Comparison



Fixed Route Farebox Recovery

Farebox recovery is the percentage of the total operating cost covered by fare revenues. It is directly related to the number of paying passengers and the operating costs of the agency. Thus, an agency that has low operating costs and many paying passengers would have a high farebox recovery.

METRO ranks seventh out of the eight considered agencies, with a calculated farebox recovery ratio of 11.6%. Only WRTA in Youngstown has a lower farebox recovery. METRO's low farebox recovery is consistent with its high cost per passenger trip and cost per revenue hour. The three measures indicate METRO's costs are high relative to the amount of service provided.

Figure 3-24: Farebox Recovery Peer Comparison

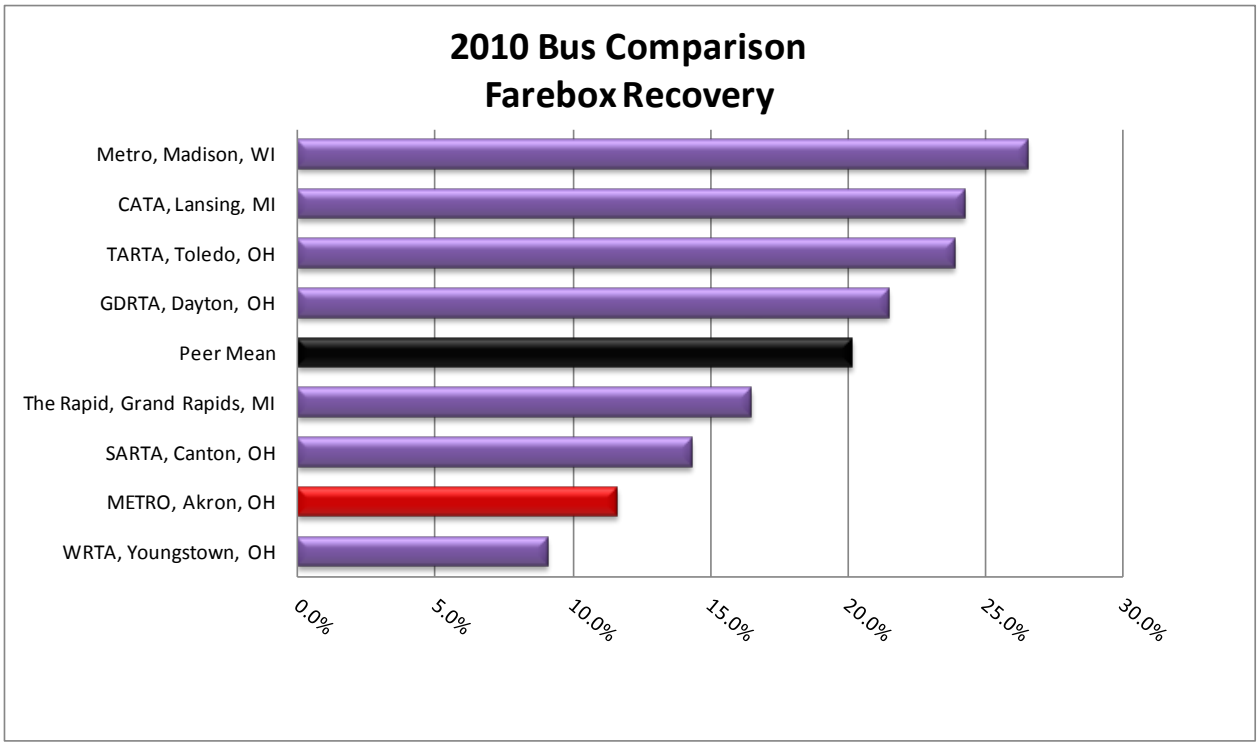


Table 3-3: 2010 NTD Cost Category Comparison

	Costs by Category As A Percentage of whole								
	Metro Madison, WI	*METRO* Akron, OH	*SARTA* Canton, OH	*GDRTA* Dayton, OH	*TARTA* Toledo, OH	*WRTA* Youngstown, OH	*The Rapid* Grand Rapids	*CATA* Lansing, MI	Peer Mean
Vehicle Operations	68%	58%	63%	68%	63%	60%	63%	64%	64%
Vehicle Maintenance	17%	16%	15%	17%	19%	20%	13%	17%	16%
Non-Vehicle Maintenance	3%	5%	2%	4%	3%	4%	3%	2%	3%
General Administration	12%	21%	20%	11%	15%	16%	21%	18%	16%

Table 3-4: 2010 NTD Paratransit Service Statistics

Agency	***Metro***	***METRO***	***SARTA***	***GDRTA***	***TARTA***	***WRTA***	***The Rapid***	***CATA***	
City	**Madison, WI**	**Akron, OH**	**Canton, OH**	**Dayton, OH**	**Toledo, OH**	**Youngstown, OH**	**Grand Rapids**	**Lansing, MI**	***Peer Mean***
NTD Number	**5005**	**5010**	**5011**	**5017**	**5022**	**5024**	**5033**	**5036**	
Service Area (Square Miles)	**72**	**420**	**567**	**274**	**149**	**433**	**185**	**136**	
Service Area Population	245,181	542,899	378,098	559,062	407,784	288,870	482,740	277,316	
Unlinked Passenger Trips	271,347	164,158	128,905	243,125	219,654	30,468	436,577	463,494	244,716
Passenger Miles Traveled	1,566,710	837,610	1,193,861	1,915,080	1,736,914	182,435	4,929,520	4,534,698	2,112,104
Average Passenger Trip Length	5.8	5.1	9.3	7.9	7.9	6.0	11.3	9.8	7.9
Vehicle Revenue Hours	108,444	82,551	56,235	155,653	94,779	21,474	184,795	174,429	109,795
Vehicle Revenue Miles	1,767,095	833,202	1,042,919	2,281,536	1,228,110	311,367	2,671,701	2,580,140	1,589,509
Passenger Trips Per Revenue Hour	2.5	2.0	2.3	1.6	2.3	1.4	2.4	2.7	2.1
Passenger Trips Per Revenue Mile	0.154	0.197	0.124	0.107	0.179	0.098	0.163	0.180	0.150
Operating Costs Per Passenger Trip	$26.01	$29.06	$36.83	$56.24	$20.53	$24.92	$19.36	$24.67	$29.70
Operating Costs Per Revenue Hour	$65.07	$57.79	$84.43	$87.84	$47.57	$35.36	$45.74	$65.56	$61.17
Operating Expenses	$7,056,402	$4,770,620	$4,748,168	$13,672,501	$4,508,957	$759,373	$8,453,206	$11,435,037	$6,925,533
Fare Revenues	$335,877	$547,572	$261,520	$693,985	$954,110	$136,295	$818,861	$855,771	$575,499
Farebox Recovery	4.8%	11.5%	5.5%	5.1%	21.2%	17.9%	9.7%	7.5%	8.3%

Paratransit Peer Comparison

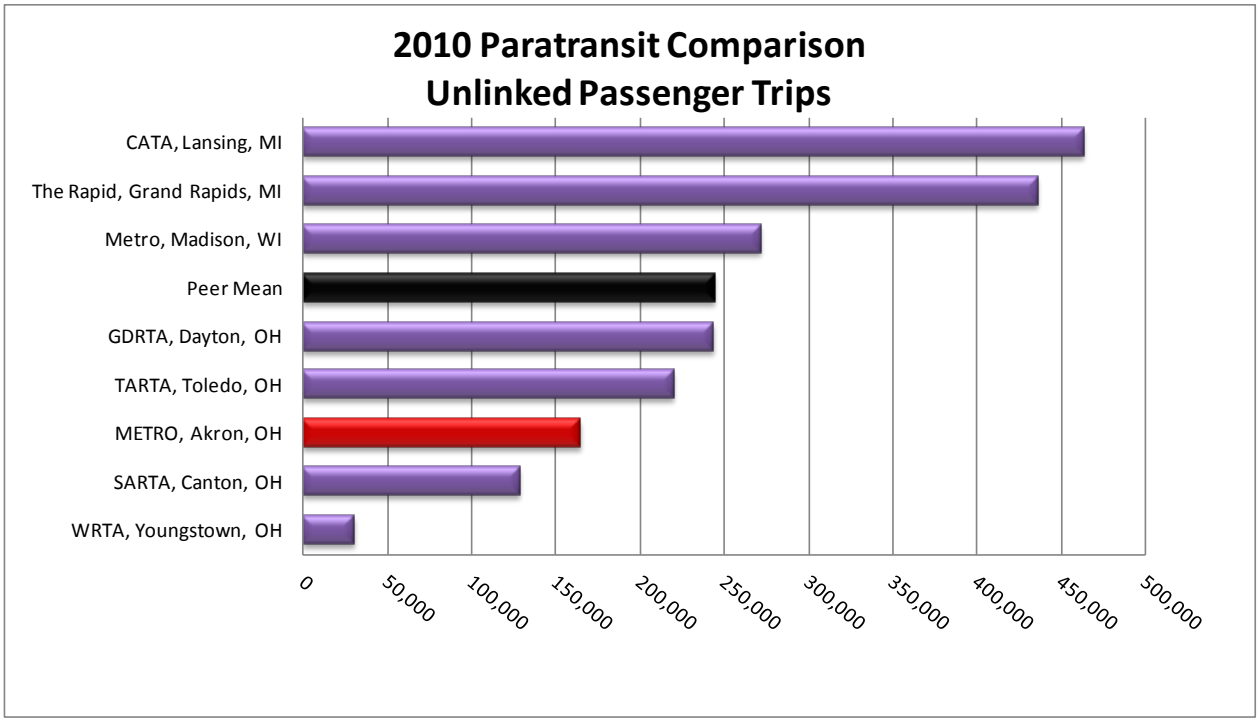
The following section compares paratransit service statistics amongst the same seven peer agencies.

Paratransit Unlinked Passenger Trips

As mentioned before, unlinked paratransit trips are a simple measure of how many paratransit trips the agency is conducting in a year. METRO, with only 164,158 paratransit trips in 2010, ranks sixth out of the eight agencies considered, with only SARTA and WRTA making fewer paratransit trips. CATA in Lansing and The Rapid have the greatest number of unlinked paratransit trips and were also ranked 2nd and 3rd in fixed-route unlinked passenger trips, respectively.

Figure 3-25 displays unlinked passenger trips for the eight peer agencies and the peer mean.

Figure 3-25: Unlinked Paratransit Passenger Trips Peer Comparison

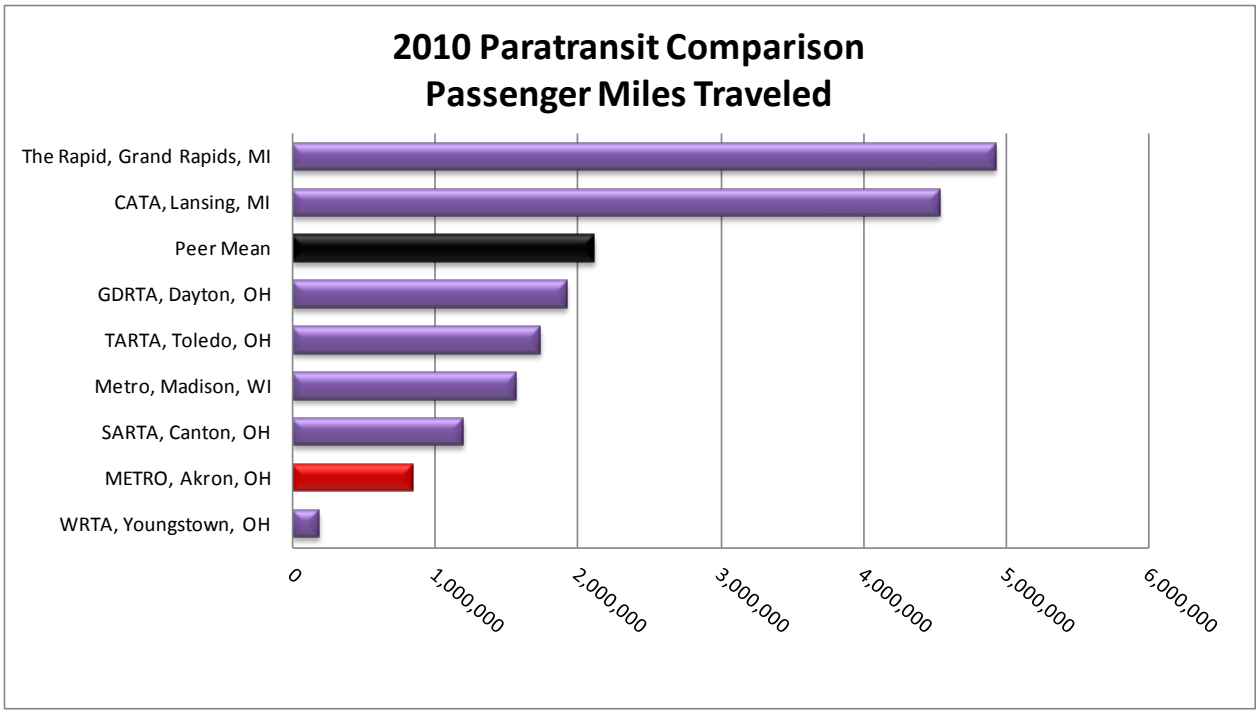


Paratransit Passenger Miles Traveled

METRO ranks seventh out of the eight agencies considered for paratransit passenger miles traveled. Table 3-3 also shows that METRO has the lowest average paratransit trip length (5.1 miles) of the peer agencies. Coupled with a low level of paratransit trips being provided, this may be attributable to the phenomenon that those who are using Akron Metro's paratransit service are clustered together and with their destinations nearby compared to the other peer agencies.

Figure 3-26 displays paratransit passenger miles traveled for the eight peer agencies and the peer mean.

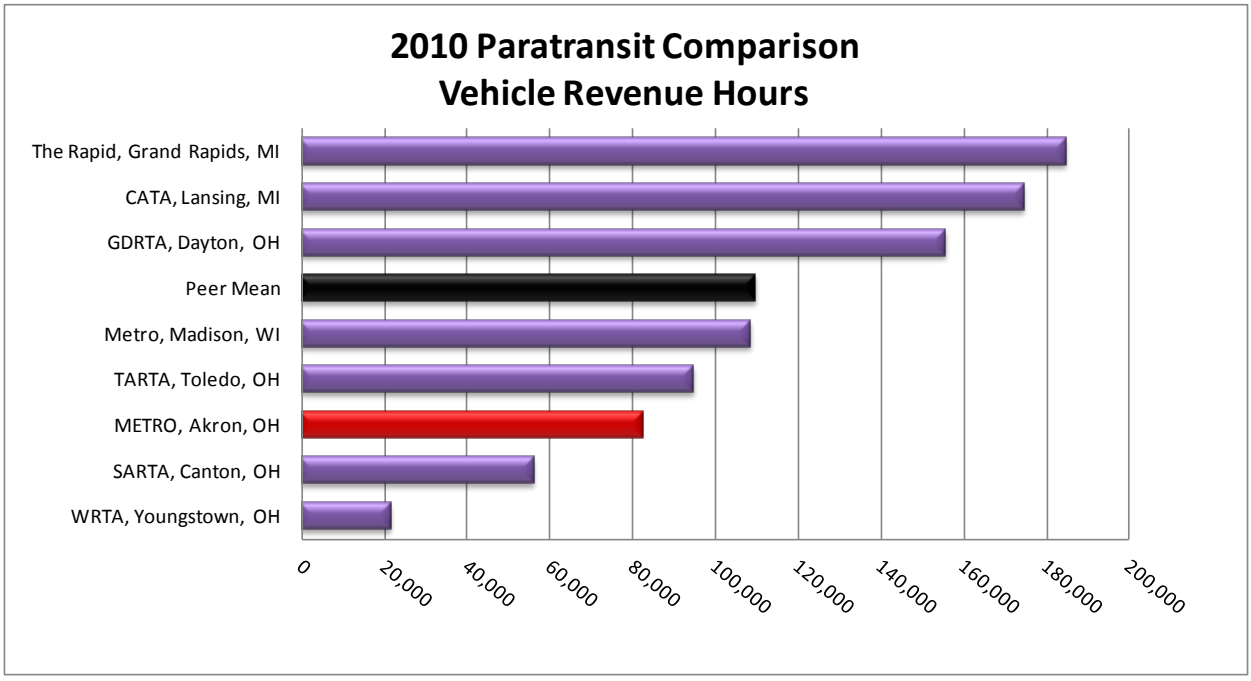
Figure 3-26: Paratransit Miles Traveled Peer Comparison



Paratransit Vehicle Revenue Hours

Once again, vehicle revenue hours are a measure of the amount of service the agency is operating in terms of the number of hours paratransit is operating in revenue service. METRO, which operates over 82,000 vehicle revenue hours, is ranked sixth of the eight peers. Figure 3-27 displays paratransit vehicle revenue hours for the eight peer agencies and the peer mean. The figure shows a clear distinction between the top three agencies (The Rapid, CATA, and GDRTA) and the remaining five.

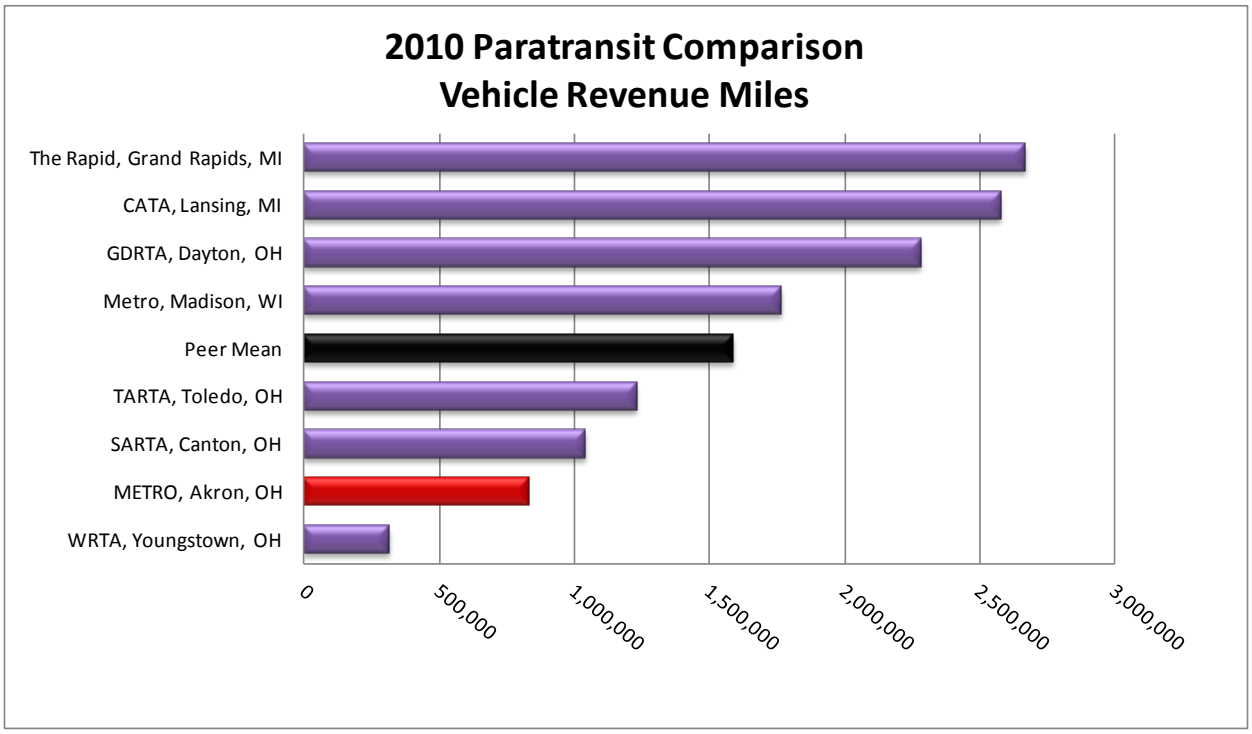
Figure 3-27: Paratransit Vehicle Revenue Hour Peer Comparison



Paratransit Vehicle Revenue Miles

Vehicle revenue miles is another measure of the volume of service an agency provides. METRO is ranked seventh out of the eight agencies, one spot lower than their ranking for vehicle revenue hours. This is expected considering the low number of paratransit trips being made and the small distances being covered during these trips. Both of these would also result in an equally low number of revenue hours and miles being accounted for in both statistics.

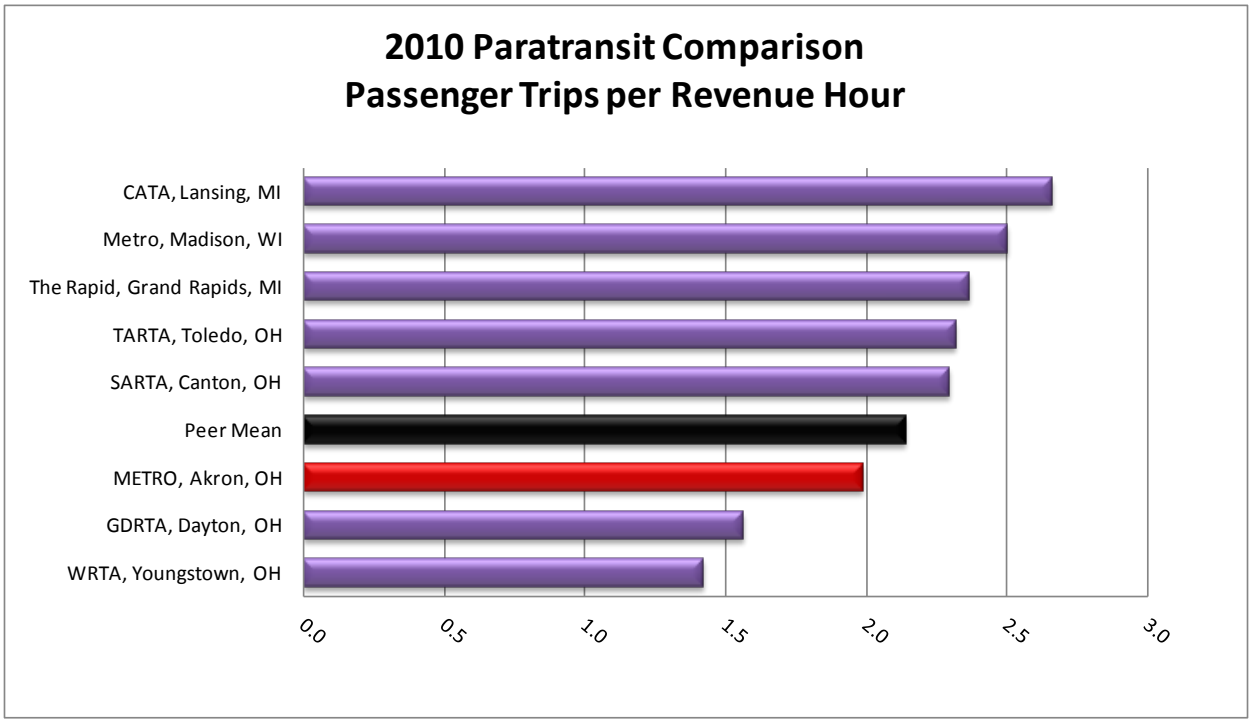
Figure 3-28: Paratransit Vehicle Revenue Mile Peer Comparison



Paratransit Trips per Revenue Hour

METRO, with an average of 2.0 passenger trips per revenue hour, is ranked sixth out of the eight agencies. Most of the peers have more paratransit riders and/or are operating fewer revenue hours of service than METRO but the difference is marginal. CATA, Madison Metro, and The Rapid operate with the highest number of trips per hour. Only GDRTA and WRTA have a lower average paratransit trips per revenue hour. This low statistic may also be attributable to the residence patterns of the county and how those who use the paratransit service are more clustered than the other peer agencies. Figure 3-29 displays passenger trips per revenue hour for the eight peer agencies and the peer mean.

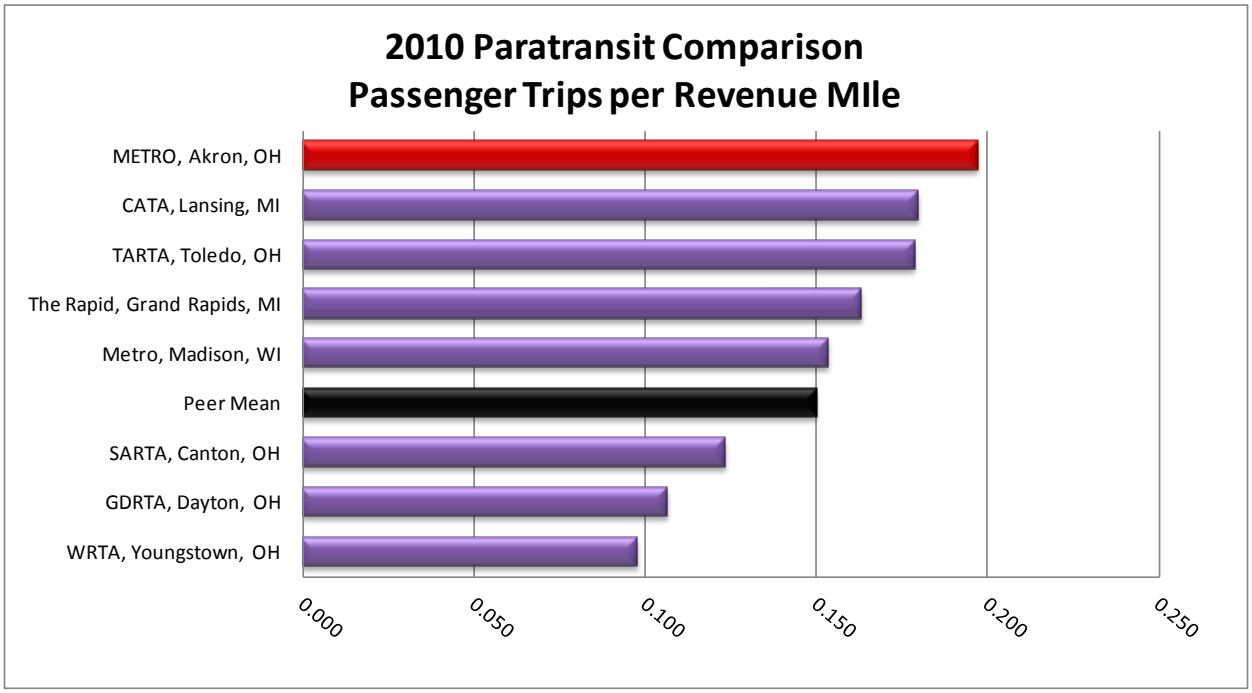
Figure 3-29: Paratransit Trips per Revenue Hour Peer Comparison



Paratransit Trips per Revenue Mile

METRO had an average of 0.197 paratransit trips per revenue mile in 2010, which takes the top spot of among all the agencies. CATA, The Rapid, and Metro Madison which have consistently taken the top spots in the previous paratransit statistics, also rank high in this category taking 2nd, 4th and 5th places, respectively. Having a much lower number of unlinked paratransit trips being provided by Akron Metro may suggest that its paratransit network may be much more condensed than the other three agencies mentioned. Figure 3-30 displays passenger trips per revenue mile for the eight peer agencies and the peer mean.

Figure 3-30: Paratransit Trips per Revenue Mile Peer Comparison

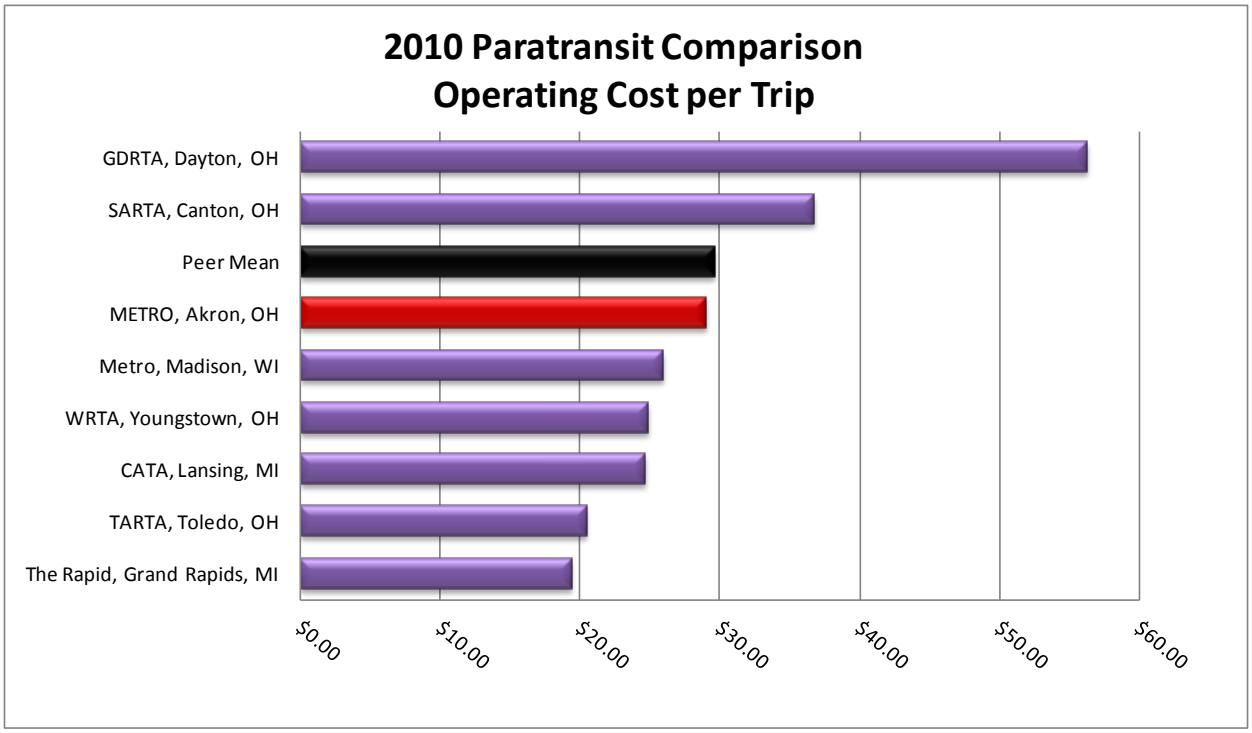


Paratransit Operating Cost per Trip

The operating cost per paratransit trip depicts how much an agency pays to provide each trip. METRO, with a calculated cost of $29.06 per passenger trip, has the third highest cost per passenger trip of the eight considered agencies. Despite having some of the lowest number and shortest lengths of paratransit trips among its peers, its costs to provide this service are some of the highest. This means that relative to its peers, METRO is spending more to carry fewer passengers than other comparable agencies, a similar problem its fixed-route bus system is also experiencing.

Table 3-31 displays operating cost per passenger trip for the eight peer agencies and the peer mean.

Figure 3-31: Operating Cost per Passenger Trip Peer Comparison

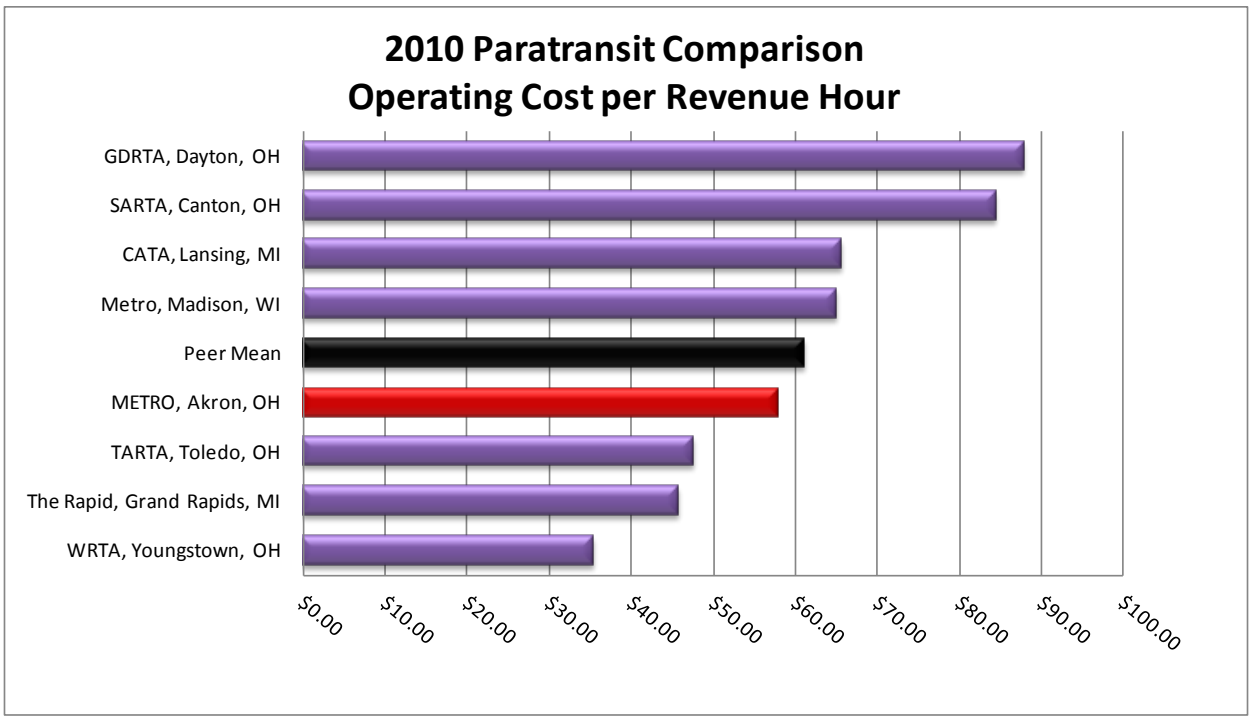


Paratransit Operating Cost per Revenue Hour

The operating cost per revenue hour is a calculation of spending relative to the amount of service hours an agency is operating its paratransit service. Because the denominator is revenue hours in this calculation, this measure is related to the cost of labor required to operate the service. METRO, with a calculated cost of $57.59 per revenue hour, has the fifth highest operating cost per revenue hour of the eight considered agencies.

While not considerably high compared to the other transit agencies, this is high relative to the number of trips it is providing with many of the transit agencies in the top spots operating double the amount of service that Akron Metro is providing.

Figure 3-32: Paratransit Operating Cost per Revenue Hour Peer Comparison

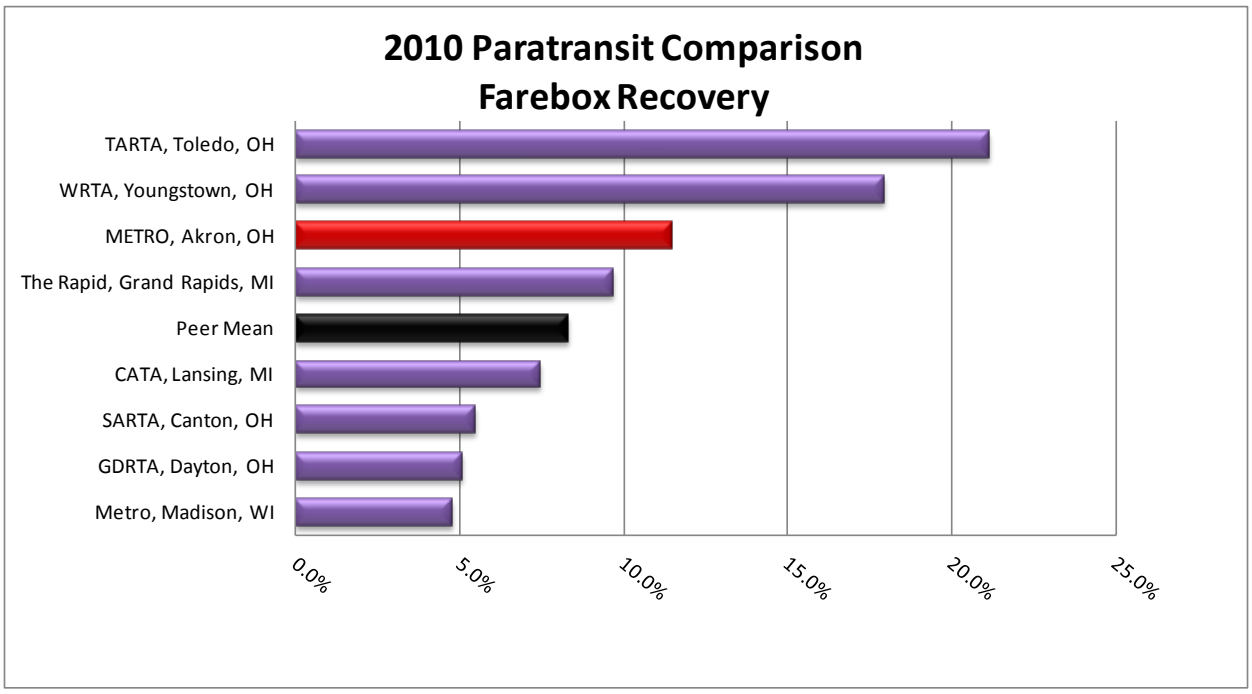


Paratransit Farebox Recovery

Farebox recovery is the percentage of the total operating cost covered by the revenues generated by the paratransit service. It is directly related to the number of paying passengers and the operating costs of the agency. Therefore, an agency that has low operating costs and many paying passengers would have a high farebox recovery.

METRO ranks third out of the eight considered agencies, with a calculated farebox recovery ratio of 11.5% similar to its fixed-route service farebox recovery of 11.6%. Only WRTA in Youngstown and TARTA in Toledo have higher farebox recovery ratios. Despite having one of the higher paratransit farebox recovery ratios, METRO is still covering almost 90% of the cost of the service it provides. METRO's low farebox recovery is consistent with its high cost per passenger trip and cost per revenue hour. The three measures indicate METRO's costs are high relative even with the relatively low amount of paratransit service provided.

Figure 3-33: Paratransit Farebox Recovery Peer Comparison



Peer Analysis Conclusions

The peer analysis indicates that METRO has some room for improvement in terms of productivity and efficiency in comparison to its peers all selected from the Industrial Midwest for both of its fixed-route and paratransit service. Of the eight agencies considered, METRO has the second largest service area population, but ranks in the lower half on basic service measures like passenger trips and revenue miles.

Not surprisingly, these low service levels correspond with low performance measures for service and cost efficiency. METRO ranks near the bottom in several efficiency categories, including having a high cost per passenger trip, high cost per revenue hour, low farebox recovery, and lower number of passengers per revenue hour. As noted in the section on cost per revenue hour, it appears higher than average General Administration expenditures coupled with lower than average vehicle operations expenditures results in METRO having the highest cost per revenue hour of all the peers.

The paratransit network seems to be quite compact, having some of the lowest passenger miles traveled among the eight agencies. However, its costs are among the highest among its peers overshadowing the benefits of its compact paratransit network.

All of these peer analysis findings require further study to determine how METRO should address them. While it is useful to make these sorts of comparisons, understanding the differences in nationally-reported data is inherently difficult due to certain limitations of NTD data. No two transit agencies or regions are precisely alike. Differences in geography, population size, demographics, economies, labor practices, and service area community financial and zoning support of transit, vary greatly between transit agencies even within the same state or region. Additionally, the selection of peer agencies is subjective, even when based on highly similar agency and service area characteristics like budget, number of employees and operating statistics. Seven other agencies could justifiably have been selected as peers, and a different group of agencies might generate a different result.

Finally, lack of detail behind the NTD data make it difficult to ensure that we are making an “apples-to-apples” comparison between various aspects of the agency. For example, on the question of administrative costs, some agencies might include certain operations functions, such as street supervision, within the General Administration labor category, while others might include that within the Transit Operation category. The level of employee contribution towards medical coverage or employer contribution to pension plans could explain some differences in administrative cost variation between transit systems. Variation in operator pay scales, usually a major portion of transit operating expense, could also cause these differences. METRO will perform further analysis of each of the areas identified as issues in the peer analysis and will appropriately address them.

Chapter 4 Future Conditions

This chapter considers the future of transit service in Summit County. The future demand for transit service is projected based on existing demand for transit service, as well as where demand is likely to change based on projected demographic and employment growth.

The first section of this chapter considers existing demand through a transit propensity analysis. This analysis employs data from the 2010 regional trip model to indicate areas where there is potential for increases in transit ridership if new or increased service levels were provided. This analysis considers two market areas: low mode share and high mode share areas. In low mode share areas, people are using transit for fewer trips than the regional average, but have many of the demographic and development characteristics that often indicate a propensity to use transit. In high mode share areas, people are already using transit to make more trips than the regional average, and the demographic and development characteristics indicate a strong propensity to use transit. Both market areas serve as indicators of areas where transit ridership would likely increase if new or additional transit service were provided.

The second section of this chapter considers the projected population and employment change in Summit County between 2000 and 2030. These projections are based on existing land use and demographic trends within the county, and represent what is *expected* to occur if these trends continue. The subsequent chapter will consider the transit network that would best serve the projected population and employment growth patterns in the county. Transit networks for alternative development patterns, based on varying land use changes, will also be considered.

Transit Propensity Analysis

A transit propensity analysis was conducted in order to determine the potential for transit ridership in Summit County. The analysis focused on two markets: (1) where characteristics for transit riders are strong but ridership is low, and (2) where characteristics for transit riders are strong and ridership is high. The first market represents latent demand, or trips that METRO is currently under-serving. This market indicates areas where new or additional transit services may result in additional riders. The second market represents places where transit use is already strong, but where additional service may generate further ridership gains.

Methodology

In basic terms this analysis uses the correlation between geographic area and transit trip demand to determine what places within Summit and Portage counties are best for transit travel. The AMATS regional travel forecasting model was used as the exclusive data source since it already information on both demographic characteristics and trip demand by geographic zone. The AMATS model provides information on origins and destinations. Information is organized in geographic districts called TAZs (traffic analysis zones). Each TAZ contains information on population and employment which the model uses to determine number and mode type of the trip.

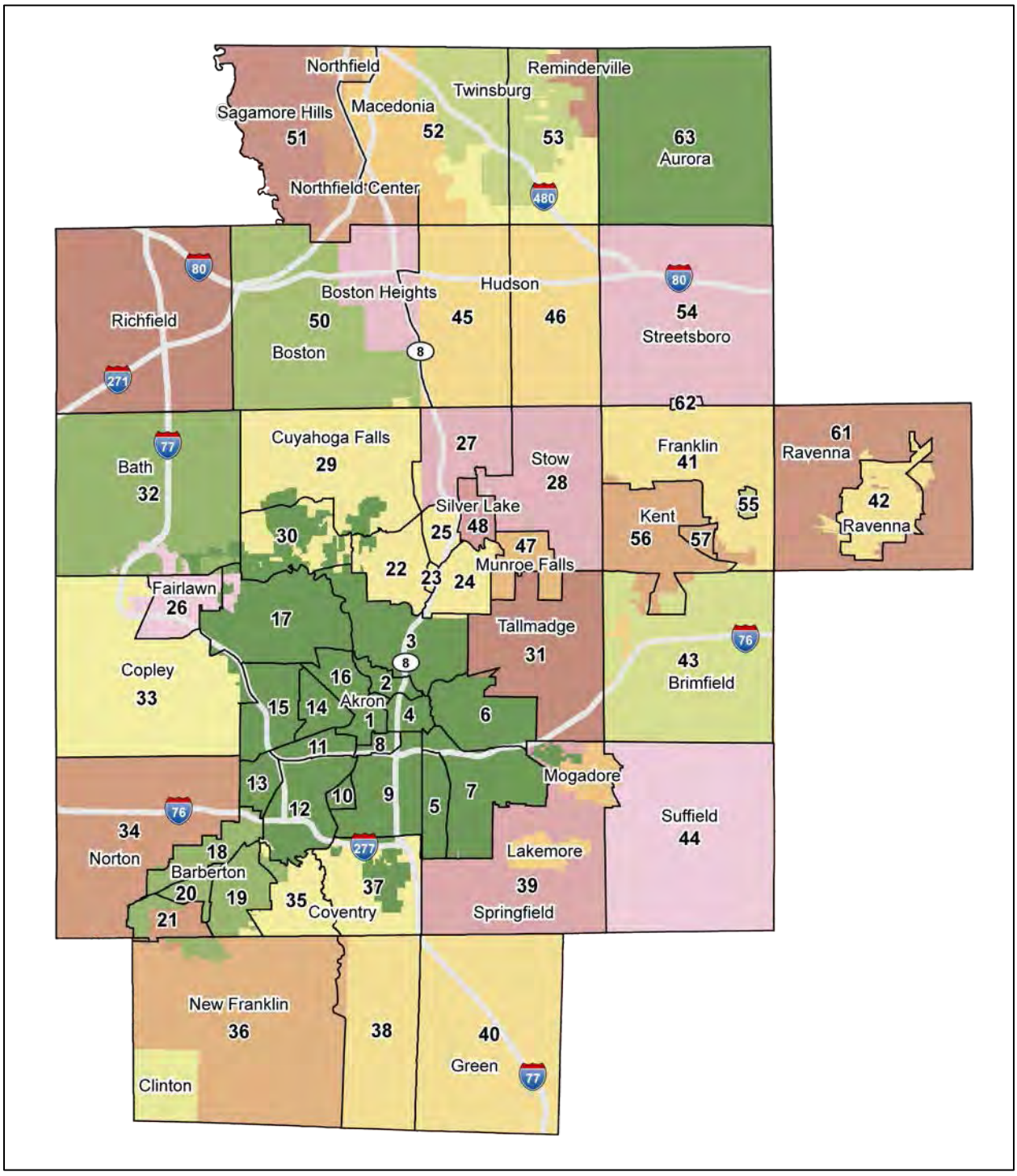
Since the model is setup as origins and destinations, every zone can connect to every other zone. As a result, information is presented in a matrix, with origins forming the left side of the matrix and destination zones across the top. Figure 4-1 depicts a typical origin-destination matrix.

Figure 4-1: Origin-Destination Matrix

		Destination Zones				
		1	2	3	4	5
Origin Zones	1					
	2					
	3					
	4					

The current AMATS model has 833 TAZs, which is too many to effectively assess transit propensity. In order to make the data easier to understand, TAZs were agglomerated into 60 districts. The districts were developed by and provided to METRO by AMATS, and are structured to match the basic boundaries of communities within Summit and Portage counties. Figure 4-2 shows the district setup for the analysis.

Figure 4-2: Transit Districts for Analysis



A total of six characteristics were used to determine the market analysis, as described below.

Median Household Income

Median household income was used to determine areas where riders are likely to use transit in greater numbers because they either do not own a car or, if they do own a car, are very sensitive to changes in gas prices. The information available was household income from the 2000 US Census (household income data from the 2010 Census was not available at the time that the transit propensity analysis was performed). Therefore, origin districts of interest were those with median household incomes less than $20,000 in year 2000 dollars.

Ratio of Transit Speed to Auto Speed

The model provides data on average auto speed per trip and average transit speed per trip. When a traveler makes a decision whether to take their car or use transit, the speed of the trip is usually a deciding factor, with auto usually winning out because it is typically much faster than the transit trip.

However, if the transit speed is competitive with the auto speed, there is a better chance that a traveler will choose transit for his or her trip. Therefore, districts of interest were those with a ratio of transit speed to auto speed of 0.75 or better.

Average Trip Distance

Travelers are more likely to choose transit when the trip is of a longer distance. This is because the cost of the auto trip goes up with distance while the transit fare is generally fixed, regardless of whether the trip is short or long-which makes the longer trip a bargain for the transit user. In addition, some travelers may prefer using transit for longer distances because they can do something else with the time instead of driving, a phenomenon that has increased with the advent of smart phones and wifi access. Districts of interest were those with an average trip distance of greater than 15 miles, because this is the distance where cost of driving becomes greater than the cost of the one-way fare.

Population Density

Population density is indicative of transit ridership potential at the *origin* end of the trip for a number of reasons. First, density means more people living within a given area, which translates into more total trips, and more transit trips. Second, density can generate traffic congestion, which can discourage some people from driving. Third, density means more uses within walking distance, which results in some people leaving their car at home for some types of trips, or not owning a car at all. Finally, density means people living in apartment buildings and condominiums, which often have lower income residents who are more likely to use transit. Origin districts of interest were those with an average population density greater than 5 people per acre. While this is a somewhat low population density compared to larger cities, it reflects the top 28% of districts (17 out of 60) in the analysis area.

Employment Density

Employment density is indicative of transit ridership potential on the *destination* end of the trip for several of the same reasons as mentioned in population density. Employment density means more total trips, which means more transit trips. Further, employment density can indicate congestion and parking constraints which could result in more people opting for transit. Finally, in some cases, employment density can also indicate places where buildings are oriented close to the street, which make it easier for transit riders to access the destination than buildings with large setbacks. Destination districts of interest were those where employment is density greater than 5 jobs per acre. This represents

approximately 10% (6 out of 60) districts in the analysis. This includes zones in and near downtown Akron, the hub of METRO's regional transit network.

Total Trips

Total trips is another important factor, because although an origin-destination connection could exhibit other related characteristics that indicate potential for transit ridership, if the total trip market is small, then it may not be worthwhile it for METRO to add or increase service to that trip pattern. Districts of interest were those with at least 1,000, daily trips because this represents only the top 10% of districts in the analysis.

All analysis maps use arrows to depict the connection between origin and destination districts. The blunt end of the arrow is the origin end while the arrowhead is the destination end. Figure 4-3 shows this connection.

Analysis

The analysis consisted of determining transit potential for two distinct markets. Market 1 is defined as areas with good transit characteristics but a current transit mode share of less than 2 percent. Market 2 is defined as areas with good transit characteristics and a current transit mode share greater than 2 percent. Appendix C shows the raw analysis results for Low Mode Share and High Mode Share markets.

Figure 4-3: Explanation of District to District Pair

Market 1 – Areas with Low Transit Mode Share

Market 1 sought districts with low transit mode share; only districts where less than 2% of trips are taken using transit were included in this analysis. Based on data that was available in the Akron regional trip model, two specific time periods were tested for Market 1: Peak Period Home Based Work and Off-peak Period-Other Trips.

The formula used for market 1 included two parts. Part 1 includes zonal characteristics that may result in transit ridership. Part 2 measures the relative market size based on the number of trips traveling between district pairs.

Market 1 Scoring Formula Part 1

1 point if Origin district median household income is less than $20,000 **+** 1 point if Transit to Auto Speed ratio is greater than 0.75 **+** 1 point if Average Trip Distance is greater than 15 miles **+** 1 point if Population Density is greater than 5 people per acre **+** 1 point if Employment Density is greater than 5 jobs per acre

Market 1 Scoring Formula Part 2

- 0 points if Total Trips is less than 1,000 (Districts in the bottom 90%)
- 1 point if Total Trips is between 1,000 and 1,500 (Districts in top 7-10%)
- 2 points if Total Trips is between 1,500 and 2,000 (Districts in top 5-7%)
- 3 points if Total Trips is between 2,000 and 3,500 (Districts in top 3-5%)
- 4 points if Total Trips is between 3,500 and 10,000 (Districts in top 2-3%)
- 5 points if Total Trips is greater than 10,000 (Districts in top 1%)

Part 1 was then multiplied by part 2, which resulted in each district to district pair generating a score. This score represents the potential for additional transit ridership if services were offered to that particular district to district pair. The map in Figure 4-4 displays zones with a score of at least 3 (the top 40 connections in the analysis). The complete table is available at the end of this chapter.

Market 2 – Areas with High Transit Mode Share

Market 2 sought districts with high transit mode share. Districts were considered if more than 2% of trips were taken with transit. Similar to Market 1, Market 2 also tested both Peak Period Home Based Work and Off-peak Period Other Trips.

The formula used for market 2 was the same as Market 1, with the noted exception that only districts with mode share greater than 2% were used.

Market 2 Scoring Formula Part 1

1 point if Origin district median household income is less than $20,000 **+** 1 point if Transit to Auto Speed ratio is greater than 0.75 **+** 1 point if Average Trip Distance is greater than 15 miles **+** 1 point if Population Density is greater than 5 people per acre **+** 1 point if Employment Density is greater than 5 jobs per acre

Market 2 Scoring Formula Part 2

- 0 points if Total Trips is less than 1,000 (Districts in the bottom 90%)
- 1 point if Total Trips is between 1,000 and 1,500 (Districts in top 7-10%)
- 2 points if Total Trips is between 1,500 and 2,000 (Districts in top 5-7%)
- 3 points if Total Trips is between 2,000 and 3,500 (Districts in top 3-5%)
- 4 points if Total Trips is between 3,500 and 10,000 (Districts in top 2-3%)
- 5 points if Total Trips is greater than 10,000 (Districts in top 1%)

For market 2, part 1 was then multiplied by part 2, with the results shown in Figure 4-5. This map displays zones with a score of at least 5 (the top 44 connections in the analysis).

Figure 4-4: Market 1 Results

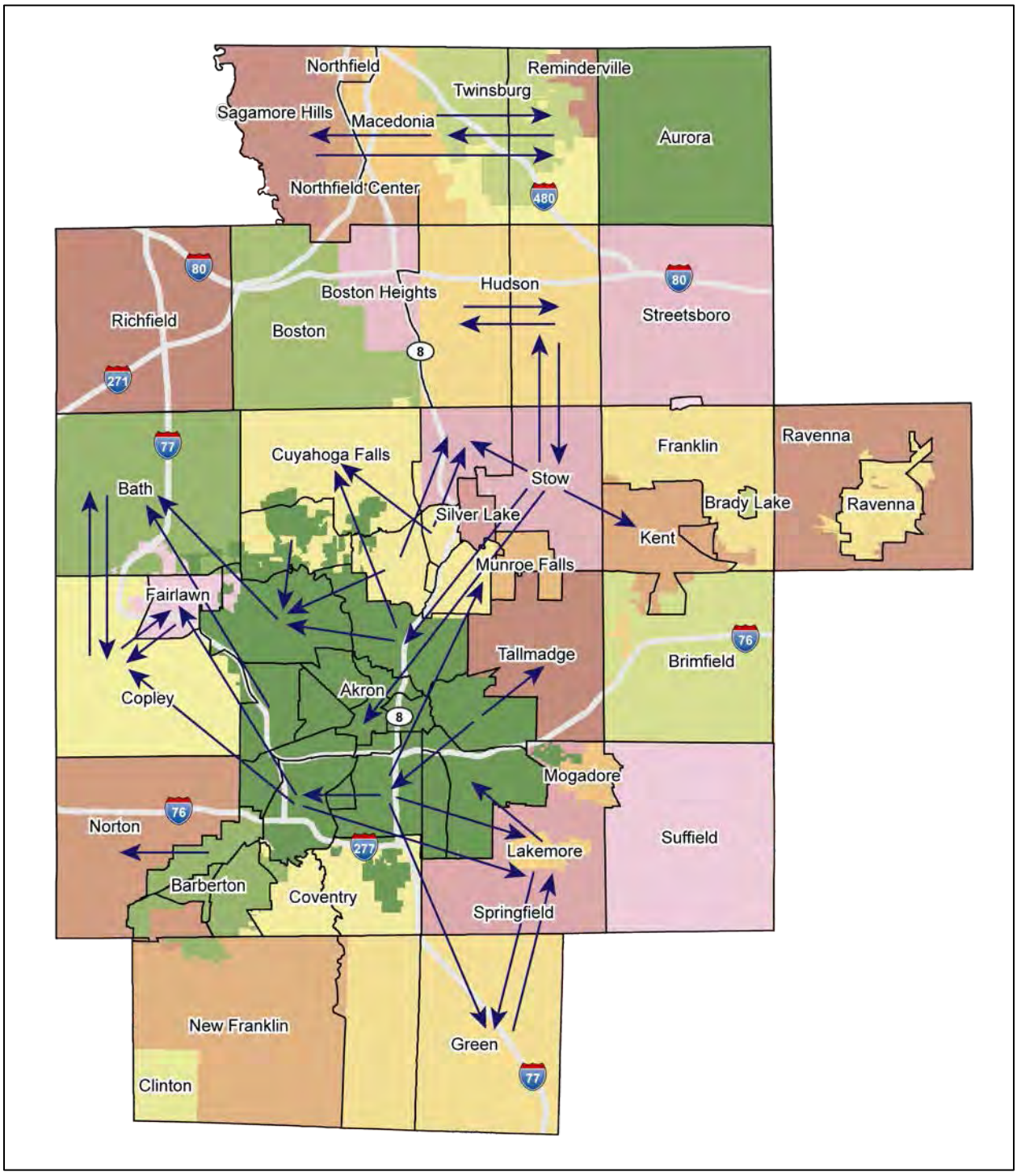
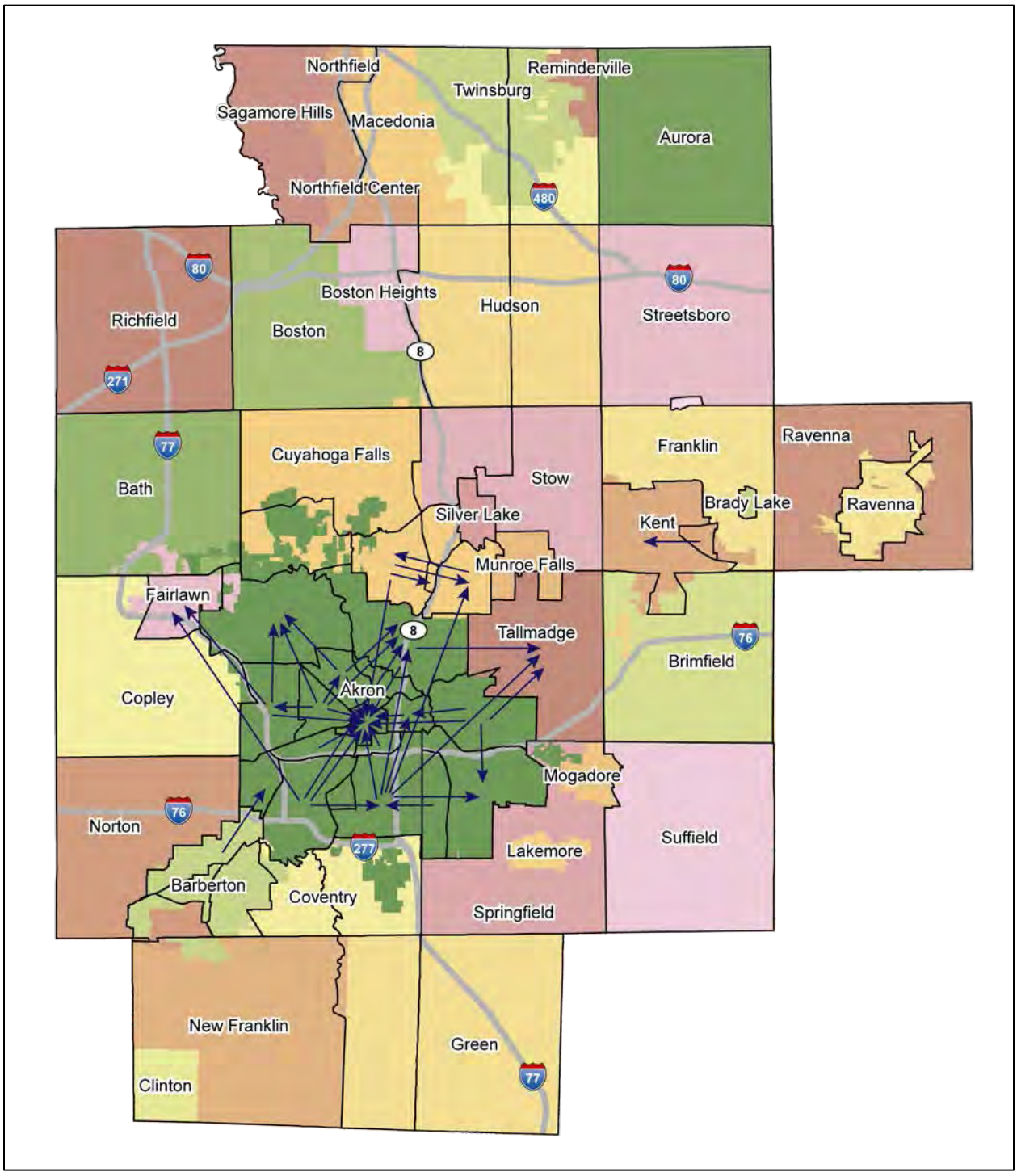


Figure 4-5: Market 2 Results



Transit Propensity Results

Market 1: Low Mode Share Results

The goal of the Market 1 analysis is to test places that currently have good characteristics to generate transit ridership but now exhibit low transit mode share. These are areas that could potentially increase transit ridership if additional service is offered. There are four major connections that indicate that they have the potential to generate more ridership with additional service. Not surprisingly, each of these is in the outer suburban areas surrounding Akron or near the border with Cuyahoga County, where relatively little transit service is offered now.

Northwest Akron

In Northwest Akron there are several connections that have potential for generating additional ridership, as shown in Figure 4-6. There are three shorter connections between Northwest Akron (centered on West Market Street) and surrounding zones. The map also shows desired connections to Fairlawn, Copley, and Bath zones, roughly forming a triangle. These results indicate a potential circulation pattern between all three zones. These results also indicate potential for crosstown routes connecting the north and southwest sides of the City of Akron to Northwest Akron and Fairlawn.

Southeast Akron

Potential connections in Southeast Akron are shown in Figure 4-7. They include the southeast, southern, and southwest zones in the city proper with the Green and Lakemore zones. Again, this appears to support the potential for crosstown connections that do not go into downtown Akron. Indications of the potential for crosstown (non-downtown oriented) services must be weighed against the recent history of crosstown bus services in the METRO service area, which generally have experienced low ridership and were eliminated during periods of budget tightening. Further analysis should be conducted before implementing new routes to serve crosstown trip patterns.

Stow

Connections in and around Stow are shown in Figure 4-8. Two zones appear in the zone map to be very attractive: the one centered on Stow itself, and the zone to the west of Stow. In the Stow zone, the arrows are pointed away, meaning that it is primarily an origin zone. Stringing the arrows from Akron through Stow to Hudson, it appears that commuter service from Hudson and Stow areas destined for northern and downtown Akron might perform well. The zone west of Stow includes development along OH-8, and shows three shorter connections from surrounding zones destined for this area. A circulation or dial-a-ride service in this area could help with trip distribution given the area's predominantly auto-oriented and suburban nature.

Twinsburg/Macedonia

The Twinsburg and Macedonia areas, shown in Figure 4-9, are far from downtown Akron and very suburban in nature. Therefore, it is unsurprising that this area would have a low transit mode share. The connections that are indicated by the transit propensity analysis are for trips in between these zones themselves. As in the case of Stow, a circulator route or dial-a-ride service in Twinsburg/Macedonia could help with trip distribution in this area.

Figure 4-6: Market 1 Results for NW Akron

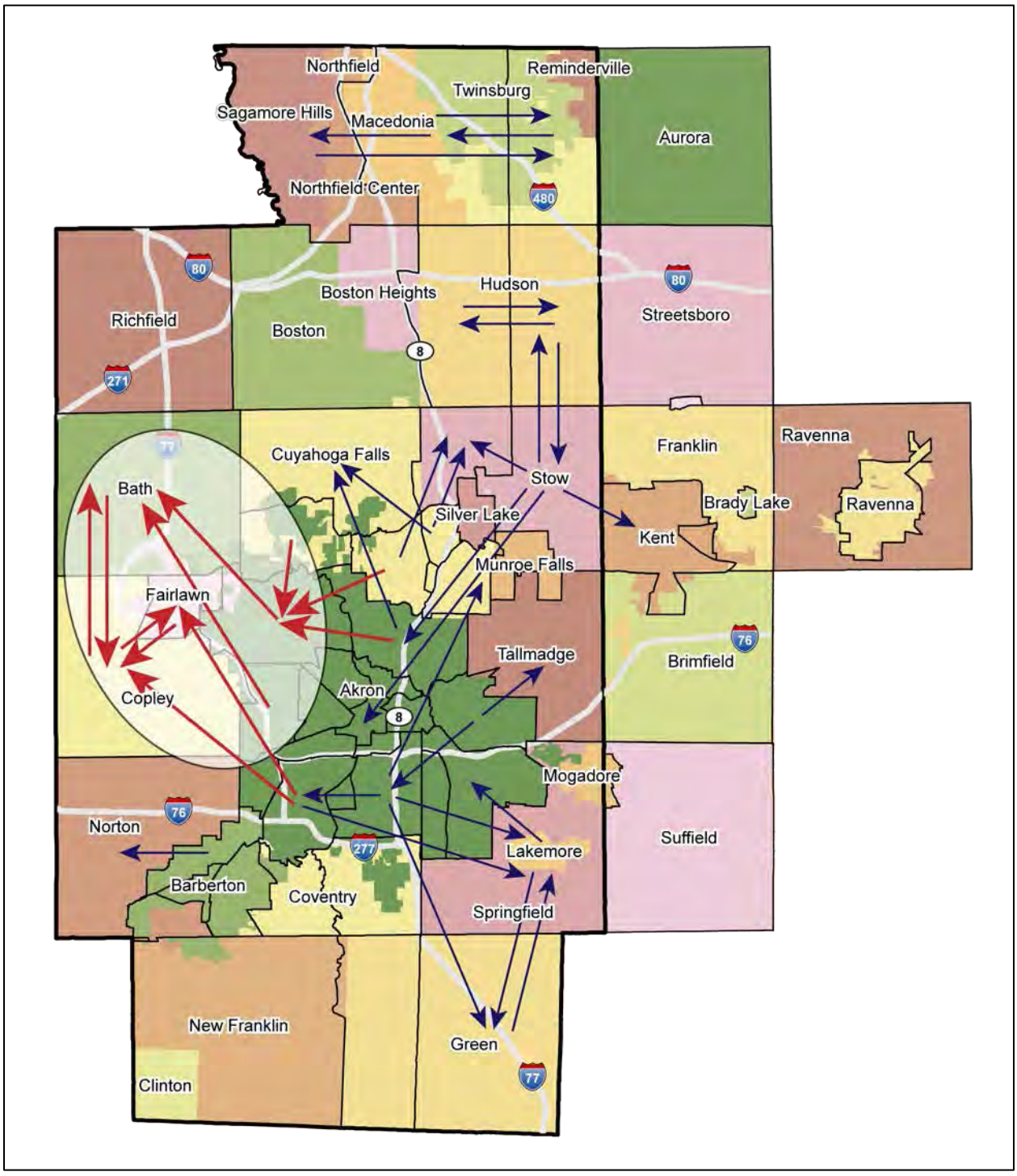


Figure 4-7: Market 1 Results for SE Akron

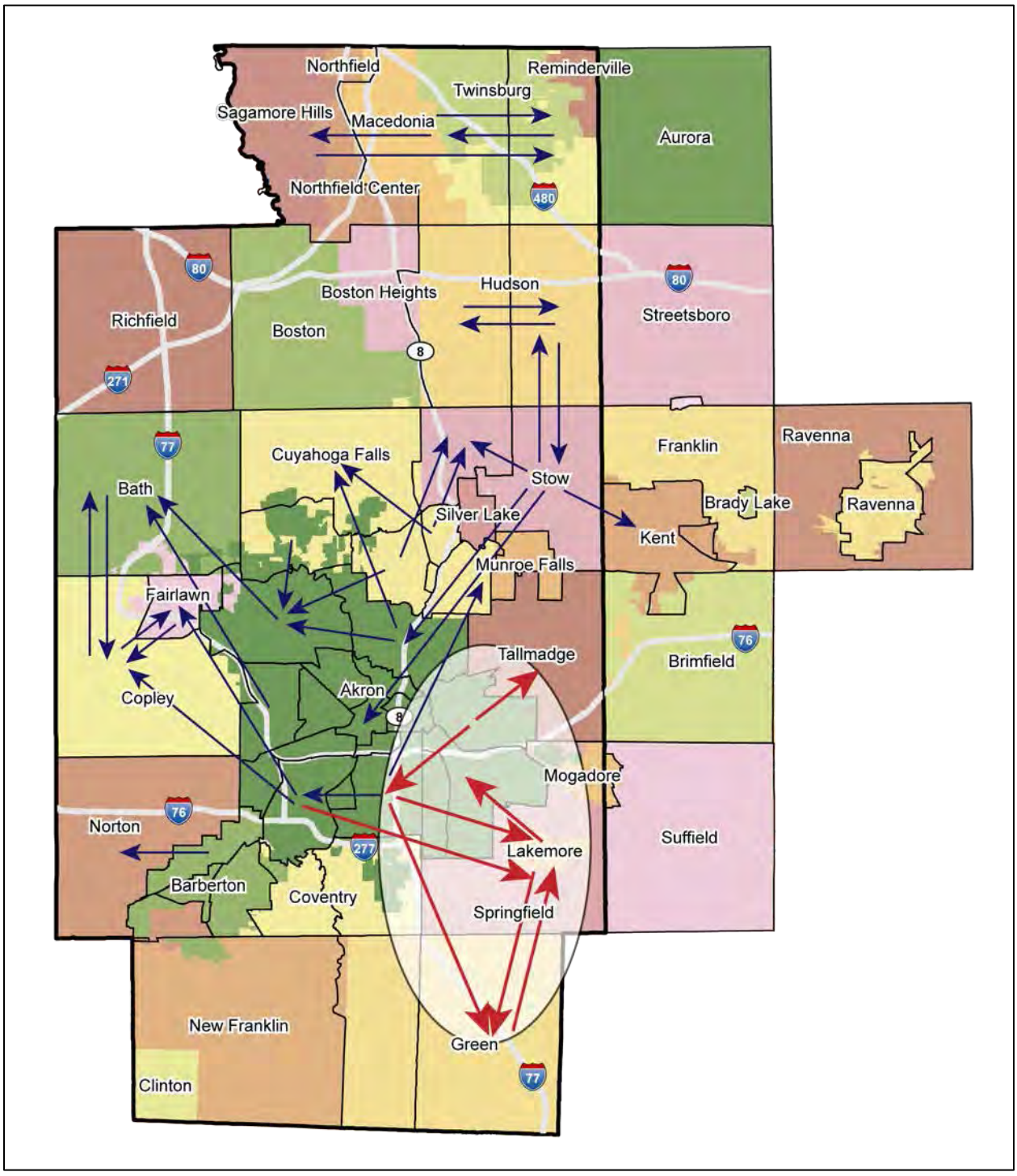


Figure 4-8: Market 1 Results for Stow

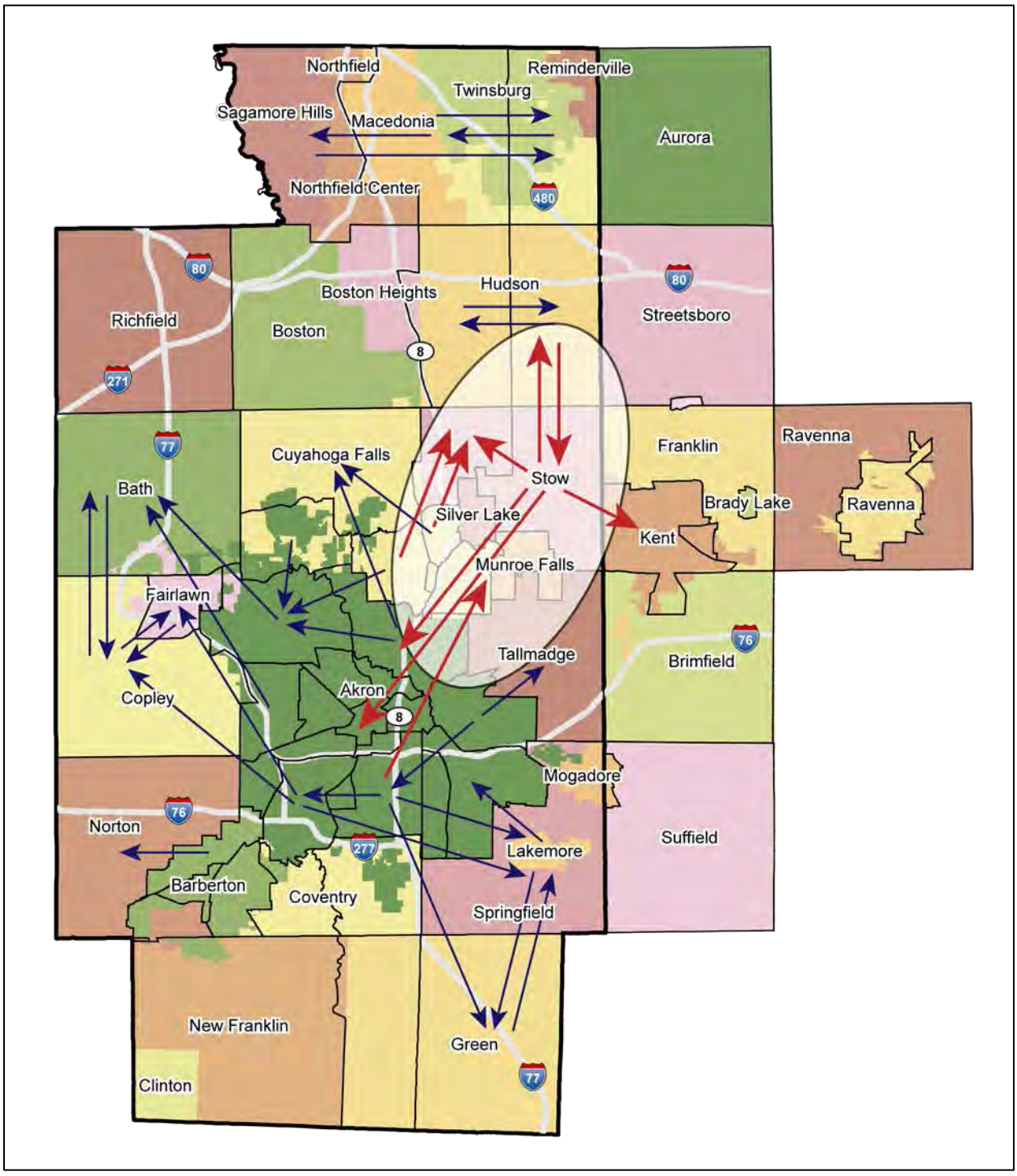
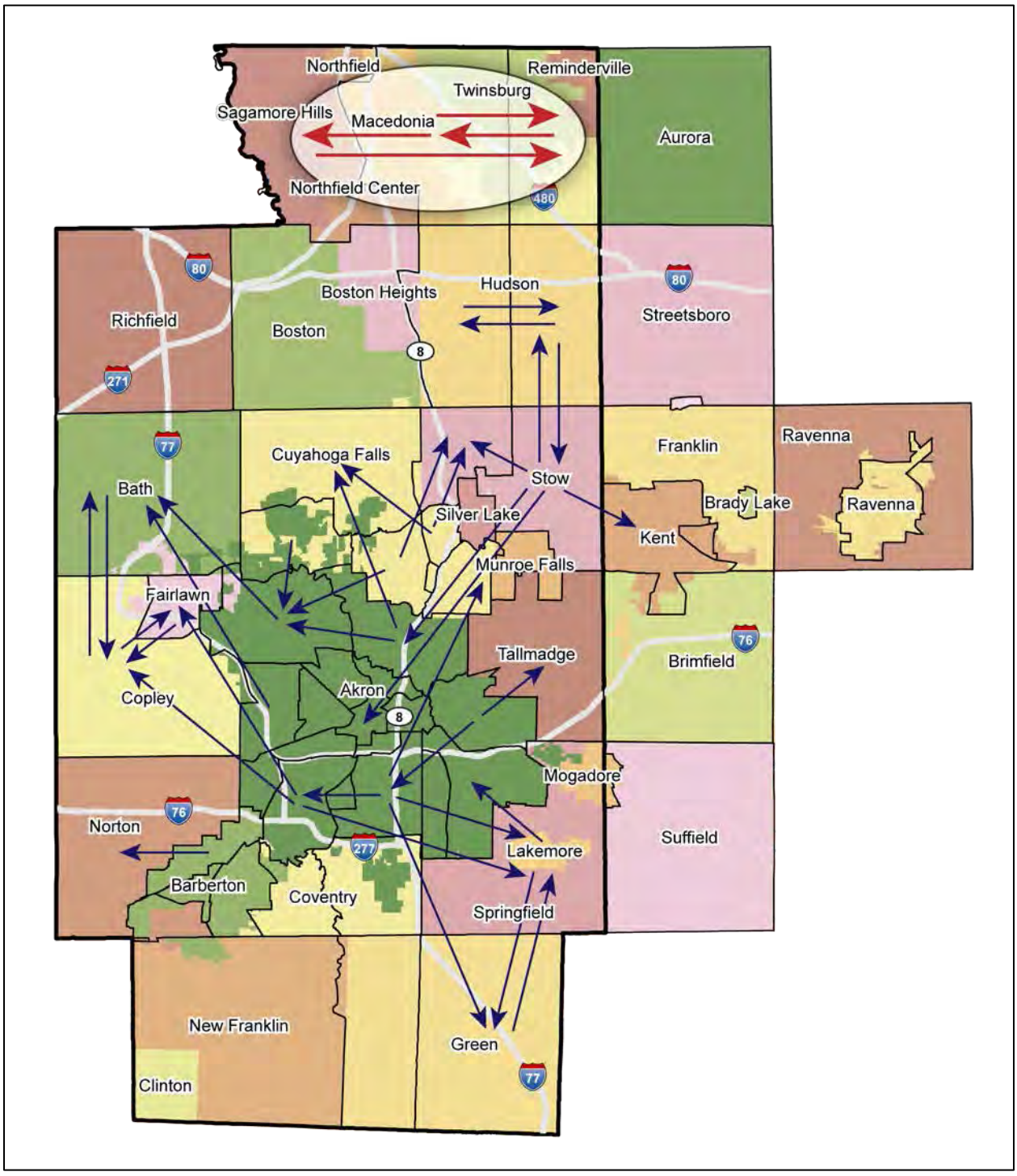


Figure 4-9: Market 1 Results for Twinsburg/Macedonia



Market 2: High Mode Share Results

The goal of the analysis of Market 2 is to identify trip patterns that currently have good characteristics to generate transit ridership and already have high transit mode share. Each of these areas and connections could potentially generate even more ridership if additional transit services were added to existing METRO services. These areas are also the most likely to respond to the addition of premium services like express bus and Bus Rapid Transit (BRT).

Akron Core

Figure 4-10 depicts transit connections to downtown Akron. The results are expected, showing strong propensity for travel to downtown from many areas. Downtown Akron remains the main employment center in the region from all sides of the city. The arrows show every zone that surrounds the downtown has a strong connection. This is in part why the downtown Transit Center is so successful, since it concentrates services into the downtown area, where the highest demand already exists. Connections to the east, west, southeast, south, and north all indicate the potential for further ridership. As noted in the introduction, these areas include corridors that are most likely to respond to "BRT" type improvements since ridership is already high, density already exists, and time travel savings could induce more people to use the transit provided by METRO.

Crosstown Connections

Figure 4-11 shows other significant connections with transit mode share already above 2 percent. One striking result is the number of crosstown connections. These are trips between zones in the city and inner-suburbs that bypass downtown. Figure 4-11 shows connections between Fairlawn and west and southwest Akron. It shows connections between southwest, south, and southeast Akron. It also shows connections to Tallmadge from south and east Akron zones. One or more crosstown routes could serve these destination zones directly without going into downtown Akron.

Figure 4-10: Market 2 Results for the Akron Core

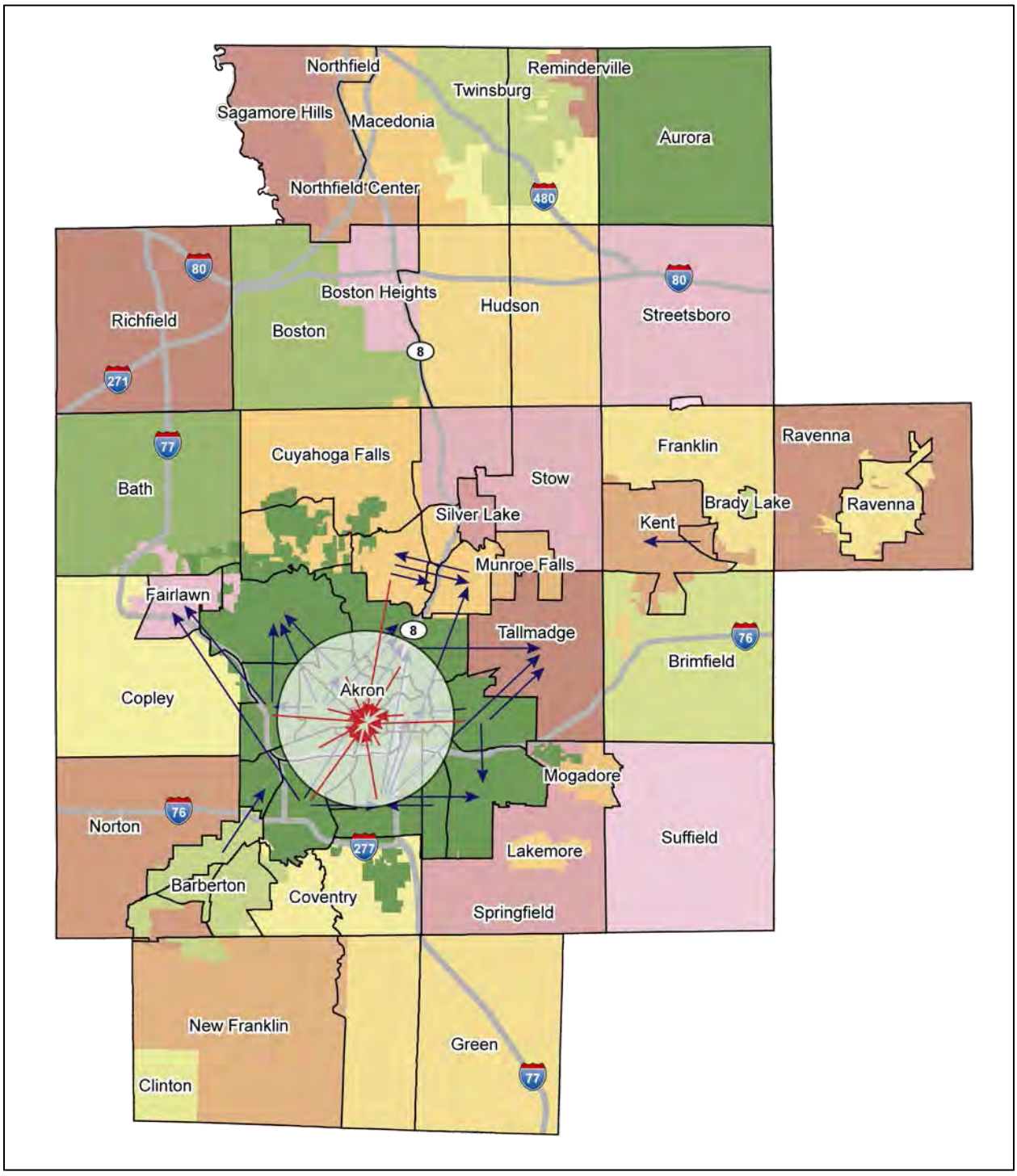
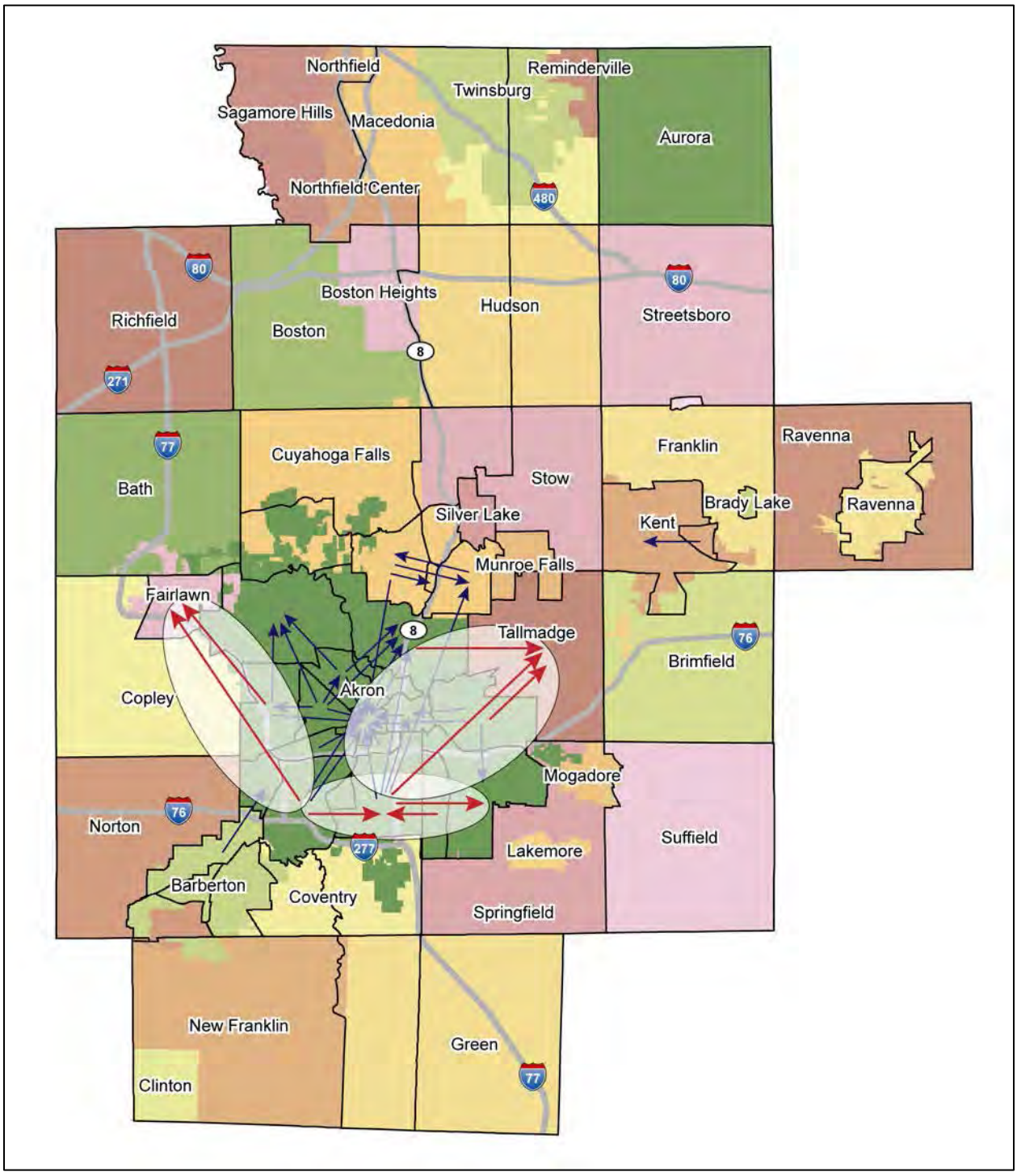


Figure 4-11: Market 2 Results for Crosstown Connections



Projected Demographic Changes

As discussed in the previous chapter, demographic and development patterns are strong indicators of transit use. The existing conditions analysis examined existing population and employment densities within Summit County. AMATS has made projections for what the population and employment distribution is likely to look like in 2030 if present development trends and growth rates persist. This analysis will identify areas where the market for transit is likely to grow or become smaller, and will, more importantly, allow METRO to plan for its future.

2000-2030 AMATS Projected Population Change

Over the next 20 years, people in Summit County are projected to continuing the present trend of out-migration from the City of Akron and other urban areas in Summit County. According to AMATS' *Connecting Communities* study, the region experienced stagnant population growth rates from 2000 to 2005 (less than one percent growth), but consumed over 16,000 acres of previously undeveloped land in residential development in that time period.

As seen in Figure 4-12, the central areas of the county, including the City of Akron, are projected to experience population losses as a result of the outward movement of residents from the county's urban core. Neighborhoods throughout the City of Akron are projected to sustain heavy population losses, with only a few TAZs showing small population gains. Only one TAZ, located in the far northern part of the city, is expected to have significant population growth.

Outside of the City of Akron, a number of other townships are projected to see population decreases, particularly in the central and southern portions of the county. These include western Coventry, Springfield, Mogadore, eastern Cuyahoga Falls, Silver Lake, and Snow. Population losses are also expected to occur in the townships located in and around Cuyahoga Valley National Park.

Despite the projected population loses in the City of Akron and other close-in suburbs, Summit County is projected to experience an overall population increase from 2000 to 2030. The population in the county is expected to grow by approximately 56,300 persons, a 3.7 percent increase from 2000. This growth is projected to occur predominately at the edges of the county, not only as a result of the out-migration from the City of Akron and its suburbs, but also as a result of residents of the Cleveland and Canton metro areas moving into Summit County. Population growth will be concentrated in the north, in the Reminderville, Twinsburg, and Sagamore Hills areas, as well as in the west, in Bath and Copley Townships, and in Green and New Franklin to the south.

Although Summit County is expected to experience population growth, population densities are expected to decline in almost all areas of the county. As shown in Figures 4-13 and 4-14, population density in the City of Akron will experience the largest decrease, as more people migrate from older and denser urban areas to farther out suburbs characterized by very low density suburban development. Areas of the county that are expected to experience population growth will still be dominated by very low density development, with almost all peripheral areas of the county having fewer than 5 people per acre in 2030.

Figure 4-12: Projected 2000-2030 Population Change

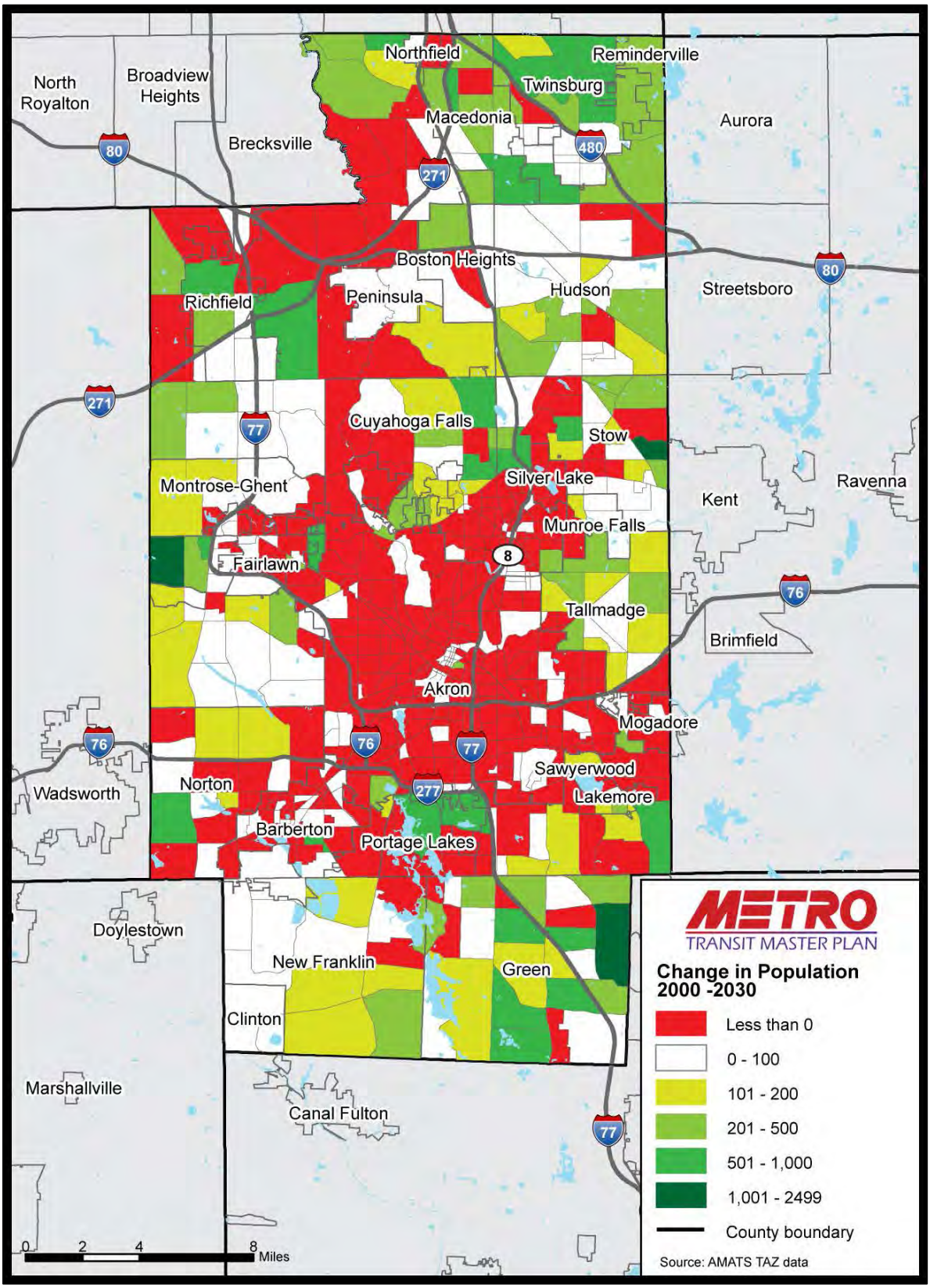


Figure 4-13: 2000 Population Density

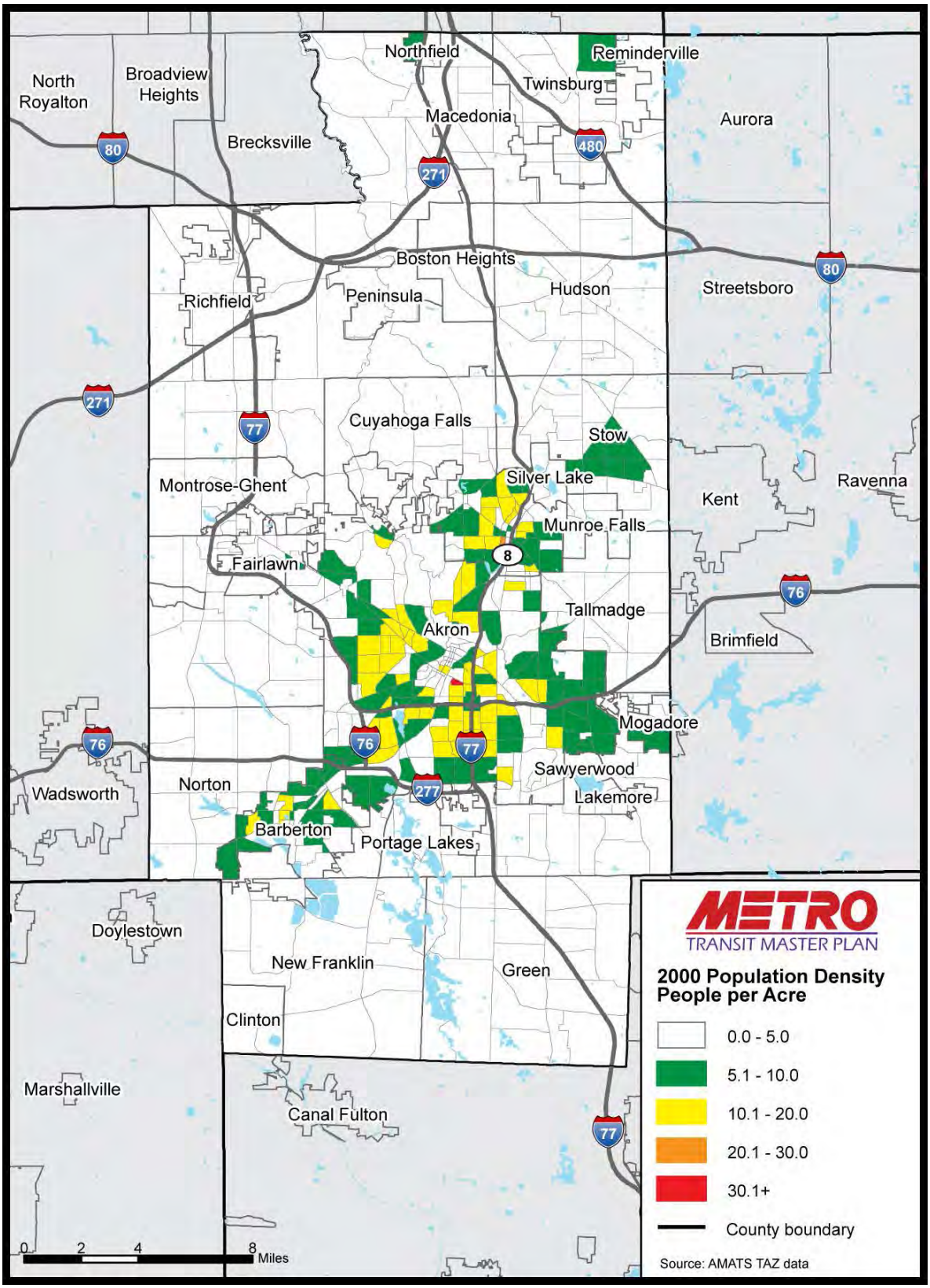
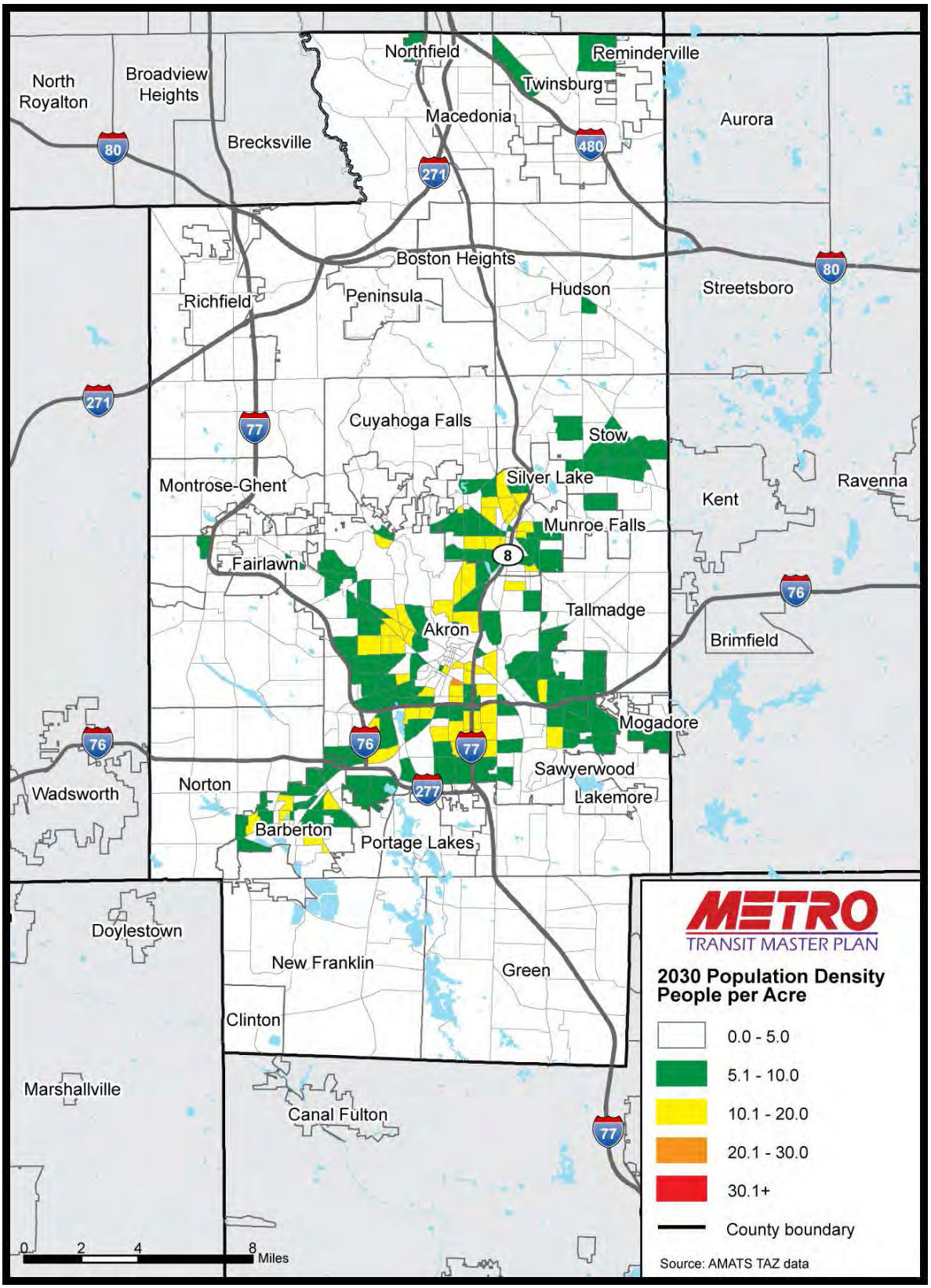


Figure 4-14: Projected 2030 Population Density



2004-2030 AMATS Projected Employment Change

Over the next 20 years, Summit County is expected to experience a net increase in jobs. As shown in Figure 4-14, the northern half of the county is projected to have the largest employment gains, particularly in the Twinsburg, Macedonia, Richfield and Hudson areas. The Fairlawn and Montrose areas, to the west, and Green Township, to the south, are also projected to experience job growth. Notably, many of the areas that are projected to experience employment growth are also expected to have population gains over the next 20 years.

The City of Akron is projected to see job growth in some parts of the city and job loss in others. Downtown of Akron is projected to experience healthy job growth over the next 20 years, with some TAZs projected to have double digit growth rates. However, this job growth in downtown is offset by the projected job loss to the south of I-77, with many TAZs projected to experience jobs loss at double digit rates. Only a few TAZs in south Akron are projected to experience minimal job growth in the next 20 years.

Similar to the out-migration of residents in Summit County, employers and businesses in the region are also expected to continue dispersing and relocating to the suburban parts of the county. This projected dispersion of job centers is particularly worrisome for the future of transit in Summit County because transit is most efficient when it can take people from many places to one area—a strong downtown employment center. When jobs centers become increasingly dispersed to different suburbs, it is very difficult to serve them efficiently and effectively with transit.

This projected migration of jobs is evident when considering the existing employment density levels in comparison with the projected density levels for 2030, shown in Figures 4-16 and 4-17. While Downtown Akron is expected retain its high employment density levels over the next twenty years, most other areas where job density is projected to increase are beyond the City of Akron. The Fairlawn and Montrose area is expected to become a fairly dense employment center, solidifying its position as a second downtown for the county. The job growth that is projected to occur in the far northern and southern parts of the county, in Twinsburg Township and Green, is expected to be fairly low density, in the range of 5 to 10 jobs per acre.

Figure 4-15: Projected 2004-2030 Employment Change

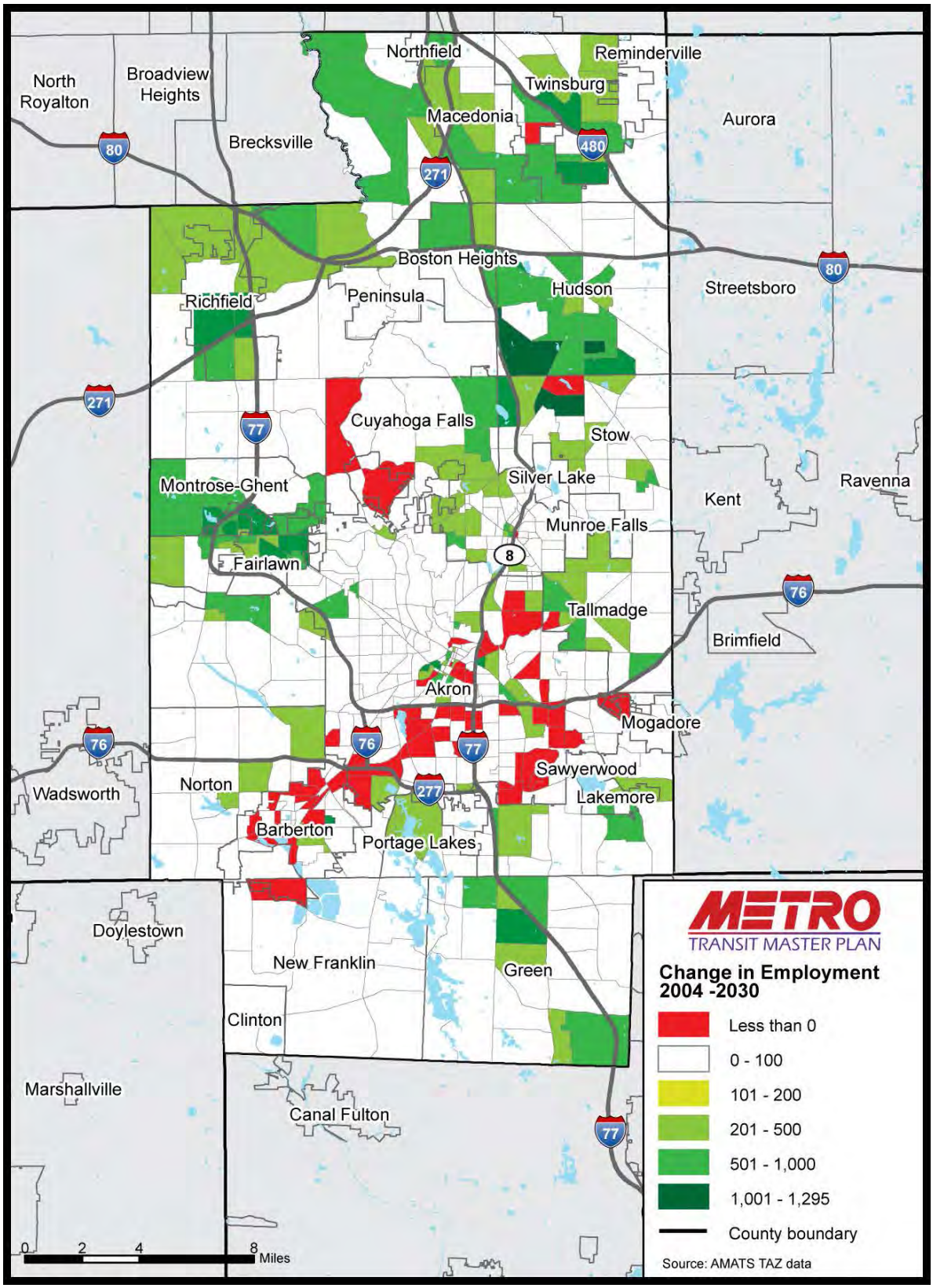


Figure 4-16: 2004 Employment Density

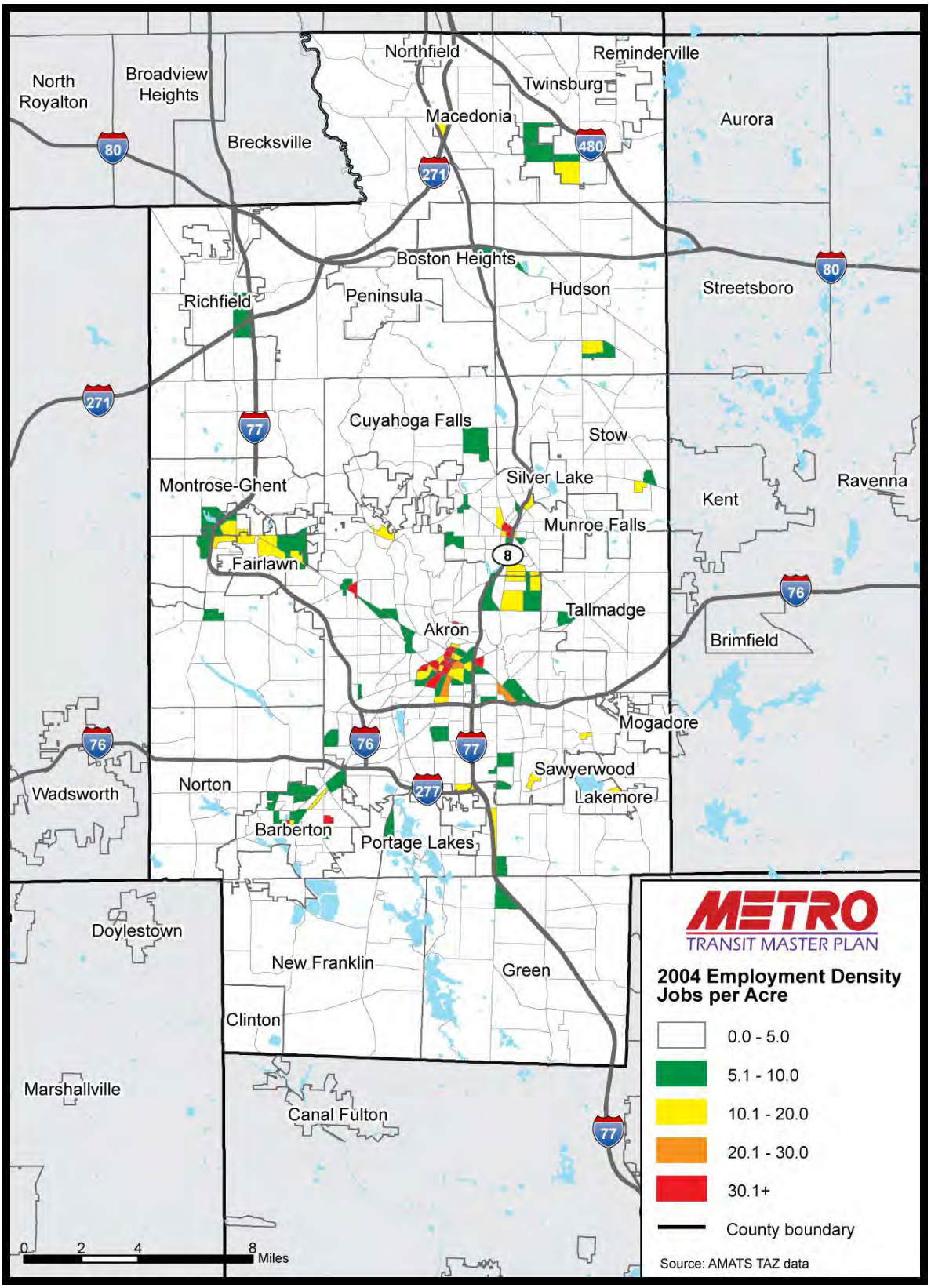
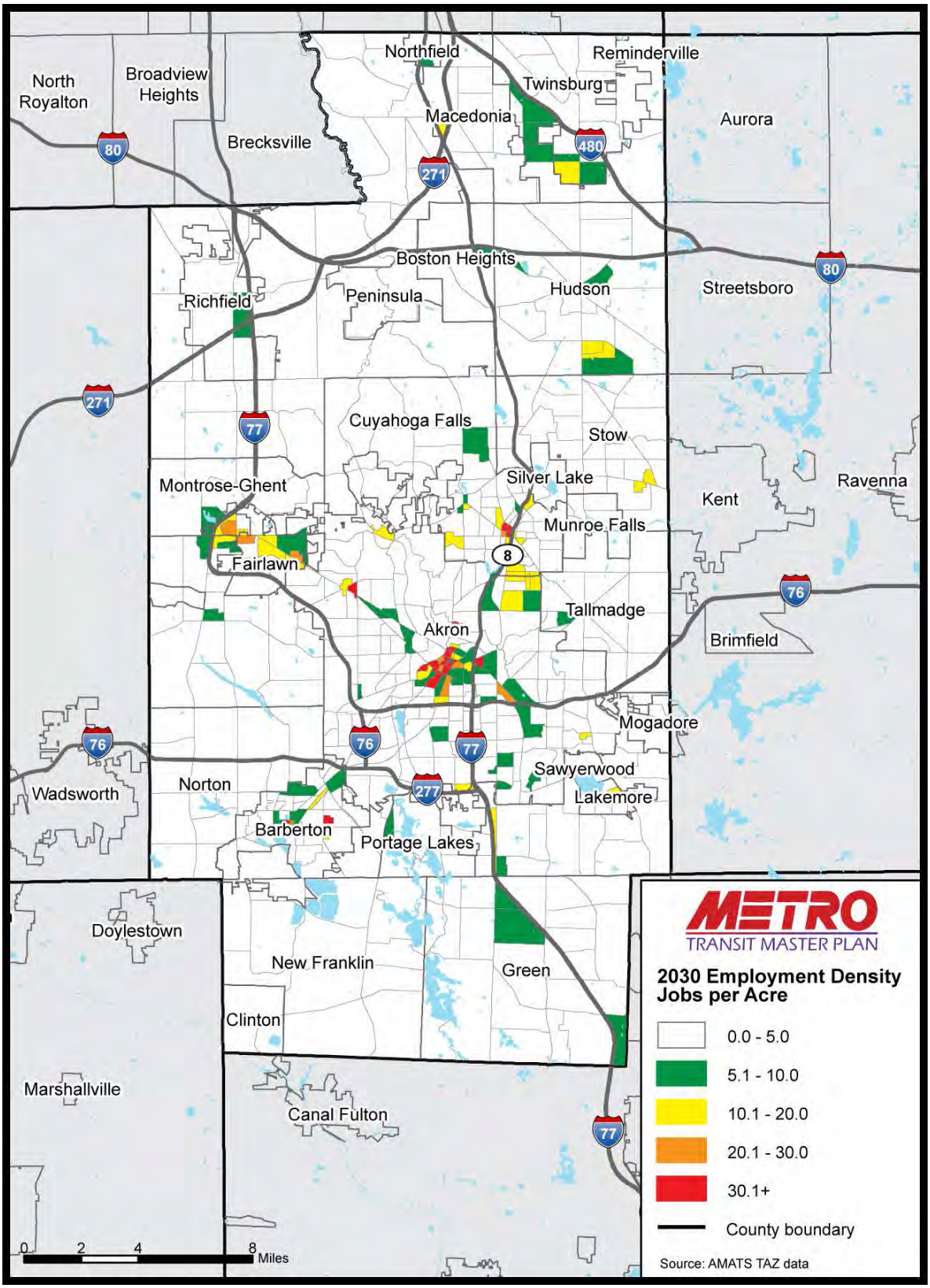


Figure 4-17: Projected 2030 Employment Density



Chapter 5 Transit Network Development

Where should METRO focus its capital and operating resources over the next 20 years?

The answer to this question will largely depend on the development trends that prevail in Summit County in this time period. As described in the previous chapter, the county is expected to experience growth in both population and employment over the next 20 years. If present development trends continue, this growth is likely to be located in the peripheral areas of the county and be low density in form. This low density growth would largely correspond to a depletion of density in the county's urban areas, as more jobs and residents move to Akron's outlying suburbs. As discussed in the Chapter 4, this is the projected development trend for the next 20 years; and if it is realized, it will become increasingly difficult for METRO to efficiently provide the same types and levels of services that it provides today. In this scenario, which we will call "Business as Usual," METRO's primary investments over the next 20 years would be in the development of park and ride lots and commuter services.

This is however, not, the only possible future. It is also possible that a number of factors, including the high price of gasoline, changing opinions about urban living among the younger demographic, and increasing awareness of the environmental concerns of a strictly auto-oriented development pattern may catalyze a return to the city. If all of the development that is projected to occur in the outlying areas of the county were instead channeled into the redevelopment in the City of Akron and its older, denser inner-ring suburbs, transit service would be concentrated in these areas of increasing density. In this scenario, which we will call "Back to the City," METRO's primary investments over the next 20 years would be in the development of high frequency corridor-based services, like bus rapid transit, along major urban arterials.

A third possible scenario can be found in the middle ground between the "Business as Usual" and "Back to the City" development possibilities. In this third scenario, most of the population and employment growth would still be expected to occur within Akron's suburbs. However, instead of the low density development pattern that has prevailed over the past 50 years in the suburbs, the new development would take the form of denser suburban villages, with a deliberate mix of land uses and transit access within walking distance. In this scenario, which we will call "Suburban Villages," METRO would still continue to invest in high frequency corridor-based services; many of which would connect with the growing suburban villages. However, there would be fewer of these corridors than in the "Back to the City" scenario.

These three development scenarios present very different growth opportunities for the provision of transit service within the County. This chapter will describe the transit network – including operational and capital investments in bus rapid transit corridors, passenger rail service, transit centers and park and ride lots – that would best serve each development pattern.

Scenario 1: Back to the City

The first scenario assumes that, over the next 20 years, there will be resurgence in urban living in the City of Akron due to a combination socio-economic factors and heightened awareness of environmental concerns. It assumes that most of the new development that is projected to occur in the region will not be in the suburbs, but in urban neighborhoods and along METRO's highest ridership bus lines. In this scenario, downtown Akron is expected to grow in importance as the region's main center for jobs, education and entertainment. This renewed focus on downtown will make the possibility of passenger rail service a more viable prospect.

This scenario may seem improbable; projections for the region's growth indicate that downtown Akron will likely retain its position as a major employment center, but the city will continue to lose population and jobs centers in other parts of the county, namely Fairlawn and the Montrose area, will grow at faster rates than downtown Akron. However, there are several reasons that a major reinvestment in urban areas is not beyond the realm of possibility; with the high price of gasoline and other fuels being the foremost contributing factor. It is much more efficient to live in an urban neighborhood, where many trips can be accomplished on foot or using public transit, than in the suburbs, where a car is required for nearly every trip. Another factor suggesting a potential return to urban living is changing preferences among younger people. In cities across the county, younger people are moving into urban neighborhoods, living in smaller spaces, seeking a more exciting and vibrant lifestyle that allows them to walk to restaurants, bars, coffee shops and entertainment opportunities near their homes.

In this scenario, METRO will respond to the redevelopment and growth within the City of Akron and its denser suburbs by investing its capital and operational resources on the urban corridors where its ridership is strongest. METRO will focus its future service on these corridors, putting in place more frequent bus service, improved bus stops and stations, landscaping and other improvements to generate travel time savings. Eventually, bus rapid transit service or even streetcar or light rail service could be developed in some of these corridors, where development potential and transit use are the strongest.

As seen in Figure 5-1, a number of corridors have been identified as Primary Transit Corridors – those corridors that have the strongest potential for the development of high capacity transit service.

These corridors include:

- West Market Street to Montrose Walmart
- East Market Street and Arlington Street to Walmart
- Copley Road to I-77
- Manchester Road, Kenmore Boulevard and Wooster Road to Barberton Plaza
- Grant Street or Brown Street to South Plaza
- Eastland Avenue and Brittain Road to Chapel Hill
- Howard Street and State Road to State Plaza
- Howard Street, Cuyahoga Falls Avenue and Howe Avenue to Chapel Hill

In general, these corridors correspond to the best performing bus routes in METRO's system, although some corridors are an aggregate of two or more existing METRO routes. In this scenario, METRO would focus its operational resources on increasing service frequencies in these corridors, creating a network of high frequency service throughout the city. It is likely that capital investments would be made in many of the identified Primary Transit Corridors, however, the specific capital projects will depend on many additional factors, including the availability of right-of-way, traffic conditions, performance of the route, redevelopment in the corridor, and availability of funding.

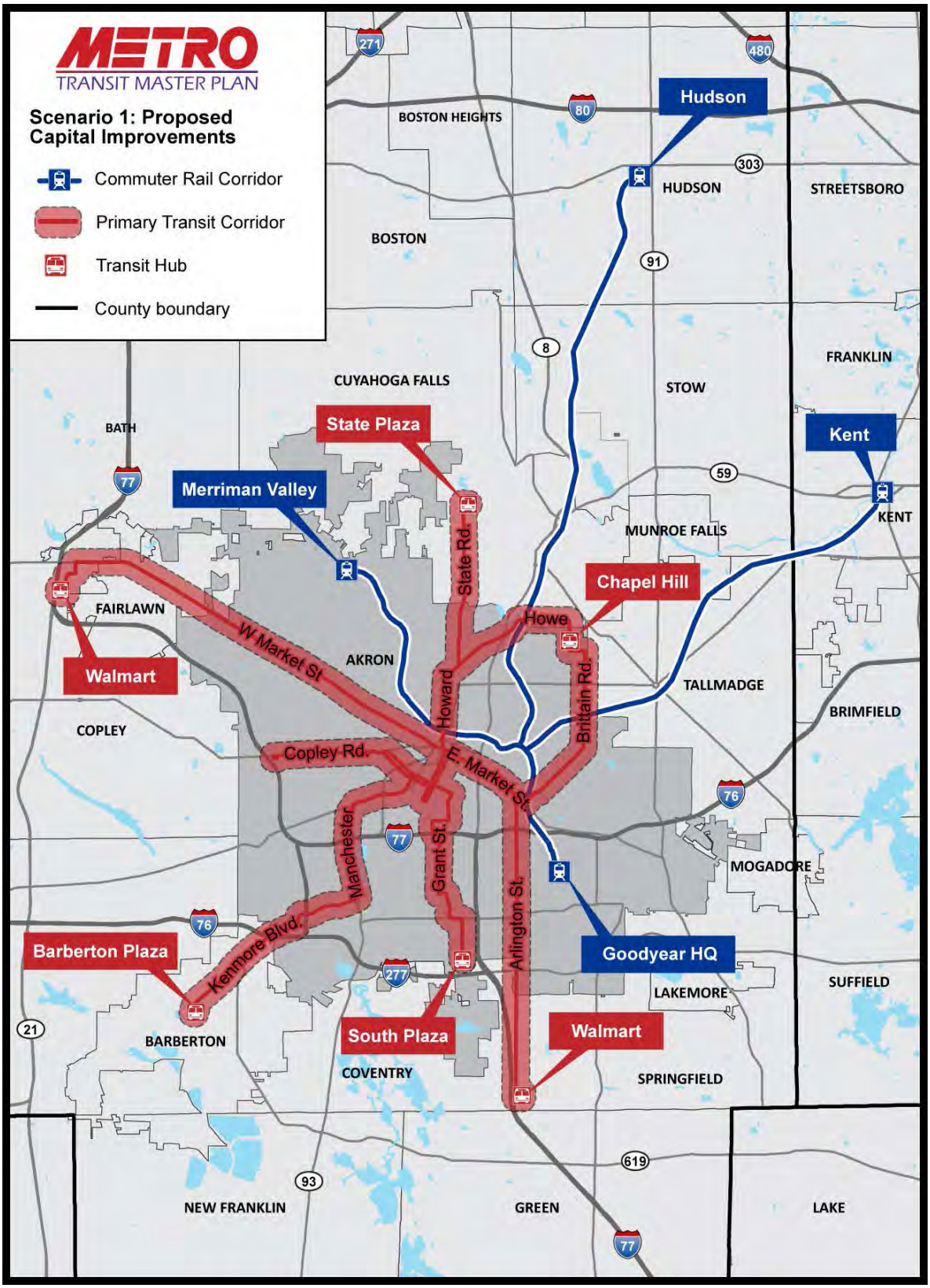
Most of the Primary Transit Corridors would have service operating in mixed traffic for at least part of the route. Curb-side bus rapid transit would be feasible on some segments of the Primary Transit Corridors, including on Howe Avenue, Brittain Road, Copley Road and several of the downtown alignments which would be shared by more than one route in the Primary Transit Corridor network. The Kenmore corridor is unique in its available right-of-way from the former streetcar corridor that would allow for center median-based bus rapid transit service on a portion of this route.

This scenario has the greatest potential for developing passenger rail service in the Akron area in due to the resurgence of downtown Akron. As seen in Figure 5-1, three rail corridors have been identified as possibilities for commuter rail service into downtown Akron. These are:

- Merriman Valley to Goodyear Headquarters (with a stop in downtown Akron)
- Hudson to Akron (with stops at Steels Corner and Cuyahoga Falls)
- Kent to Akron (with a stop in Tallmadge)

These rail lines, which were acquired by METRO in the 1990s, are in various states of repair, with some areas currently used by freight haulers and others where track has been removed. Further study will be required to determine the feasibility of bringing these lines up to state of good repair to support passenger rail service.

Figure 5-1: Back to the City – Capital Investments



Scenario 2: Suburban Villages

In the second scenario, it is assumed that most of the development that is projected to occur over the next 20 years will be in the suburbs. However, this suburban development would have a very different form than it what we have witnessed in the recent past. In place of new cul-de-sac developments and strip shopping centers, this scenario assumes that, over the next 20 years, new development will take the form of dense "suburban villages" in many of the county's fastest growing suburbs like Norton, Copley, Twinsburg and Macedonia. These suburban villages would create more walkable environment, activity clusters, vibrant town centers that most Summit County suburbs currently lack, while offering a pleasant compromise between high density urban living and preserving open space in suburban areas. While this outcome might seem unlikely, and would require both changes to these communities' zoning codes and the interest and investment of developers, it is possible that this change in development patterns will occur over the next 20 years. Some of the trends that point to this outcome include recent changes in urban and suburban development in larger metropolitan areas, changing tastes in development, particularly among younger people, and demographic changes including a population comprised of larger percentages of older adults, childless couples, recent immigrants from urban cultures, and members of ethnic and racial minority groups accustomed to urban lifestyles.

In this scenario, METRO will continue to focus its operational and capital resources on its major urban corridors where ridership remains strong. However, there will be fewer Primary Transit Corridors in the Suburban Villages scenario than in the Back to the City scenario due to the lack of redevelopment activity and loss of population within the city. In response to increasing densities in the new suburban villages, METRO will extend many of its Primary Transit Corridors to these nodes of transit-supportive development and invest in transit facilities in the suburban villages.

The greater level of development in suburban areas would mean less redevelopment in the city, and as a result, fewer priority transit corridors would be viable for further transit development in the city. As the map in Figure 5-2 indicates, a smaller number of corridors have been identified as Primary Transit Corridors, where bus rapid transit investments still remain viable:

- West Market Street to Montrose Walmart
- East Market Street and Arlington Street to Walmart
- Copley Road to I-77
- Manchester Road, Kenmore Boulevard and Wooster Road to Barberton Plaza
- Howard Street and State Road to State Plaza

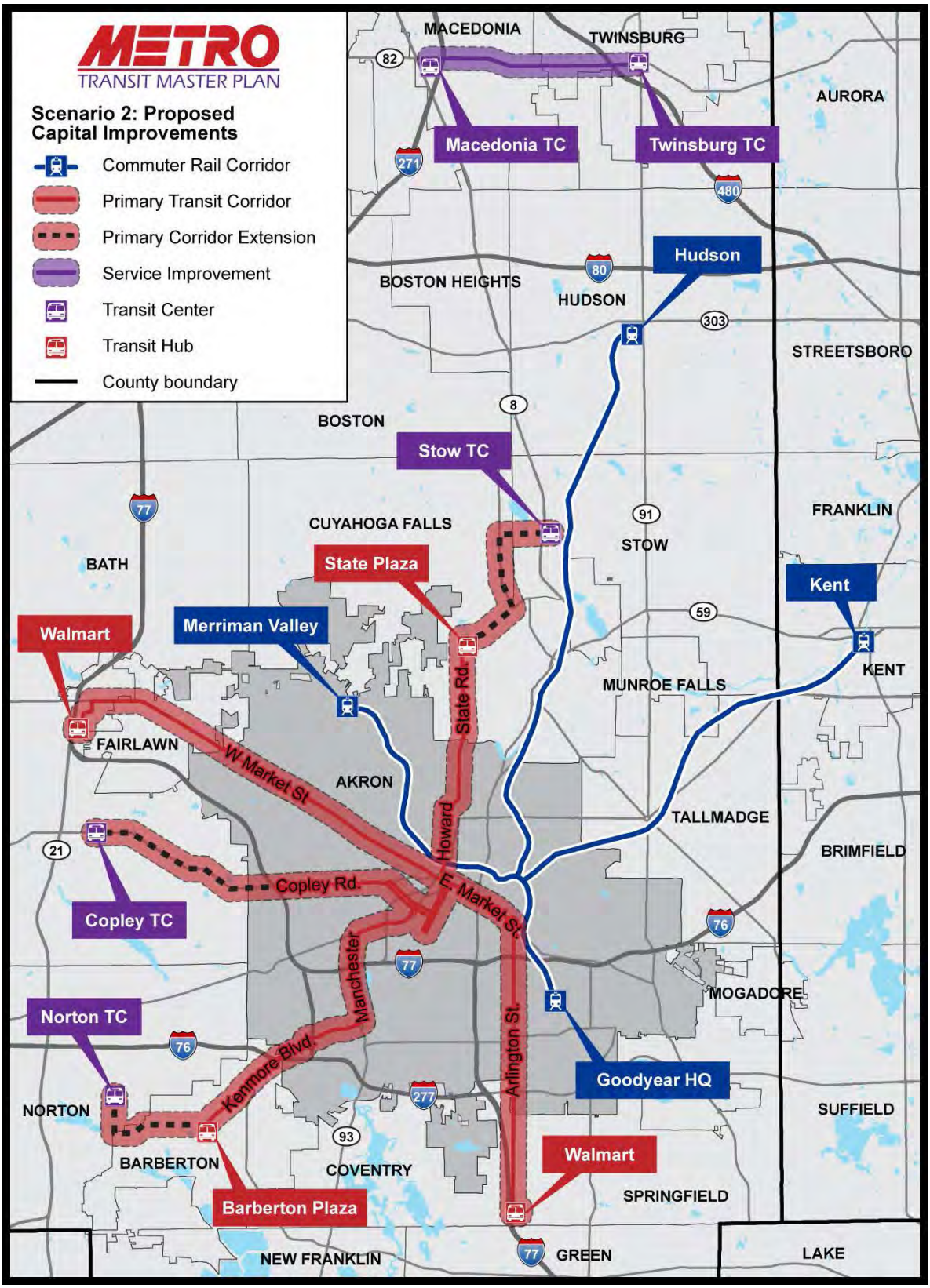
In addition, it is anticipated that the Copley, Kenmore and Howard/State corridors would be extended to serve the dense suburban villages in Norton, Copley and Stow, respectively, where transit centers would be constructed. It should be noted, however, that the extension of these Primary Transit Corridors would be contingent upon significant land use changes. Currently, zoning codes in these communities prohibit many aspects of transit supportive and transit oriented development. These land use changes would need to be reflected through changes to land use policies and zoning in these communities, and this could lead to the development of dense suburban villages within these suburban communities. Without transit-supportive development in these areas, METRO would not be inclined to extend its high frequency services and invest in transit facilities to support these nodes.

In addition to extending its Primary Transit Corridors to serve the suburban villages surrounding the City of Akron, METRO will also focus some of its resources on improving circulation in the far northern suburbs. Transit facilities located in the suburban villages of Twinsburg and Macedonia would be

supported by a new route connecting the two communities. These facilities would also serve as hubs for METRO's Northern Summit Dial-a-Ride service and express services to Cleveland.

In this scenario, passenger rail service could still potentially be developed to serve some of the suburban village areas, although further study would be necessary to determine which of METRO's rail lines could feasibly support passenger service.

Figure 5-2: Suburban Villages – Capital Investments



Scenario 3: Business as Usual

The third scenario assumes that thousands of additional households and jobs will leave the City of Akron and other older urban areas in Summit County over the next 20 years, and will relocate to suburbs. It further assumes that this development will spread out across the county in low density, single use areas, much as it has over the past sixty years, and that these areas will be connected only by roads, making it nearly impossible to travel anywhere by walking or biking. These new suburban areas will be difficult to serve efficiently with public transit, and with a dispersion of jobs from downtown Akron to surrounding suburban areas, all public transit service to downtown also will operate much less efficiently.

This may seem like a daunting prediction, but, as noted above, this has been the development trend in Summit County for the past 60 years. If development continues in this direction, METRO will find it more difficult and costly to get people to jobs, to school, and to the other places they need to go using public transit. The system will steadily become less efficient and will attract and serve fewer people.

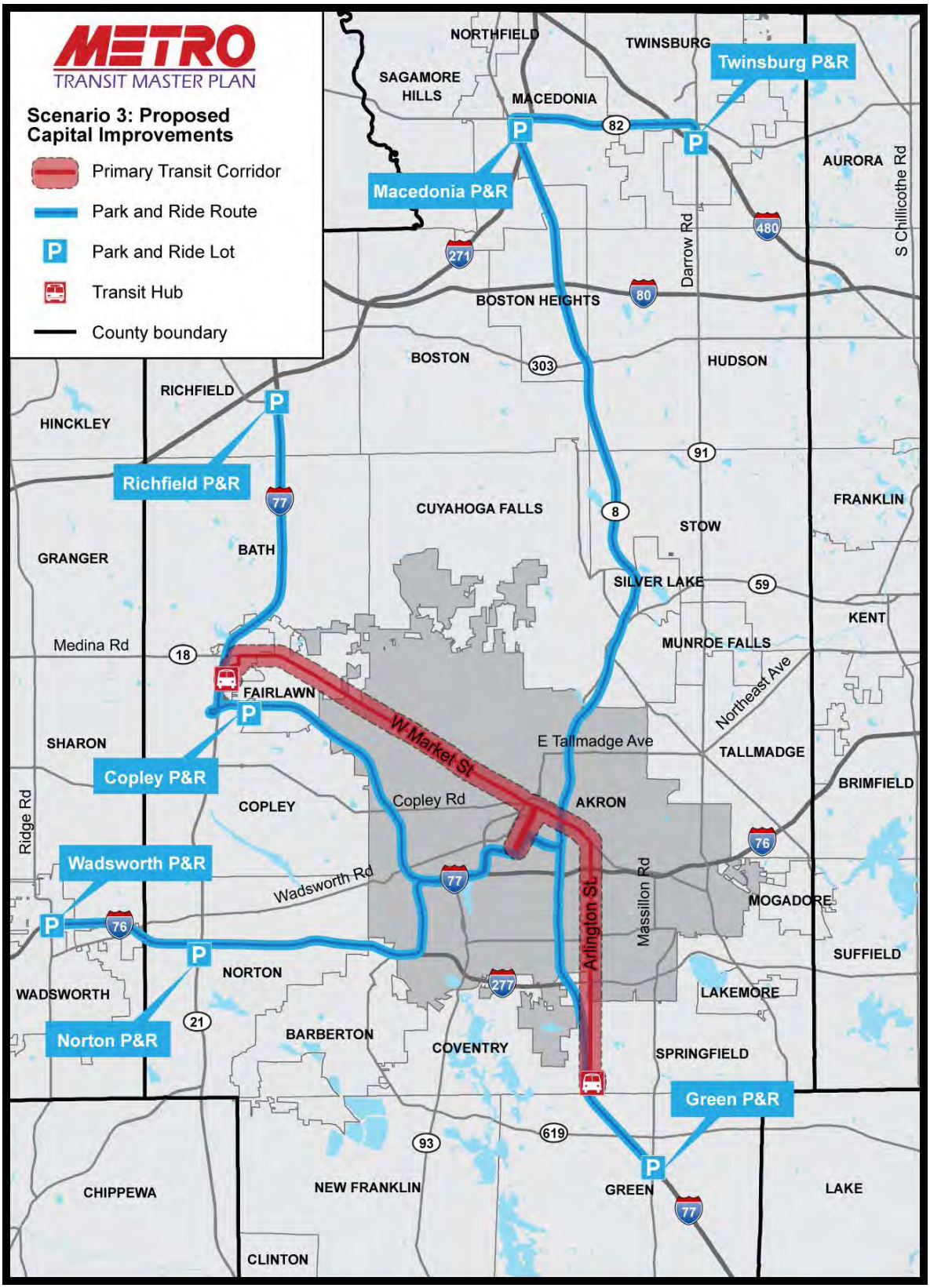
In this scenario, METRO could still develop bus rapid transit in its strongest corridors. As shown in Figure 5-3, West Market and Arlington remain viable as Primary Transit Corridors. However, METRO will concentrate most of its resources on developing a network of park and ride lots to transport riders to jobs in and around downtown Akron from suburban areas throughout the county. The following locations have been identified for development of park and ride lots:

- Twinsburg
- Macedonia
- Copley
- Wadsworth
- Norton
- Green
- Richfield

As shown in Figure 5-3, the park and ride lots would be linked by commuter service to downtown Akron, with one route serving the park and ride lots in Twinsburg and Macedonia and continuing to Akron on OH-8, a second route serving Richfield and Copley and continuing on I-77, a third route serving Wadsworth and Norton and continuing on I-76, and a fourth routing connecting Green to Akron via I-77.

It is unlikely that METRO would develop any passenger rail service in this scenario due to a weakening of downtown Akron as a regional destination and the widespread distribution of populations and jobs throughout the county.

Figure 5-3: Business as Usual – Capital Investments



Chapter 6 Recommended Transit Network

The previous chapter described three transit networks, each of which is designed to serve a different development pattern in Summit County. The Back to the City network would accommodate a future scenario in which virtually all of the development which is projected to occur in Summit County over the next 20 years occurs within the city of Akron and its denser inner-ring suburbs. This is a very attractive scenario from a transit standpoint, and the scenario which was preferred both by METRO Staff and members of the public, as measured by input from the Master Plan's public involvement process. On the other end of the development spectrum, the Business as Usual network would serve a development pattern where population and employment growth continues to occur primary in the peripheral areas of the county, in a low-density, auto-oriented pattern. This is, in fact, "business as usual." It is the future scenario which is projected to occur if current development trends continue, and that is most likely to occur unless the governmental, business and community leaders of Summit County actively prevent it.

The preferred network recommendation for this Transit Master Plan, which will guide METRO's development over the next 20 years, is the Suburban Villages scenario. As attractive as the Back to the City scenario, it is probably unrealistic, unfair to already developed areas of the county, and impractical to assume that every new development that is realized in the next 20 years will be a redevelopment project located along one of Akron's urban corridors. The abundance of inexpensive, undeveloped land remaining in the county, as well as the continued migration from Cleveland suburbs into northern Summit County, ensures that much of the new development that occurs in Summit County in the next 20 years will occur in the suburbs. However, there are many reasons to believe that this suburban development will not take the same form as it did in the past 50 years.

One of the reasons that development is unlikely to continue marching outwards at the same pace and in the same form as it did in the recent past is the high price of fuel. Since 2008, gasoline has surpassed $4.00 per gallon two times, and has not fallen below $3.00 per gallon since late 2009. There is much evidence to suggest that the price of fuel will remain high. Oil supplies in places where it can be extracted easily are in running short. Future oil supplies are more likely to be found in unstable or unfriendly countries, or in places where it is difficult to reach, such as in the arctic or the deep oceans, or through the use of technologies like "fracking" or the processing of oil sands, processes that generate significant environmental damage and greatly reduce the efficiency of oil production compared to conventional methods. There also is increasing demand for oil from countries like India and China, where until recently most people did not drive, but where private automobile ownership is now within reach of millions and are now competing with us for world oil supplies. Alternative fuels show promise, but are still years away from reaching their potential as substitutes for oil, if they ever achieve it. Diminishing oil supply and increased demand indicate that the price of fuel is likely to remain high in the future.

The higher price of oil will be a burden, not only for our economy, whose 2008 recession was precipitated in part by the high price of fuel, but also for households where transportation costs will consume an increasingly large proportion of their income. For many low-income people, maintaining regular employment and living beyond the reach of transit service will be incompatible notions. High fuel prices will not only impact the transit dependent population; it will also cause the choice rider market to expand, as greater numbers of people begin to resent the futility of expending such a large part of their income on the purchase, maintenance and fueling of autos. This will create more demand for housing in areas where many of their daily needs are located within convenient walking distance, and that are served by high quality transit service.

Another reason that suburban development is unlikely to take the form that it has in the recent past is that the preferences of younger people – those just entering the workforce through their 30s – are changing. In 2009, the total number of miles that Americans drove fell for the first time since World War II, and has not fully rebounded. This drop was caused in part by the recession, but also because younger people are driving less. Young professionals are attracted to the fun and vitality of urban living – places where you can walk to restaurants and shops and bars and where driving to work is not a necessity. They are fascinated by the promise of new technologies to enhance their daily lives, but increasingly see automobiles and driving as an old, and outmoded, technology. They are less interested in living in the types of development that have predominated in the recent past and, like people of all ages, are increasingly concerned about the environmental impacts of the use of fossil fuels. If Summit County is to retain this vital demographic, it will need to begin providing more diverse housing choices, developed in conjunction with high quality transit service. The Suburban Villages scenario reflects this need for a new kind of development to occur both in the urban areas of Akron, Barberton, Cuyahoga Falls and the other more "urban" places in Summit County, but also in the more far-flung suburbs of Summit County.

Recommendations in this chapter are divided into two sections. The first section presents recommendations for transit oriented development (TOD) in the five Suburban Villages identified in the preferred transit network. The second section describes infrastructure and operating recommendations to support this development pattern.

Transit Oriented Development

The kind of development that is envisioned for the Suburban Villages that form the nodes of the recommended transit network is known as transit oriented development (TOD). TOD focuses compact growth within an easy walk of transit stations, bringing potential riders closer to transit facilities, and promotes increased ridership by making riding transit that much easier. TOD can be defined as:

> Moderate to higher density compact mixed-use development, located within an easy five to ten minute walk of a major transit stop. TOD involves high quality urban development with a mix of residential, employment and shopping opportunities, designed in a pedestrian oriented manner without excluding the automobile. TOD can be new construction or redevelopment of one or more buildings whose design and orientation facilitate the use of public transit, walking, and bicycling.

A successful TOD will reinforce both the community and the transit system. Creating a mix of uses within a TOD, which are easily accessible by walking, promotes activity around the clock. This in turn promotes the most efficient use of the transit system: travel in both directions, throughout the day. TODs produce a variety of other benefits by encouraging walkable compact and infill development and redevelopment.

In general, people living and working in TODs walk more, use transit more and own fewer cars than the rest of the larger community. TOD households are twice as likely to not own a car, and own roughly half as many cars as the "average" household. At an individual transit station, TOD can increase ridership by 20 to 40 percent, and up to five percent overall at the regional level. People who live in a TOD are five times more likely to commute by transit than other residents.

Locating the right land uses adjacent to transit is only part of making a successful TOD. The ease of riding transit is also an important component. Important attributes that transit service must possess to support TOD include:

- Frequent service (every 10 minutes or less during peak periods, every 20 minutes or less during off-peak periods).
- Service throughout the day, every day of the week.

- High quality transit stops or stations that provide enhanced waiting amenities for passengers.
- The transit station can function as a major stop for through transit service and/or as a transit center for several transit routes that terminate at the TOD.
- A limited number (~50) of parking spaces to provide park and ride opportunities to nearby residents

The type of transit that serves the TOD is less important than the service it provides. Service can be provided by on-street mainline routes, by bus rapid transit routes on a transitway, or by a rail route.

As part of this master planning process, a TOD Handbook was created to provide guidelines for future transit oriented development in Summit County. This TOD Handbook is included as Appendix F to this document. As part of the Handbook, five communities were selected as case studies of potential for future transit oriented development and redevelopment. Sites of approximately ¼ mile in radius were selected in each community, and conceptual TOD plans were generated for each. A summary of the conceptual TOD plans for Norton, Copley, Stow, Macedonia and Twinsburg are provided below.

Norton TOD Concept

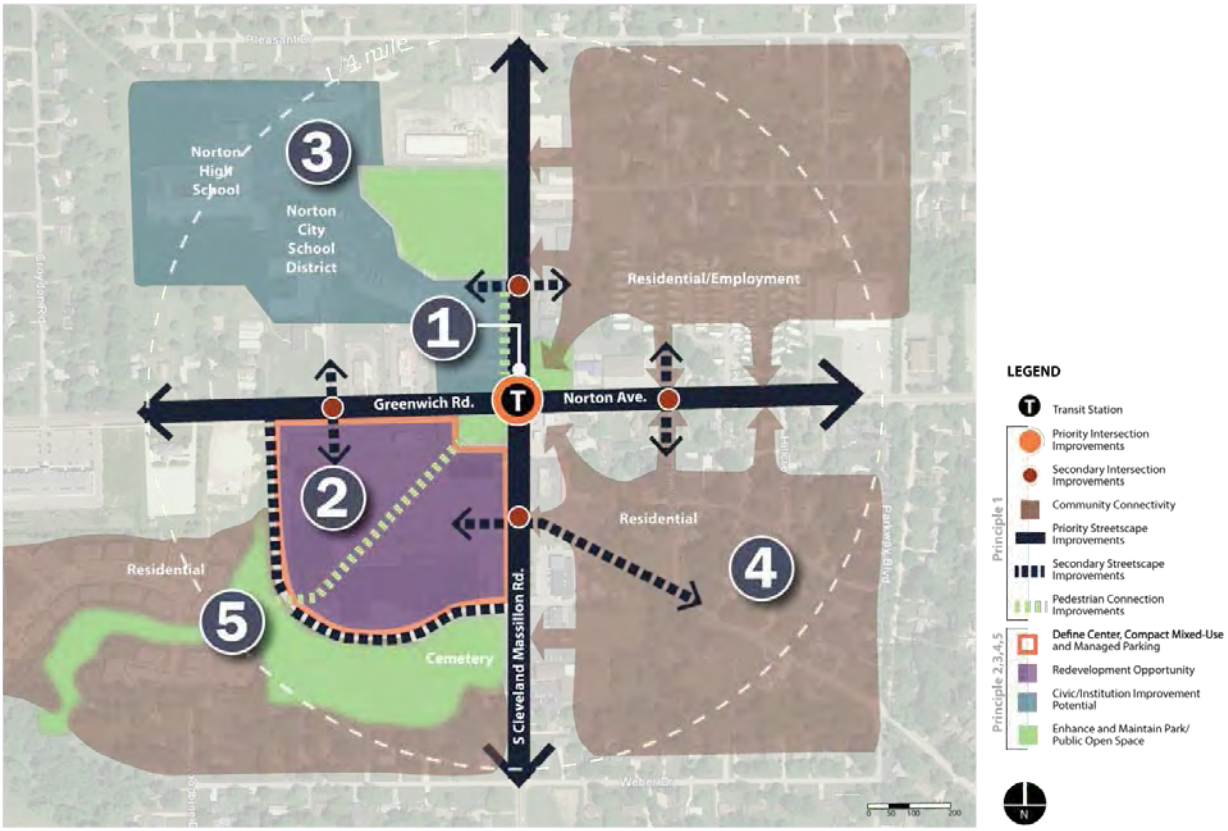
Norton is a low density, primarily residential community about 10 miles southwest of downtown Akron, Ohio. The site for this case study concept is loosely defined as the area within a ¼ mile radius around the intersection of S. Cleveland-Massillon Road and Greenwich Road/Norton Avenue. Primarily suburban in character, commercial uses front these two main arterials, including a shopping center in the southwest quadrant of the intersection. Large to medium lot single family residences cover much of the remaining areas near this intersection. Parks and open space punctuate the area, along with Norton High School in the northwest quadrant of the intersection. There are very few sidewalks within the case study area, including S. Cleveland-Massillon Road and Greenwich Road/Norton Avenue, which have no sidewalks. Connectivity between residential neighborhoods and to the main roads is limited in some areas.

This area has many of the necessary ingredients of a community center with a mix of commercial, public, recreation, and residential uses. The primary TOD elements that are lacking include limited pedestrian connectivity and low densities. The Norton Comprehensive Plan identifies the Cleveland-Massillon Road Corridor as the “center” of the community and indicates that pedestrian traffic should be encouraged. The intent of this TOD concept is to support this planning goal by creating better pedestrian accessibility and to potentially redevelop the existing shopping center into a more urban and higher density community destination for shopping, entertainment, and living.

<u>Recommendations</u>

- Improve S. Cleveland-Massillon Road and Greenwich Road/Norton Avenue for pedestrians by completing the sidewalk network, providing improved pedestrian crossings, adding street trees, and pedestrian-scaled lighting.
- Encourage redevelopment and/or infill of Norton Plaza Shopping Center featuring pedestrian access through the site or creation of smaller block sizes, a greater mix of uses, higher densities, and buildings that are closer to the street and activate the street edge.
- Create a stronger civic presence for Norton High School from adjacent streets with landscaping, more visible entryways, and building design with any new site development.
- Create and strengthen pedestrian connections to link transit stops, residential neighborhoods, and employment areas.
- Connect parks and open spaces, such as the ball fields behind Norton Plaza and Columbia Woods Park with improved sidewalks and/or trails.

Figure 6-1: Norton TOD Concept



Copley TOD Concept

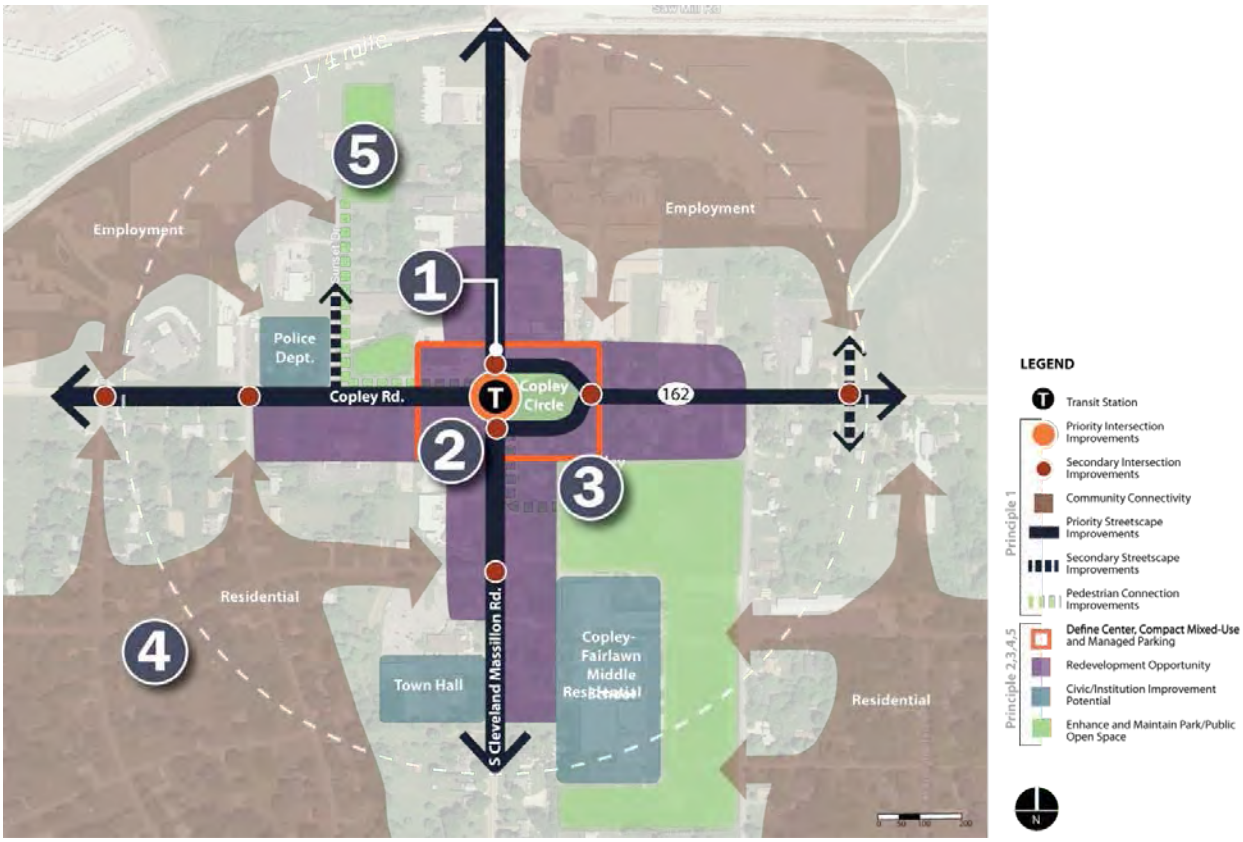
Copley is a low density, primarily residential community located about 7 miles west of downtown Akron. The case study is focused on the area within approximately ¼-mile of the Route 162/Copley Road and S. Cleveland-Massillon Road. Copley has a suburban character and commercial uses generally front the two arterial roads. Medium to large lot single family residences, along with employment uses to the north, cover much of the remaining areas near the intersection. Parks and open spaces are provided in the area, with the most notable being Copley Circle located on the east side of the intersection and Copley-Fairlawn Middle School to the southwest.

This rural hamlet has acquired a more suburban character as new development has come to the area. It has several civic building and open spaces, including the Copley Township Hall, Copley- Fairlawn Middle School, Copley Circle, and police department within the case study area. Although these community assets are in close proximity, they are not tied together as a cohesive community center. The Copley Township Comprehensive Plan designates the land near the Copley Road and S. Cleveland-Massillon Road intersection as a Mixed-Use/Historical District. The Plan indicates an interest in "exploring compact, mixed-use neighborhoods" if other areas are preserved as open space. The Plan goes on to identify Copley Circle area and Copley Road corridor as a possible receiving area for transferred development density. The TOD concept is designed to support these planning ideas by providing an improved walking environment to link these important public destinations along with infill development and redevelopment consistent with the Comprehensive Plan and the historic character of the Copley Circle area.

<u>Recommendations</u>

- Improve major street corridors for pedestrians by completing streetscape improvements including sidewalks, marked crosswalks and traffic calming at key intersections, street trees, landscaping, pedestrian-scale street lighting, and wayfinding signage.
- Encourage mixed-use redevelopment and/or infill of surface parking to replicate the site design of the older buildings in Copley Circle with storefronts and building entrances oriented to the street, parking to the rear or side, and improved pedestrian circulation.
- Create a stronger civic presence between all the public uses in the Copley Circle area by linking these destinations with sidewalks and pathways. Such a network will encourage local residents and visitors to park once and then walk to several destinations instead of using the car for each trip.
- Create and strengthen pedestrian connections between transit stops, residential neighborhoods, and employment areas.
- Connect the existing parks and open spaces with sidewalks and trails. Special attention should be given to Copley Circle, which is surrounded by free-flowing traffic and areas with no sidewalks or marked pedestrian crossings. This should become a pedestrian priority district that helps define the study area as a distinct community center.

Figure 6-2: Copley TOD Concept



Stow TOD Concept

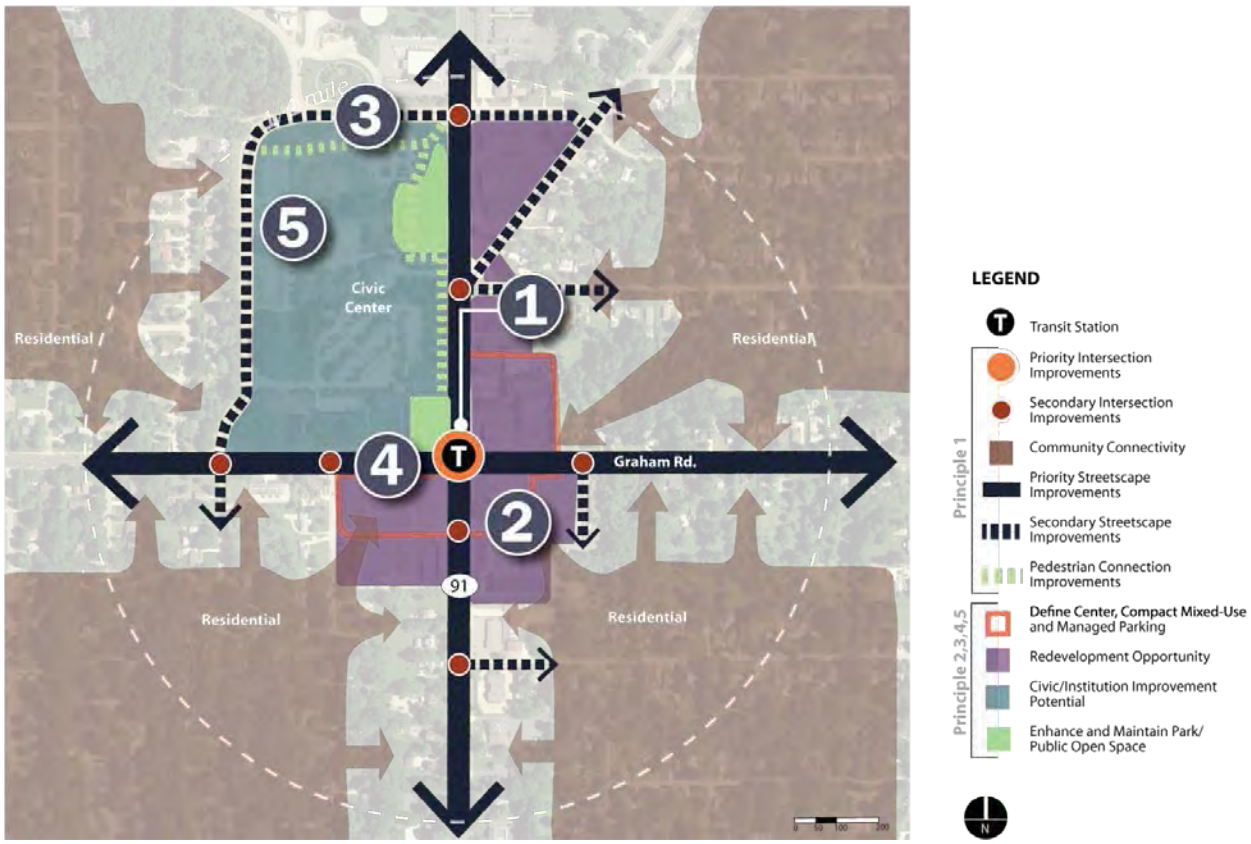
Stow is a low density residential community approximately 8 miles northeast of Akron. The case study site is within a ¼-mile radius of route 91/Darrow Road and Graham Road. Primarily suburban in character, a variety of uses front Darrow and Graham roads. The Stow City Hall complex, which occupies the northwest quadrant of the intersection, includes the police and fire department facilities, and park areas. Auto-oriented commercial development is found in the other three intersection quadrants. Residential neighborhoods are located behind these civic and commercial uses. The sidewalk system in this portion of Stow is reasonably complete, including many intersections with marked crosswalks.

The TOD concept is intended to build on the diverse uses in the area, including the Stow City Hall complex, local businesses, and residential neighborhoods. The presence of sidewalks along many of the area streets provides a good foundation to encourage walking and transit use. Therefore, the concept encourages building on these attributes to create a "mixed-use downtown" as suggested in the Stow Comprehensive Plan. Enhancing the pedestrian experience and providing infill and redevelopment, which is oriented to pedestrian traffic rather than cars, is stressed in the recommendations below.

<u>Recommendations</u>

- Build on the existing sidewalk network and concentrate on making it easier and safer to cross Darrow Road and Graham Road. These multi-lane roads are wide, and crossings should be improved with more clearly delineated crosswalks, reduced crossing distances, and traffic calming.
- Just like the King Dragon/CO-OP Optical Eye Care building located to the south on Kent Road, infill and redevelopment of commercial uses on the northeast, southeast, and southwest quadrants of the Darrow Road/Graham Road intersection should be oriented to the street sidewalk with parking to the rear or side of the building. Consistent with the Stow Comprehensive Plan, such development should support the creation of a "mixed-use downtown." Such development should also look for opportunities to reduce the number and width of driveways.
- Continue to build upon the strong civic presence of the City Center and related facilities to further reinforce this area as the recognized center of the City.
- Create and strengthen pedestrian connections between surrounding residential areas and the civic, recreation, and commercial uses as well as transit. For example, the future street connections shown in the Stow Comprehensive Plan near the northwest corner of the City Hall complex should be actively pursued.
- Provide improved pedestrian connections to existing parks and open space on the City Hall property from the surrounding area.

Figure 6-3: Stow TOD Concept



Twinsburg TOD Concept

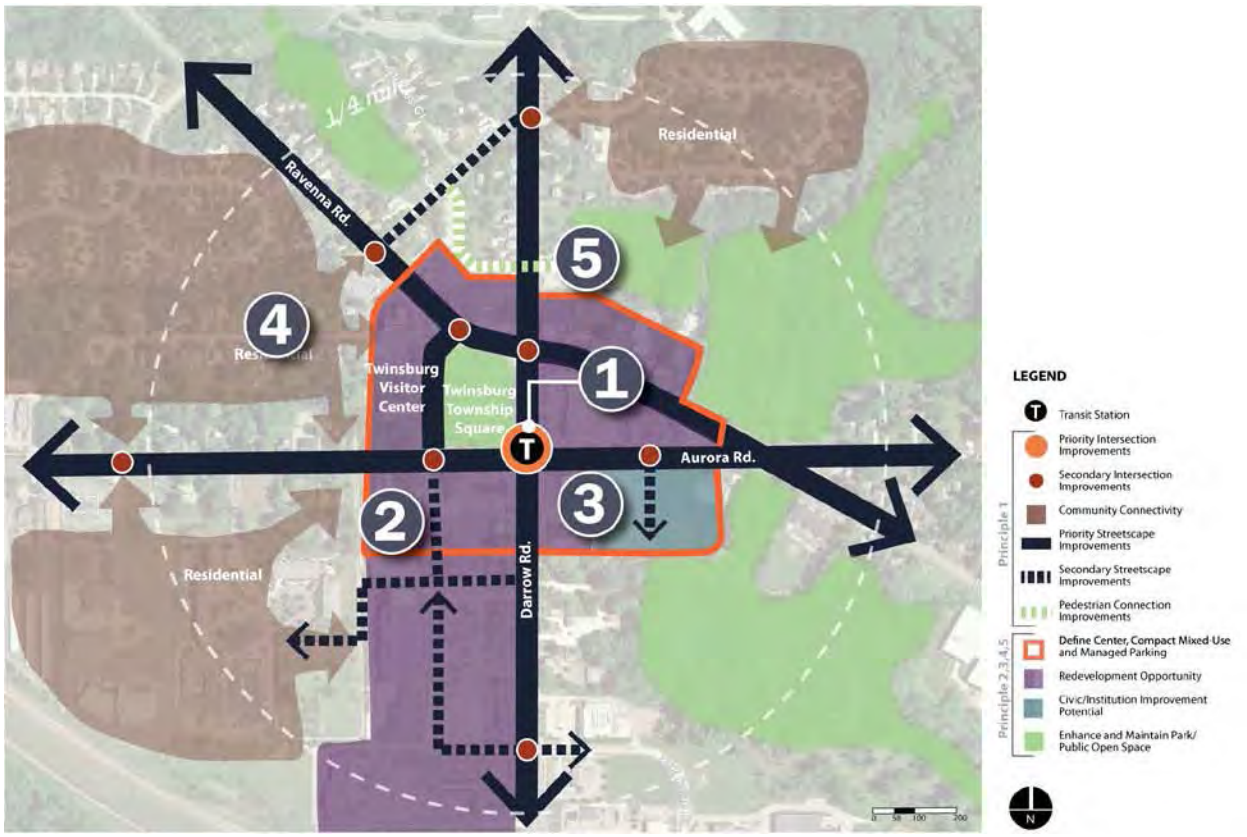
Twinsburg is a low density suburban community located about 20 mile north of Akron. The case study area is within a ¼-mile radius of the intersection of Route 82/Aurora Road and Route 91/Darrow Road. The area on the north side of Graham Road has a small town character, and the area to the south has larger commercial developments. In addition to the Twinsburg Township Square, located immediately north of Graham Road, a variety of recreation and civic uses are located to the northwest beyond the study area, along Ravenna Road. Sidewalks are present along portions of the major streets. Nearby residential neighborhoods are somewhat isolated.

The City's Comprehensive Plan contains several goals and objectives aimed at making the Twinsburg Township Square a focal point for community activities and to create a more pedestrian-friendly community center around it. The TOD concept is designed to support this community desire by recommending a series of development and pedestrian improvements that will help transform this area from a relatively auto-oriented crossroads into the pedestrian-friendly community center sought in the Comprehensive Plan. Consistent with the Twinsburg Comprehensive Plan, the Twinsburg Township Square and vicinity should evolve into a walkable and active city center.

Recommendations

- Further improve major street corridors for pedestrians by adding missing sidewalk segments and providing sidewalks on both sides of the street. Improving pedestrian accessibility across the major streets, especially surrounding the Twinsburg Township Square, are particularly important. The square is separated from the surrounding community by free-flowing traffic that surrounds it. Marked crosswalks, traffic calming, and improved street lighting should all be considered.
- Encourage mixed-use infill and redevelopment surrounding the square. This should also include placing buildings near the street with parking to the rear, side or on-street, as well as taking opportunities to create smaller block sizes on larger sites to enhance circulation for all modes. The pedestrian network and character of development should encourage local residents and visitors to park once and then walk to several destinations instead of using the car for each trip.
- Create a stronger city identity by encouraging redevelopment surrounding the square that includes retail and entertainment uses, which would complement the square and make this area a destination rather than a place to travel through.
- Look for opportunities to improve connectivity between residential neighborhoods, commercial districts, and the square.
- Connect the surrounding parks with sidewalks and trails. Good pedestrian and bike access between the square and the Twinsburg Community Center and other public uses to the northwest on Ravenna Road should be emphasized.

Figure 6-4: Twinsburg TOD Concept



Macedonia TOD Concept

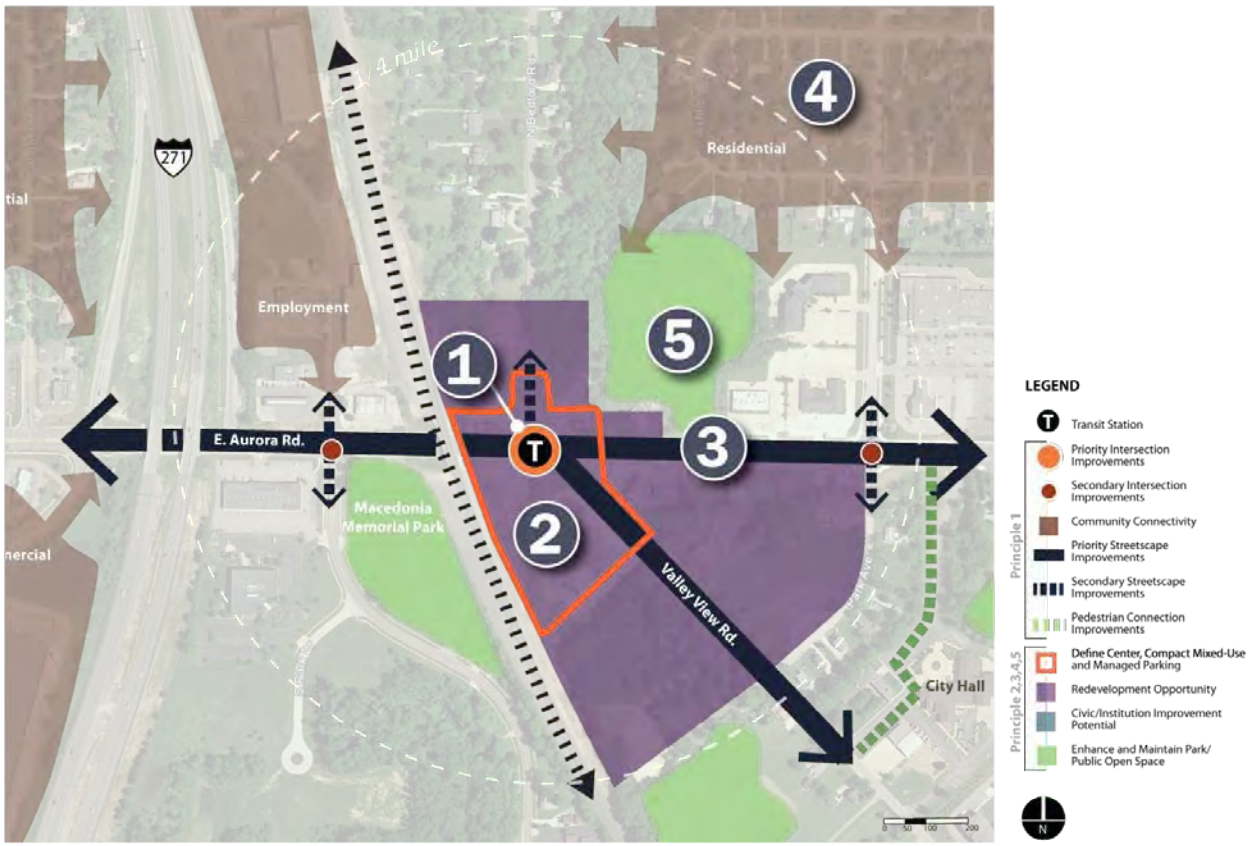
Macedonia, located about 18 miles north of Akron, is a suburban community with a mix of low density residential, commercial, and employment uses. The case study area is centered on the intersection of Route 82/Aurora Road and Valley View Road. Aurora Road is a commercial corridor, and a significant concentration of commercial retail uses is located immediately west of the study area on the opposite side of I-271. Employment uses extend north along the east side of I-271, and Macedonia Memorial Park lies in the southwest quadrant of the intersection. Low density residential uses occupy much of the remaining area. The City Hall lies just outside of the study area on Valley View Road.

The TOD concept is intended to support a city desire, expressed in its Comprehensive Plan, to establish a town center in this general area. E. Aurora Road is proposed to remain a major thoroughfare in the city in this concept, but modified to be safer and more comfortable for walking. Linking the commercial, employment, civic, and residential uses in the area is a major focus of the concept.

Recommendations

- Improve E. Aurora Road and Valley View Road for pedestrians by completing the sidewalk system and providing improved crosswalks at major intersections. E. Aurora Road currently has sidewalks and the undercrossing of I-271 provides sufficient room for pedestrians. This street primarily needs to be improved to make walking safer and more comfortable by adding street trees, landscaping, pedestrian-scale lighting, and supplemental sidewalk width in some areas to encourage walking.
- Encourage mixed-use infill development and redevelopment in the area around the E. Aurora Road/Valley View Road intersection. The intersection area is the priority, but this should be encouraged down Valley View Road to the City Hall.
- Take advantage of Macedonia Memorial Park as a focal point to complement surrounding development. Encourage uses, such as retail, restaurants, and mixed-use residential that would be complementary to the park.
- Create and strengthen pedestrian connections between residential neighborhoods, employment and commercial districts, and transit stops.
- Look for opportunities to provide additional parks and open space to supplement Macedonia Memorial Park. These new areas should be highly visible and accessible to surrounding uses.

Figure 6-5: Macedonia TOD Concept

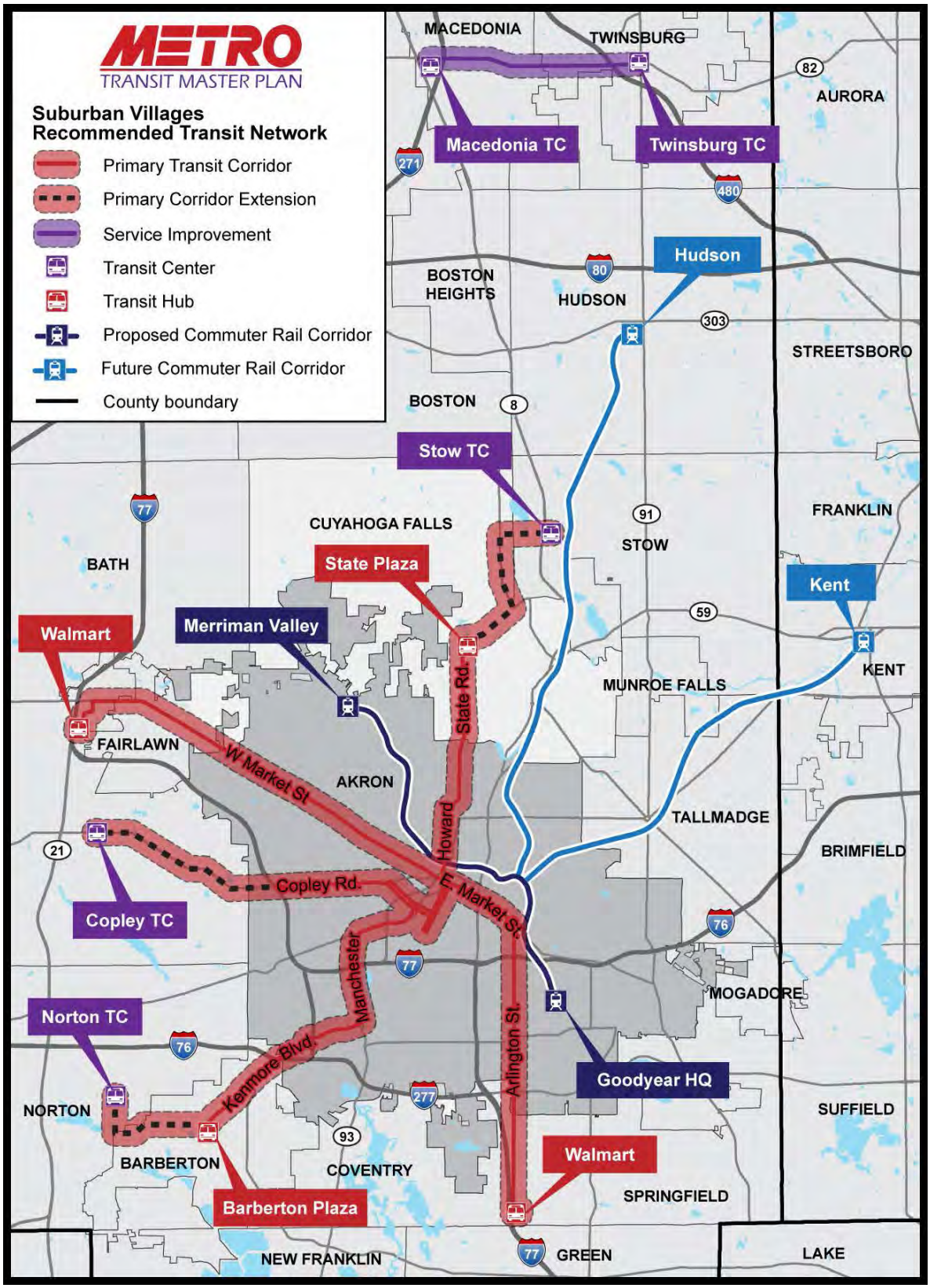


Infrastructure Recommendations for the Suburban Villages Transit Network

The second part of this chapter includes infrastructure recommendations for the Suburban Villages development pattern. The sequencing was intentional. Since land use and development directly influences transit ridership, it is only natural that infrastructure recommendations will be influenced by the recommended land use changes at each of the Suburban Villages locations.

This section includes both service and infrastructure recommendations for METRO's bus network, along with recommendations for a future rail line in the region.

Figure 6-6: Suburban Villages Transit Network



High Frequency Bus Network

A key component of this Transit Master Plan is to increase service frequency on METRO's most important and best performing routes. The basis for this recommendation is two-fold. In the short-term, existing riders would benefit from the increased service. In 2008 the voters of Summit County increased the sales tax dedicated to METRO from 0.25% to 0.5%. While the passage of the tax never explicitly promised increases in frequency on any individual route, an increase in service frequency on key corridors is important to show that the transit agency is improving service to existing customers.

Second, increasing the service frequency on select routes is a precursor of future infrastructure improvements on these corridors. The increased service would attract new riders and could also potentially qualify the corridor for the FTA New Starts funding program.

Five routes are recommended for METRO's High Frequency Bus Network:

- Route 1 W. Market
- Route 2 Arlington
- Route 3 Copley Road/Hawkins
- Route 10 Howard/Portage Trail
- Route 8 Kenmore/Barberton

The recommended High Frequency Bus Network is shown in Figure 6-1. The routes were selected in part because of their already high ridership, meaning they will likely respond to increases in service frequency. Table 6-1 shows ridership on each of the recommended routes.

Additionally, these routes were also located along potential development/redevelopment corridors, were shown to have potential for further transit ridership in the transit propensity analysis, and are also recommended for additional bus infrastructure as each is a designated Primary Transit Corridor.

Table 6-1: Ridership of Recommended High Frequency Bus Network

		2008 Ridership	2009 Ridership	2010 Ridership **	Ridership Rank (2010)	Pass. per Revenue Hour (2010 Survey)	Average Peak Headway	Average Off-Peak Headway
1st Tier	Route 1	508,831	518,454	424,082	2	40.0	24 minutes	35 minutes
	Route 2	591,432	500,840	432,416	1	42.2	25 minutes	35 minutes
2nd Tier	Route 3	376,531	332,276	276,603	3	33.5	24 minutes	36 minutes
	Route 10*	284,230	258,099	224,568	5	25.4	33 minutes	52 minutes
	Route 8	301,035	233,841	196,135	6	25	31 minutes	47 minutes

** 15 minute service not needed past Cuyahoga Falls Ave*

*** Through Oct 2010*

Estimated Operating Costs

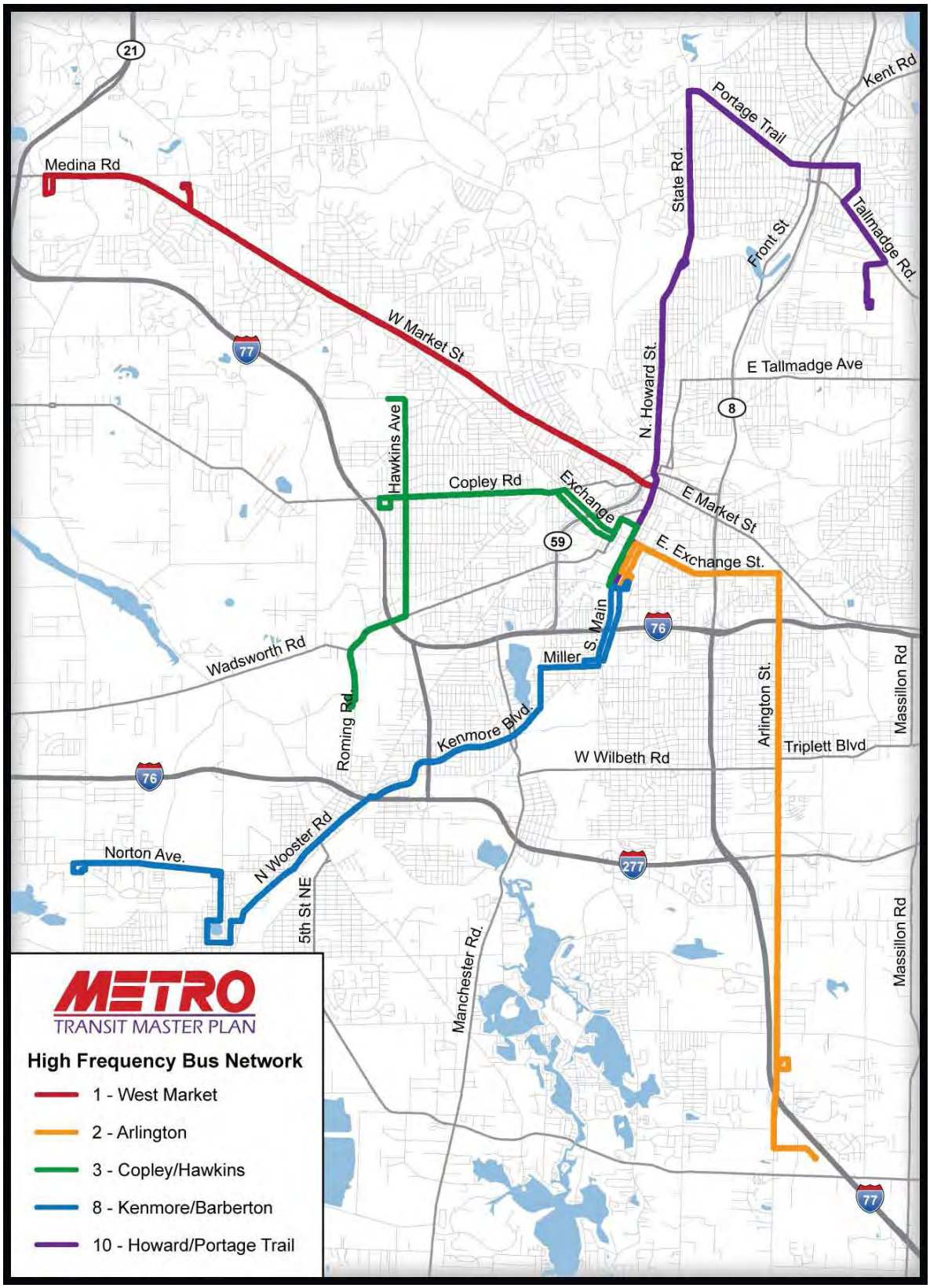
Operating costs for the High Frequency Bus Network were estimated by calculating the additional number of revenue hours required for the network and multiplying by $116.10, which is the cost per revenue vehicle hour reported to the National Transit Database in FY 2010.

The High Frequency Bus Network assumed frequencies would increase to 15 minutes during peak periods only, defined as 7-9 AM and 4-6 PM. Offpeak frequencies for these routes were assumed to remain as they are today. Table 6-2 details the operating costs for increasing the frequency on the five routes.

Table 6-2: Estimated Operating Costs

	Existing Peak Revenue Hours	Proposed Peak Revenue Hours	Additional Revenue Hours	Cost per Revenue Hour	Total Cost
Route 1 - West Market	5,100	8,160	3,060	$116.10	$355,266
Route 2 - Arlington	4,080	6,120	2,040	$116.10	$236,844
Route 3 - Copley	4,080	6,120	2,040	$116.10	$236,844
Route 10 - Howard/Portage Trail	3,060	7,140	4,080	$116.10	$473,688
Route 8 - Kenmore/Barberton	3,060	7,140	4,080	$116.10	$473,688

Figure 6-7: High Frequency Bus Network



Primary Transit Corridors

The proposed Primary Transit Corridors can be considered the second phase of bus-based improvements that were initiated with the High Frequency Bus Network. The Primary Transit Corridors are all proposed to be upgraded with bus rapid transit infrastructure, including traffic signal priority, larger bus stations at key bus locations as defined in the service standards, and distinctive signage and branding.

FTA Very Small Starts Funding

Because improvements in each of these corridors will require several million dollars to construct, it is highly likely that METRO would pursue funding under the FTA 5309 New Starts grant program. Currently, the New Starts program features a Very Small Starts program for lower cost projects below $50 million. The Very Small Starts program has several criteria[2] that must be followed in order to qualify for funding. Very Small Starts corridors must include:

- Traffic Signal Priority
- Low Floor Vehicles
- Branding of the Proposed Service
- 10 minute peak / 15 minute offpeak service frequencies for 14 hours each weekday
- At least 3,000 riders on the corridor in an average weekday
- A total capital cost of less than $50 million and an average cost of less than $3.0 million per mile

For the purposes of this document, the Primary Transit Corridors are listed by letter in order to distinguish them from METRO's other routes. While the corridors are very similar to METRO routes 1, 2, 3, 8, and 10, they are routed in a more direct fashion on each of the corridors. Once operational, each of these corridors will operate along with METRO's existing routes in order to provide high frequency service along the corridors. The service concept is that each of these corridors will serve as the flagship premium service for METRO through all parts of the region, and that premium service will appeal to choice riders and attract new transit users in each of these corridors. The five proposed Primary Transit Corridors are:

- Line A – West Market
- Line B – Arlington
- Line C – Copley
- Line D – Kenmore
- Line E – Howard/State
- Line F – Twinsburg-Macedonia Service

A map of the proposed corridors is shown in Figure 6-8.

Line AB – West Market+Arlington

Line AB is actually two lines (Line A West Market and Line B Arlington) that are proposed to be interlined and operate as a single identifiable service.

Line A West Market is proposed to match almost exactly the Route 1 currently operated by METRO. The western terminus is at the newly constructed Wal-Mart on Rothrock Road. The service will then travel north to West Market Street, which will use to access downtown Akron. Downtown, the service will use the High and Broadway one-way pair in order to provide access to downtown destinations and the

[2] FTA New Starts Capital Investment Program FY 12 Evaluation and Rating Document

Downtown Transit Center. The service concept for this corridor is BRT operating in mixed traffic, with curbside stations.

Line B Arlington is similar to METRO Route 2. The service would differ from Route 2 in one respect: The Line B Primary Transit Corridor is proposed to use the Broadway and High one-way pair through downtown and then East Market Street to access Arlington Road. This deviation from the existing Route 2 is proposed in order to provide an identifiable service through downtown Akron. Line B would then travel on Arlington, ending at the Wal-Mart just north of the I-77 interchange. This corridor service also would consist of BRT operating in mixed traffic, with curbside stations.

Line C – Copley

Line C is proposed is to operate primarily on Copley Road. To and from downtown, the service is proposed to use the Cedar and Exchange one-way pair. It would then operate on Copley Road, ending just east of the I-77 interchange. This is similar to a branch of METRO Route 3, except Line C has a more direct routing through downtown Akron.

An extension of this line on Copley Road to Cleveland-Massillon Road is also proposed, but would only be implemented when transit-oriented development occurs in Copley Township. Extending Line C would result in high frequency (10 min peak /15 min offpeak) service to a lower density area of Summit County. Thus, an extension only makes sense when the development pattern is dense and compact enough to justify the additional service. At that point, a transit center is proposed to be developed in Copley Township in order to anchor the Line C service and provide transfer opportunities to other possible future services oriented to serving Copley Township. The service concept for corridor also is expected to be BRT operating in mixed traffic, with curbside stations.

Line D – Kenmore

Line D is proposed to operate from downtown Akron to Barberton, with an additional extension to Norton when transit-oriented development occurs in that area. The routing for Line D includes Cedar and Exchange in of downtown Akron. The service then would continue west on Locust Street (Vernon Odom Avenue). The service would then use East Avenue for a short distance and then turn onto Manchester Road. From there, Line D would use Kenmore Blvd and Wooster Road to Barberton.

When first constructed, the service is expected terminate in Barberton at Barberton Plaza, which has potential for redevelopment as a TOD site. A future extension to Norton is possible when transit-oriented development occurs in that city. As with Copley Township listed above, an extension will result in high service levels which will require compact development and high population densities in order to justify the extension. The extension is proposed to use Hopocan Ave, Hillsdale Ave, Shannon Ave, and Cleveland-Massillon Road to access the center of Norton. A transit center is proposed in Norton to facilitate the service and provide other transfer opportunities.

Most of the Line D corridor is expected to operate as BRT in mixed traffic with curbside stations. The one exception to this is the segment on Kenmore Blvd, which has the right-of-way width and, perhaps, the transit demand to support dedicated bus lanes and more substantial stations located in the center of the roadway right of way.

Line E – Howard/State

Line E is proposed to operate from downtown Akron to State Road Plaza in Cuyahoga Falls, with a possible extension to Steels Corners Road in Stow. From downtown Akron, the service would use the Broadway and High one-way pair to Market Street and then take a slight jog west to Howard Street, where it could interface with the existing Cuyahoga Valley Scenic Railroad station on the north side of

downtown Akron (this station could be the site of a future passenger rail station). The service would operate north on Howard Street to Cuyahoga Falls Avenue, where it would turn northeast for a short segment. At State Road the service would turn north and terminate at State Road Plaza.

A possible extension for Line E is also considered on Graham Road, Wyoga Lake Road, and Steels Corners Road to SR 8. As with the other proposed extensions, this extension is more likely to occur when transit oriented development occurs in Stow. However, the extension to SR 8 also provides the opportunity for a park and ride lot and station to be located to intercept commuters using the freeway to travel to downtown Akron. Service in this corridor is expected to consist of BRT operating in mixed traffic, with curbside stations.

Line F – Twinsburg-Macedonia Service

Line F is different from the other primary transit corridors in that it is not a BRT Light concept, but rather an improved local/shuttle bus route operating primarily on SR 82 between Macedonia and Twinsburg, and perhaps as a circulator within those communities. Capital improvements in the corridor likely would be limited to the development of a transit center to be constructed in each of the two cities (SR 82 and Bedford in Macedonia, SR 82 and Darrow in Twinsburg). A satellite operations and maintenance center would be required to store vehicles and perform fueling, cleaning and light maintenance in the northern portion of the county (for both fixed route and paratransit services) to reduce deadhead operations and improve service efficiencies for expanded service in the north of Summit County.

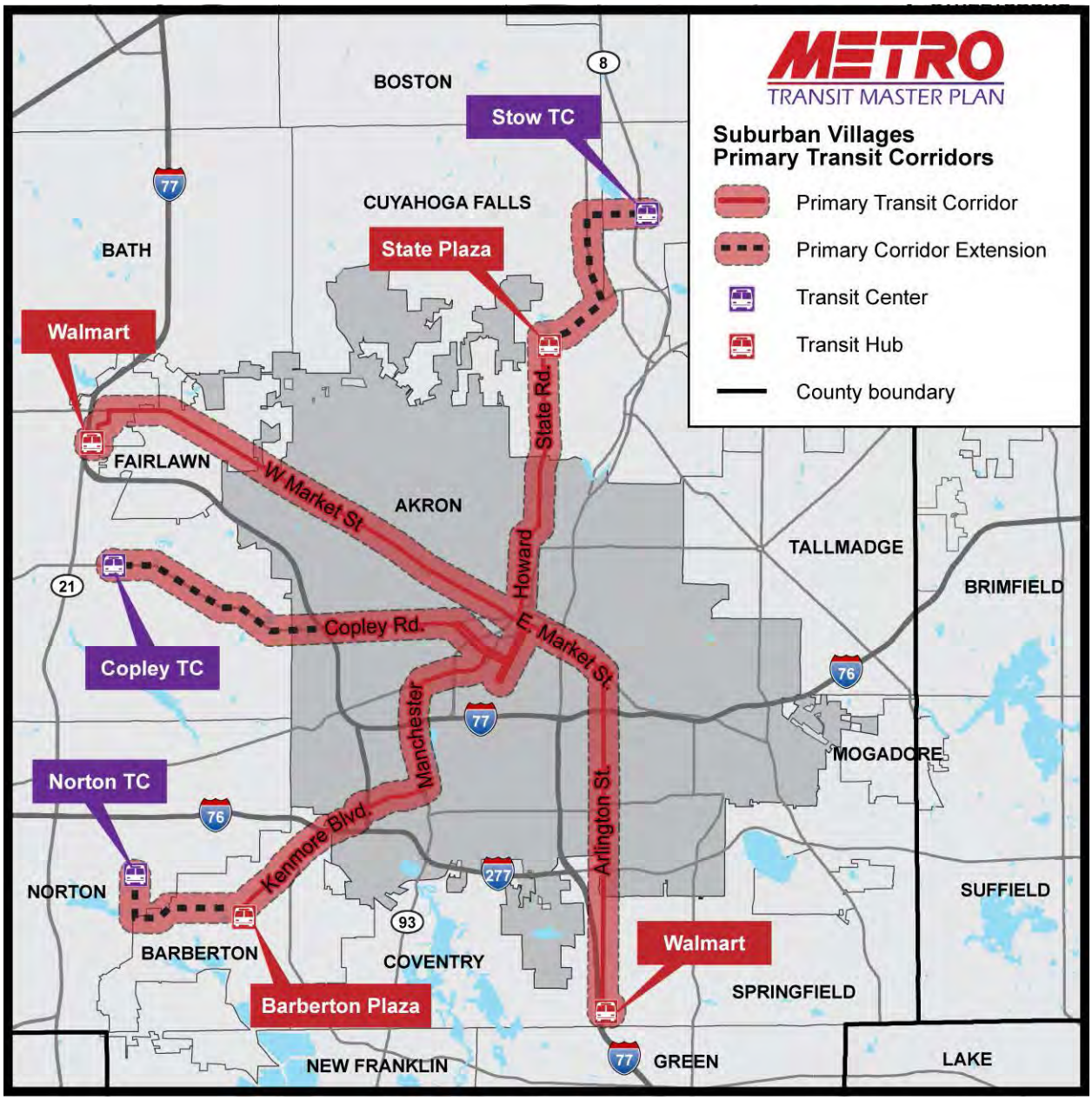
Ridership Projection

An off-model ridership estimate (i.e., not using the AMATA regional travel demand model) was developed for each of the lines based on the travel speed improvements expected and the intended 10 min peak/15 min offpeak service frequencies. The results are shown in Table 6-3. A further explanation of ridership Appendix J.

Table 6-3: Primary Transit Corridor Projected Ridership

Proposed Route	BRT Boardings	Local Bus Boardings	Total Corridor Boardings
Line AB Market+Arlington	1,190	2,020	3,210
Line C Copley	580	970	1,550
Line D Kemore	210	350	560
Line E Howard/State	230	390	620

Figure 6-8: Primary Transit Corridors



Estimated Capital Costs

A detailed segment analysis was conducted to determine the potential configuration of the Primary Transit Corridors, which in turn directly informed the capital costs. The full explanation of the segment analysis can be found in Appendix H.

Capital costs were estimated by determining unit costs and then multiplying those by the expected number of units on each corridor. Unit costs (in FY 2011 dollars) included:

- Median BRT - $11.2 million per mile
- Curbside BRT - $8.7 million per mile
- Mixed Traffic – $1.8 million per mile
- Queue Jump – $1.9 million per intersection
- Park & Ride - $3.6 million per facility
- Suburban TOD Transit Center/Park and Ride – $4.0 million per facility
- ROW Acquisition - $533,250 per acre
- 60' Articulated Bus - $1.1 million per vehicle

The capital cost by corridor is shown in Table 6-4, with a more detailed breakdown of capital costs for each facility shown in Table 6-5. It is important to note that many corridors would share the same routing into and out of downtown (either High and Broadway for north-south travel or Cedar and Exchange for east-west travel). For the purpose of estimating capital cost, the cost of developing BRT improvements on these downtown streets were assigned to the first facility that will use them (Line E Howard/State for Broadway and High and Line C Copley for Exchange and Cedar). This allocation is covered in greater detail in the implementation chapter.

Extended Primary Transit Corridors correspond to the suburban villages land use plan discussed in Chapter 5 and at the beginning of this chapter. Each extension includes bus station amenities for mixed traffic BRT and a transit center/park and ride terminal at the outer end of the extension.

Table 6-4: Primary Transit Corridors Capital Cost Summary

Facility	Cost
Line AB - West Market+Arlington	$28,210,000
Line C – Copley	$16,770,000
Line D – Kenmore	$29,236,600
Line E – Howard/State	$12,558,000
Line F – Twinsburg-Macedonia	$10,133,000
Copley Twp Extension	$12,164,500
Norton Extension	$9,616,500
Stow Extension	$11,982,500

Table 6-5: Detailed Primary Transit Corridor Capital Costs

Primary Corridors*	Median BRT	Curbside BRT	Mixed Traffic	Queue Jump	Park & Ride	Transit Center	ROW Acquistion	60' Artic. Bus
Cost	$11,187,000/mi	$8,700,000/mi	$1,820,000/mi	$1,881,000/int	$3,600,000 ea	$4,000,000 ea	$533,250/acre	$1,100,000 ea
State	0.0	0.0	3.0	0	0	0	0.0	0
$5,460,000	$ -	$ -	$ 5,460,000	$ -	$ -	$ -	$ -	$ -
Arlington	0.0	0.0	5.6	0	0	0	0.0	0
$10,192,000	$ -	$ -	$ 10,192,000	$ -	$ -	$ -	$ -	$ -
West Market	0.0	0.0	8.2	0	0	0	0.0	0
$14,924,000	$ -	$ -	$ 14,924,000	$ -	$ -	$ -	$ -	$ -
Kenmore	1.8	0.0	1.6	0	0	0	0.0	0
$23,048,600	$ 20,136,600	$ -	$ 2,912,000	$ -	$ -	$ -	$ -	$ -
Copley	0.0	1.3	2.2	0	0	0	0.0	0
$15,314,000	$ -	$ 11,310,000	$ 4,004,000	$ -	$ -	$ -	$ -	$ -

**Note: Primary Corridors do not include shared segments closer to downtown Akron*

Shared Corridors	Median BRT	Curbside BRT	Mixed Traffic	Queue Jump	Park & Ride	Transit Center	ROW Acquistion	60' Artic. Bus
Cost	$11,187,000/mi	$8,700,000/mi	$1,820,000/mi	$1,881,000/int	$3,600,000 ea	$4,000,000 ea	$533,250/acre	$1,100,000 ea
Cuyahoga Falls	0.0	0.0	0.3	0	0	0	0.0	0
$546,000	$ -	$ -	$ 546,000	$ -	$ -	$ -	$ -	$ -
Howard	0.0	0.0	1.4	0	0	0	0.0	0
$2,548,000	$ -	$ -	$ 2,548,000	$ -	$ -	$ -	$ -	$ -
East Market	0.0	0.0	1.7	0	0	0	0.0	0
$3,094,000	$ -	$ -	$ 3,094,000	$ -	$ -	$ -	$ -	$ -
Cedar	0.0	0.0	0.4	0	0	0	0.0	0
$728,000	$ -	$ -	$ 728,000	$ -	$ -	$ -	$ -	$ -
Exchange	0.0	0.0	0.4	0	0	0	0.0	0
$728,000	$ -	$ -	$ 728,000	$ -	$ -	$ -	$ -	$ -
Wooster	0.0	0.0	2.1	0	0	0	0.0	0
$3,822,000	$ -	$ -	$ 3,822,000	$ -	$ -	$ -	$ -	$ -
Vernon Odom/Locust	0.0	0.0	1.3	0	0	0	0.0	0
$2,366,000	$ -	$ -	$ 2,366,000	$ -	$ -	$ -	$ -	$ -
Broadway	0.0	0.0	1.1	0	0	0	0.0	0
$2,002,000	$ -	$ -	$ 2,002,000	$ -	$ -	$ -	$ -	$ -
High	0.0	0.0	1.1	0	0	0	0.0	0
$2,002,000	$ -	$ -	$ 2,002,000	$ -	$ -	$ -	$ -	$ -

Extended Corridors	Median BRT	Curbside BRT	Mixed Traffic	Queue Jump	Park & Ride	Transit Center	ROW Acquistion	60' Artic. Bus
Cost	$11,187,000/mi	$8,700,000/mi	$1,820,000/mi	$1,881,000/int	$3,600,000 ea	$4,000,000 ea	$533,250/acre	$1,100,000 ea
Copley	0.0	0.0	3.9	0	0	1	2.0	0
$12,164,500	$ -	$ -	$ 7,098,000	$ -	$ -	$ 4,000,000	$ 1,066,500	$ -
Graham/Steels Corner	0.0	0.0	3.8	0	0	1	2.0	0
$11,982,500	$ -	$ -	$ 6,916,000	$ -	$ -	$ 4,000,000	$ 1,066,500	$ -
Hoponcan/Cleveland-Ma	0.0	0.0	2.5	0	0	1	2.0	0
$9,616,500	$ -	$ -	$ 4,550,000	$ -	$ -	$ 4,000,000	$ 1,066,500	$ -
Macedonia	0.0	0.0	0.0	0	0	1	2.0	0
$5,066,500	$ -	$ -	$ -	$ -	$ -	$ 4,000,000	$ 1,066,500	$ -
Twinsburg	0.0	0.0	0.0	0	0	1	2.0	0
$5,066,500	$ -	$ -	$ -	$ -	$ -	$ 4,000,000	$ 1,066,500	$ -

Estimated Operating Costs

As noted above, each of these corridors has the possibility of receiving funding through the FTA Very Small Starts program. The program bi-directional requires service frequencies of 10 minutes peak / 15 minutes offpeak to be operated for 14 hours each weekday. This operating scenarios was used to estimate the operating costs for each of the proposed corridors.

The procedure for estimating operating costs begins by first using the frequencies of existing bus service, and then calculating the incremental number of additional trips required on the proposed Primary Transit Corridors in order to meet the requirement for a combined service frequency of 10 minutes peak / 15 minutes offpeak. Similar to the costs estimated for the High Frequency Bus Network, total revenue hours were calculated for each line and this was multiplied by the cost of $116.10 per revenue hour. It was assumed Primary Transit Corridors would operate at 16.5 mph due to traffic signal priority and limited stops, thus providing a faster trip than the local routes.

Table 6-6: Estimated Primary Transit Corridor Operating Costs

	Proposed Annual Revenue Hours	Cost per Revenue Hour	Total Cost
Line AB West Market+Arlington	26,647	$116.10	**$3,093,775**
Line C Copley	9,435	$116.10	**$1,095,403**
Line D Kenmore	16,192	$116.10	**$1,879,949**
Line E Howard/State	15,364	$116.10	**$1,783,731**
Line F Twinsburg/Macedonia	4,590	$116.10	**$532,899**

Commuter Rail

The implementation of rail service is an expensive proposition that is justifiable when passenger demand is higher than what can be adequately served with lower cost bus service, or when the rail service provides transit connections that are significantly more direct than can be accomplished using the bus. There are other reasons to develop rail service, of course, most notably that rail is more likely than bus service to generate transit oriented development or redevelopment at station locations. The equation is also altered when an existing rail corridor is available for passenger use, which would significantly reduce the capital costs involved with such a project. However, it is rare that an existing rail corridor is in a state of good repair sufficient to allow immediate implementation of passenger rail service without significant upgrades, but has so little current freight rail traffic that passenger service could operate unimpeded.

The Transit Master Plan recommends that METRO pursue the development and operation of three passenger rail lines in Summit County. Implementing passenger rail service would be a major undertaking, but could both provide new, attractive transportation alternative and a potential impetus for transit oriented development and redevelopment in Akron and several suburban communities. The arguments for passenger rail service include the following:

1. Rail lines would serve emerging and existing important destinations in Summit County and the surrounding area, including Merriman Valley, Hudson, Kent, Tallmadge, and the new Goodyear Headquarters.
2. Rail stations would provide a significant incentive for compact transit oriented development and redevelopment in the above areas.
3. Most of the rail lines and rights of way are currently owned by METRO, which removes a key hurdle in terms of negotiating with a third party for use of the corridor.
4. Infrastructure improvements on the rail lines would benefit both passenger rail and freight operations..

The three lines proposed for the system include:

- Line A Merriman-Akron-Goodyear: Line A would operate on the Sandyville Secondary from Merriman Valley in the northwest of Akron to the Goodyear Headquarters southeast of downtown. The line is proposed to have a stop at a Downtown Akron Station, located at the site of the current Cuyahoga Valley Scenic Railroad station at 27 Ridge Street.

- Line B Hudson-Cuyahoga Falls-Akron: Line B is proposed to operate between Hudson and the Downtown Akron Station, operating primarily on the Akron Secondary, which parallels SR 8. The line is proposed to have two intermediate stops: Steels Corner Road Park and Ride and downtown Cuyahoga Falls. The Akron Secondary is currently inactive and would require significant infrastructure improvement in order to allow for passenger rail operations.

- Line C Kent-Tallmadge-Akron: Line C is proposed to operate on the Freedom Secondary between Kent and Akron, with a single intermediate stop in Tallmadge. The Freedom Secondary is currently inactive and would require significant infrastructure improvements in order to operate passenger rail.

<u>Interaction with Freight Services</u>

METRO owns and is responsible for maintaining about 51miles of rail lines located in both Summit and Stark Counties. METRO conducted a rail freight system study concurrently with the development of the

Master Plan during 2011. The study indicates that the economic changes that are occurring at both a national level and at the local level within northern Ohio are favorable for the development of freight rail service, and that freight service has good potential in Summit and Stark Counties and in the locations currently served by METRO's rail lines. It is important for both preservation of the rail system, and for the future Ohio jobs that are dependent on rail access, for METRO to continue to invest in improvements to the rail system, using both local funds and funds from state and Federal government sources.

Estimated Capital Costs

Capital cost estimates were developed for the three rail lines identified in the Suburban Villages transit network. In developing these costs, it was assumed that most of the existing track would need to be replaced in order to bring the lines up to standard for passenger rail service. Costs for midday layover facilities, right-of-way acquisition, vehicles, professional services and contingency were also included. Vehicles were assumed to be FRA crash-worthy DMUs, which would allow freight service to continue operating in conjunction with passenger service.

The methodology for estimating capital costs was to determine unit costs and then multiply those costs by the expected number of units for each corridor. Some of the unit costs (in FY 2011 dollars) for the largest cost items include:

- New CWR Track, Complete with Wood Ties - $280 per track-foot
- Commuter Rail Station, At Grade, Single Track - $1.5 million per station
- Install CTC System - $1.75 million per mile
- Install PTC System - $770,000 per mile
- Railroad Bridge - $10,300 per track-foot
- Urban Land Acquisition - $395,000 per acre
- Layover Facility - $218,000 per vehicle
- DMU, Single Level, US Railcar - $2.45 million per vehicle

The capital cost estimates indicate that each line will require roughly $1 million per mile in capital expenditures to begin operating passenger service. This high cost means that METRO is unlikely to begin passenger rail service on more than one corridor during the next twenty years. The Merriman Valley to Goodyear line has been given first priority by METRO for development of passenger rail service; an Alternatives Analysis under FTA's Section 5309 New Starts program, will study the potential for passenger service on that line in 2012. The next chapter will discuss the implementation of rail service on this corridor and what this means for the future of passenger rail service on the other two lines.

Figure 6-9: Commuter Rail Lines

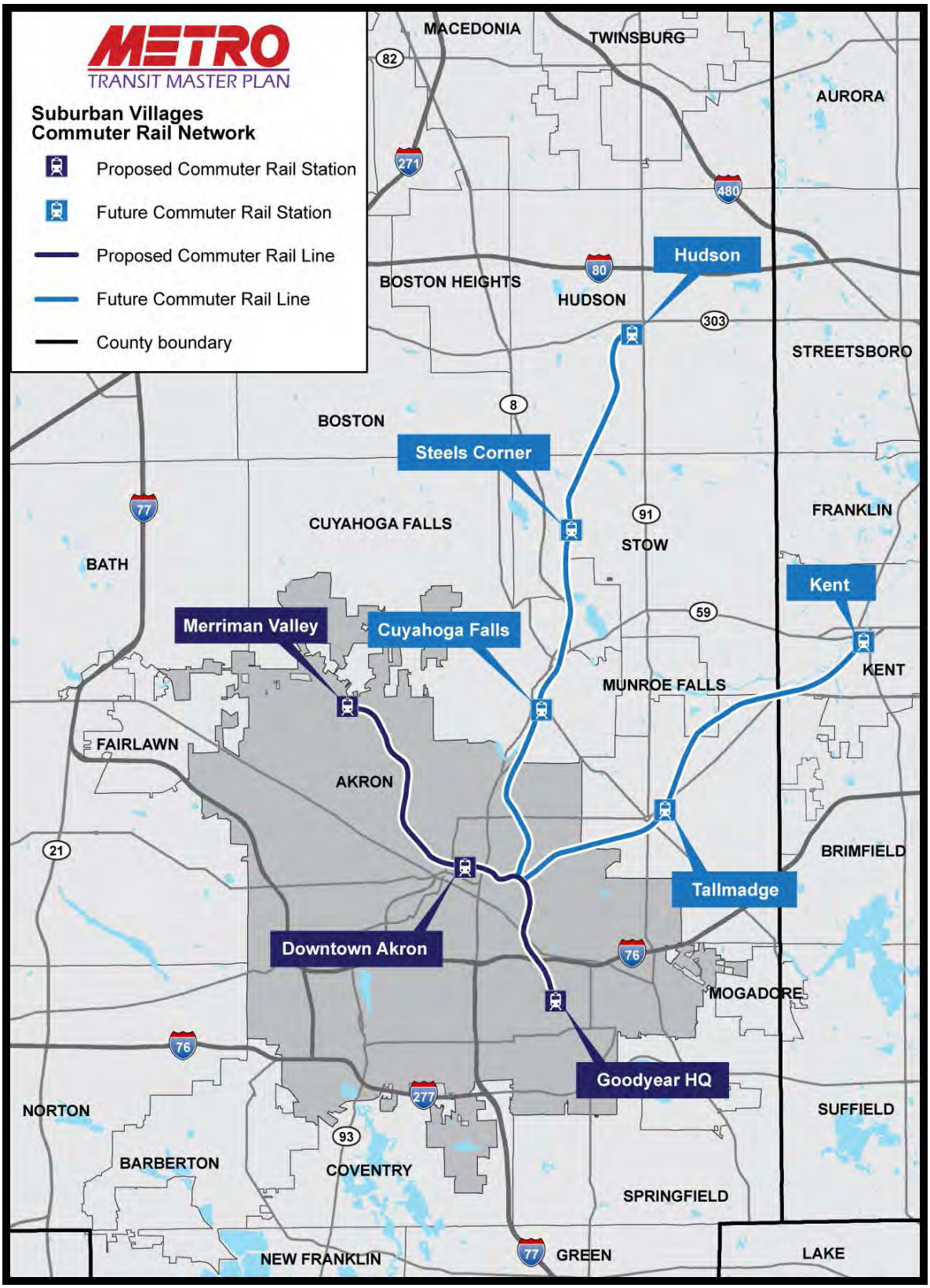


Table 6-8: Commuter Rail - Preliminary Order of Magnitude Capital Costs

					All Costs in 2011 Dollars		
					UNIT	ALLOCATED	*TOTAL*
SCC	ITEM DESCRIPTION	UNIT	QTY		COST	COSTS	*COST*
	Merriman Line (Merriman to Goodyear)	***LSUM***	***1***	***$***	***38,168,736***		***$ 38,168,736***
10.04	Railroad Bridge	TF	240	$	10,300	$ 2,472,000	
10.11	New CWR Track, Complete w/ Wood Ties	TF	5,000	$	280	$ 1,400,000	
10.11	Rail Replacement, CWR	TF	42,000	$	58	$ 2,436,000	
10.11	Remove and Replace Ballast	TM	8.0	$	100,400	$ 798,636	
10.11	Surface Track w/ 33% Timber Tie Replacement	TF	42,000	$	49	$ 2,058,000	
10.12	Turnout Installation - #15, Timber	EA	3	$	151,000	$ 453,000	
20.01	CR Station, At-Grade, Single Track	LSUM	2	$	1,500,000	$ 3,000,000	
40.01	Bridge Demolition	SF	3,900	$	130	$ 507,000	
40.07	Pre-Cast Roadway Crossing Panels (10' Long)	TF	750	$	280	$ 210,000	
50.01	Install CTC System (Single Track)	MILE	8.0	$	1,745,000	$ 13,960,000	
50.01	Install PTC System (Single Track)	MILE	8.0	$	769,700	$ 6,157,600	
50.01	Interlocking - One Turnout (switch machine, heater, signals)	EA	3	$	1,027,000	$ 3,081,000	
50.02	Upgrade Crossing Circuits for Increased Speed	EA	5	$	32,100	$ 160,500	
50.02	Automatic Warning Device (Gates), Public & Private	EA	5	$	295,000	$ 1,475,000	
	Hudson Line (Akron to Hudson w/ Option A Connection)	***LSUM***	***1***	***$***	***54,861,635***		***$ 54,861,635***
10.04	Railroad Bridge	TF	335	$	10,300	$ 3,450,500	
10.11	New CWR Track, Complete w/ Wood Ties	TF	49,740	$	280	$ 13,927,200	
10.11	Track Removal & Disposal	TF	42,240	$	10	$ 422,400	
10.11	Rail Replacement, CWR	TF	4,500	$	58	$ 261,000	
10.11	Remove and Replace Ballast	TM	0.9	$	100,400	$ 85,568	
10.11	Surface Track w/ 66% Timber Tie Replacement	TF	4,500	$	74	$ 333,000	
10.12	Turnout Installation - #15, Timber	EA	5	$	151,000	$ 755,000	
20.01	CR Station, At-Grade, Single Track	LSUM	3	$	1,500,000	$ 4,500,000	
40.01	Bridge Demolition	SF	6,725	$	130	$ 874,250	
40.01	Building Demolition	SF	44,700	$	30	$ 1,341,000	
40.07	Pre-Cast Roadway Crossing Panels (10' Long)	TF	710	$	280	$ 198,800	
50.01	Install CTC System (Single Track)	MILE	9.4	$	1,745,000	$ 16,438,693	
50.01	Install PTC System (Single Track)	MILE	9.4	$	769,700	$ 7,250,924	
50.01	Interlocking - One Turnout (switch machine, heater, signals)	EA	1	$	1,027,000	$ 1,027,000	
50.01	Interlocking - Crossover (switch machines, heaters, signals)	EA	1	$	1,540,000	$ 1,540,000	
50.02	Upgrade Crossing Circuits for Increased Speed	EA	3	$	32,100	$ 96,300	
50.02	Automatic Warning Device (Gates), Public & Private	EA	8	$	295,000	$ 2,360,000	
	Kent Line (Akron to Kent via Tallmadge)	***LSUM***	***1***	***$***	***48,717,457***		***$ 48,717,457***
10.04	Railroad Bridge	TF	155	$	10,300	$ 1,596,500	
10.11	New CWR Track, Complete w/ Wood Ties	TF	23,500	$	280	$ 6,580,000	
10.11	Track Removal & Disposal	TF	23,500	$	10	$ 235,000	
10.11	Rail Replacement, CWR	TF	28,500	$	58	$ 1,653,000	
10.11	Remove and Replace Ballast	TM	5.4	$	100,400	$ 541,932	
10.11	Surface Track w/ 66% Timber Tie Replacement	TF	28,500	$	74	$ 2,109,000	
10.12	Turnout Installation - #15, Timber	EA	3	$	151,000	$ 453,000	
20.01	CR Station, At-Grade, Single Track	LSUM	3	$	1,500,000	$ 4,500,000	
40.01	Bridge Demolition	SF	3,425	$	130	$ 445,250	
40.07	Pre-Cast Roadway Crossing Panels (10' Long)	TF	930	$	280	$ 260,400	
50.01	Install CTC System (Single Track)	MILE	9.8	$	1,745,000	$ 17,182,962	
50.01	Install PTC System (Single Track)	MILE	9.8	$	769,700	$ 7,579,213	
50.01	Interlocking - One Turnout (switch machine, heater, signals)	EA	1	$	1,027,000	$ 1,027,000	
50.01	Interlocking - Crossover (switch machines, heaters, signals)	EA	1	$	1,540,000	$ 1,540,000	
50.02	Upgrade Crossing Circuits for Increased Speed	EA	2	$	32,100	$ 64,200	
50.02	Automatic Warning Device (Gates), Public & Private	EA	10	$	295,000	$ 2,950,000	
	Midday Layover Yard	***LSUM***	***1***	***$***	***4,360,000***		***$ 4,360,000***
30.05	Layover Facility	VEH	20	$	218,000	$ 4,360,000	

		Real Estate/ROW Acquisition	***LSUM***	***1***	***$ 2,110,000***		***$ 2,110,000***
	60.01	Land Acquisition - Rural	ACRE	1.0	$ 135,000	$ 135,000	
	60.01	Land Acquisition - Urban	ACRE	5.0	$ 395,000	$ 1,975,000	
		Vehicles	***LSUM***	***1***	***$ 49,100,000***		***$ 49,100,000***
	70.03	DMU, Single Level, Colorado Railcar	EA	20	$ 2,455,000	$ 49,100,000	
		Professional Services	***LSUM***	***1***	***$ 43,832,348***		***$ 43,832,348***
	80.01	Preliminary Engineering/Project Environmental		8%		$ 11,688,626	
	80.02	Final Design		4%		$ 5,844,313	
	80.03	Project Managenent for Design & Construction		2%		$ 2,922,157	
	80.04	Construction Administration & Management		10%		$ 14,610,783	
	80.06	Service Development Plan/Service Environmental		4%		$ 5,844,313	
	80.07	Surveys, Testing, Investigation		2%		$ 2,922,157	
		Contingencies	***LSUM***	***1***	***$ 72,127,562***		***$ 72,127,562***
		Construction and Professional Services		35%		$ 67,217,562	
		Rolling Stock		10%		$ 4,910,000	
	PRELIMINARY CAPITAL COST ESTIMATE		***(2011 Dollars)***				***$ 313,278,000***

Estimated Operating Costs

In order to calculate passenger rail operating costs, a basic operating plan was developed for each of the rail lines. For Line A (Merriman-Akron-Goodyear), single direction service was assumed, with three southbound AM peak trips and three northbound PM peak trips, and train service on weekdays only. Line B (Hudson-Cuyahoga Falls-Akron) also assumes three southbound AM peak trips and three northbound PM peak trips, but service is proposed to operate seven days a week. Line C (Kent-Tallmadge-Akron) is proposed to have the most ambitious service plan because of the demand for travel to both Kent and Akron. As a result, seven trips were assumed (three AM, one midday, and three PM) in both directions. In addition, Line C was also assumed to operate seven days a week.

Operating costs were estimated using a four variable cost model that estimates the total cost of both operating and maintaining the passenger rail system. This four variable model assumes rail service would be contracted out to a private operator, with the costs assumed to be the terms of the contract with the operator. It should be pointed out that in reality no decision has been made on whether commuter rail service would be operated by METRO or privately and these costs are estimated for high-level decision making only. It is expected that decisions on operation would be made at a later date during a more detailed look at any one (or all) of the commuter rail lines.

The four cost drivers for the passenger rail operation costs estimate include train revenue miles, peak passenger cars, number of stations, and administration. The service plan was used to estimate the number of each of these variables for the three proposed lines. Then these drivers were multiplied by estimated costs in order to come up with the total cost.

- Train revenue miles – represents the cost of operating the service, including engineers and conductors on the trains, dispatchers to ensure the train can operate on the track, and track maintainers. This number is multiplied by $10 per train revenue mile to estimate the total cost for a private operator to operate the rail line.
- Peak passenger cars – represents the cost of maintaining the passenger cars. It is based on the number of cars operated in peak service because this is the total number of cars that would need to

be maintained at any one time. This number is multiplied by $90,000 per car in order to estimate the total cost of maintaining the vehicles.

- Stations – represents the cost of operating and maintaining the stations, including ticket vending machine technicians, grounds and maintenance workers, security, and utility costs. This number is multiplied by $215,000 per station in order to estimate the total cost of maintaining the stations.
- Administration – represents the costs of all administrative functions associated with the rail service, including service planners, IT technicians, legal department, financial department, and management staff. This number is estimated to be $2,000,000 for the entire system, and the costs will be incurred regardless of whether there are one or three lines in operation. Therefore, the administrative cost was assumed to be part of the first line in operation, with the second and third lines not incurring additional administrative costs.

The costs for Lines A, B, and C are shown in Table 6-9.

Table 6-9: Estimated Annual Commuter Rail Operating Costs

	Unit Cost	Line A Stat	Line A Cost	Line B Stat	Line B Cost	Line C Stat	Line C Cost
Annual Train Revenue Miles	$10	36,261	$362,610	84,096	$840,960	104,244	$1,042,440
Peak Passenger Cars	$90,000	6	$540,000	6	$540,000	4	$360,000
Stations	$215,000	3	$645,000	3	$645,000	2	$430,000
Administration	$2,000,000	1	$2,000,000	0	$0	0	$0
Totals			***$3,547,610***		***$2,025,960***		***$1,832,440***

Conclusion

METRO supports the Suburban Villages pattern for future development in Summit County, and the infrastructure recommendations in this chapter reflect this potential pattern. The Suburban Villages pattern was selected because it reflects two principles about transit ridership and development in the Akron region. First, transit ridership in Akron and elsewhere typically responds best to dense areas of development, because these are places where people are less likely to use a personal automobile. At the same time, development in the Akron region has moved outward from the core and is expected to continue to do so in the future, albeit in a new, more dense and walkable pattern. As a result, the Suburban Villages development plan marries the density necessary for increased transit ridership with the reality of private development in the region.

Chapter 7 Implementation and Financial Analysis

This chapter discusses METRO's existing and future financial conditions and how implementation of the Transit Master Plan will affect future finances. There are three sections in this chapter. The first discusses the existing financial condition of the agency for both the current year (FY2012) and future years. The second section discusses the Transit Master Plan implementation, including staging of capital and operations improvements over a twenty year period for fiscal years 2013- 2032.

The final section assesses three financial scenarios for implementation. Scenarios 1 and 2 assume there are no other changes to METRO's finances; scenario 3 assumes that additional revenue has been secured which will allow a full implementation of the TMP. Section 3 presents recommendations, including the inclusion of a rainy-day fund.

Existing Financial Conditions

As part of the implementation recommendation, baseline financial figures were established for the agency. METRO provided these figures, including:

- Operating expenses, starting with a baseline of fiscal year 2013. These expenses were estimated to increase
    - 3.5% a year in 2014-15
    - 2.5% a year in 2016-20
    - 2.25% a year in 2021-25
    - 2.20% a year in 2026-32
- Revenues from Summit County's 0.5% sales tax, starting with a baseline of fiscal year 2013 and then estimated to increase
    - 1.68% in year 2014
    - 2.67% in year 2015
    - 1.86% in year 2016
    - 1.97% in year 2017
    - By an additional 0.01% a year, from 2.38 to 2.47%, in the years 2018-25
    - 2.0% a year from 2026-32
- METRO share of annual capital expenditures for fleet, estimated based on the age of current vehicles and federal policy on local share for bus replacement (20%).
- METRO share of annual capital expenditures for capital projects at METRO's existing facilities, also assumed with a 20% local/80% federal cost. Projects include
    - Chapel Hill Turnaround ($500,000 construction cost in 2014)
    - Maintenance Facility ($250,000 upgrade cost in 2016)
    - Intermodal Facility ($1,500,000 rehab cost in 2020)
    - Ghent Park and Ride ($150,000 rehab cost in 2025)
    - Chapel Hill Turnaround ($100,000 rehab cost in 2026)
    - Fuel Facility ($1,000,000 upgrade cost in 2027)
    - Intermodal Facility ($1,500,000 rehab cost in 2032)

The baseline conditions are shown in Appendix K Table K-1. The operating expenses and revenues were used to establish an annual net income (or loss) for the agency. Then the fleet and non-fleet projects were added in to determine the annual surplus (or deficit) for the agency. This annual surplus (deficit) was added to the rolling number to show the additional cash the agency would have on hand in any one year.

The final row of the table calculates the rolling surplus as a function of number of months of operating funds. METRO's Board has established a goal of having six months of operating funds on hand for the agency. However, as Table K-1 shows, the goal of six months worth of operating funds is unattainable with the assumed growth of operating expenses and revenues.

Analysis

The financial numbers shown in Appendix K Table K-1 depict an agency that is living within its means. METRO estimates modest increases in operating expenditures but these are covered by an equally modest increase in sales tax revenues. A surplus is shown for the agency in each fiscal year but one, 2024. However, even that can be considered healthy, as 2024 shows an estimated $3.158 million to be spent on new vehicles. This means the agency is spending to maintain its level of services and to keep its facilities and equipment in a state of good repair.

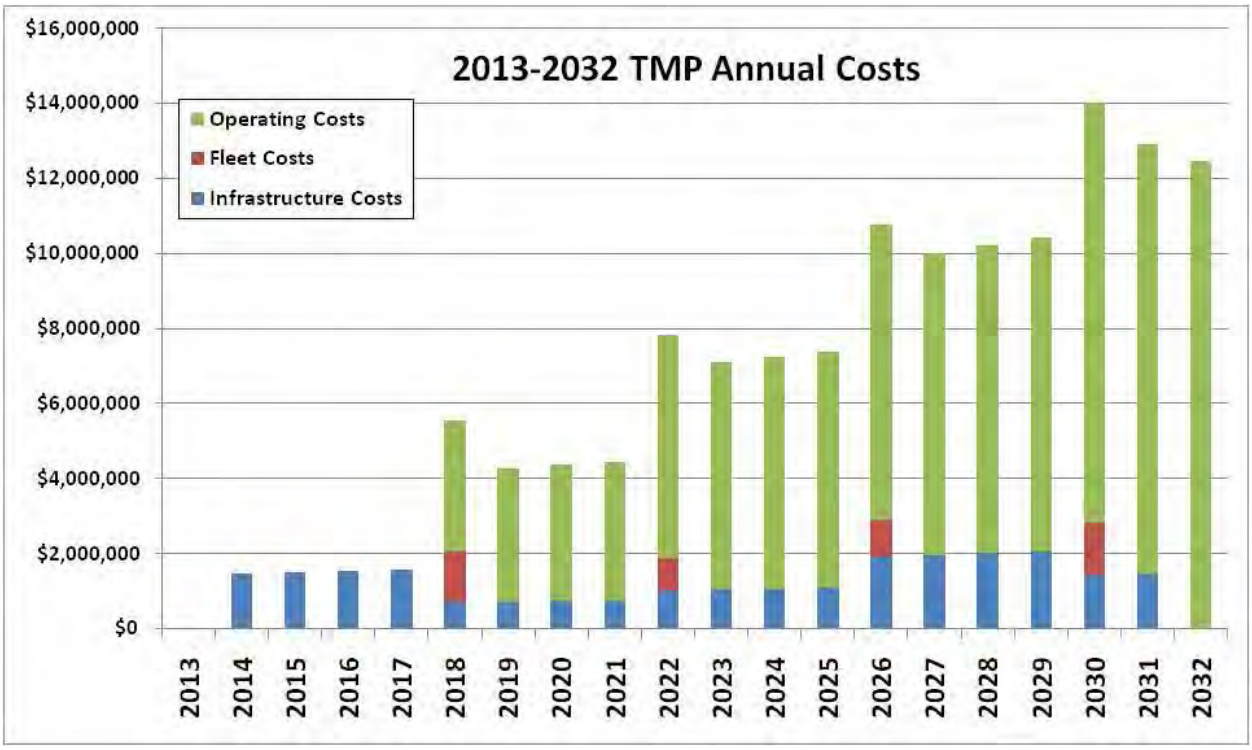
From the analysis presented, it appears that METRO would be unable to reach the stated goal of six months worth of operating expenses. METRO is able to build on its rolling surplus in most years but with only a small amount in any one year. Coupled with the projected 2-3% increase in operating expenses annually, the result is that the agency will not have six months of operating expenses on hand by 2032.

The second part of the implementation analysis is to determine the costs associated with the capital and operations improvements proposed for the Transit Master Plan. The costs presented here are based on the recommendations listed in Chapter 6 - Recommended Transit Network. This section assigns costs for each implementation step and then orders those costs over the twenty year timeframe of the TMP. These costs are then used to complete the financial analysis presented in this chapter.

Transit Master Plan Implementation

This section details the proposed implementation of Transit Master Plan recommendations. Assuming a 2% rate of inflation, implementation of *most of* the improvements recommended in the TMP will cost approximately $135 million over the next twenty years. This does not include every project recommended. Figure 7-1 shows the estimated yearly costs of the implementation.

Figure 7-1: 2013-2032 Costs of TMP Implementation



This section includes two sections – Proposed Capital Implementation and Proposed Service Improvement Implementation.

Proposed Capital Implementation

Capital Implementation includes both infrastructure and fleet costs. Service Improvement Implementation discusses recommended service changes that correspond to the proposed capital investment.

A total of twelve capital projects were considered for implementation within the Transit Master Plan. Those projects, along with the projected capital costs in FY 2011 dollars include:

- Commuter Rail Line A - Merriman-Akron-Goodyear: $86.2m
- Commuter Rail Line B - Hudson-Cuyahoga Falls-Akron: $123.4m
- Commuter Rail Line C - Kent-Tallmadge-Akron: $104.4m
- Primary Transit Corridor Line AB - West Market+Arlington: $28.2m
- Primary Transit Corridor Line C – Copley: $16.8m
- Primary Transit Corridor Line D – Kenmore: $29.2m
- Primary Transit Corridor Line E – Howard/State: $12.6m
- Primary Transit Corridor Line F – Twinsburg-Macedonia: $10.1m
- Primary Transit Corridor Copley Extension: $12.2m

- Primary Transit Corridor Norton Extension: $9.6m
- Primary Transit Corridor Stow Extension: $12.0m

Several other assumptions were made for the capital projects, including:

- Each initial commuter rail and Primary Transit Corridor project would take four years to complete, with costs spread equally over the four year development period
- Primary Transit Corridor extensions would take two years to complete, with costs spread equally over the two years
- Line F in Twinsburg-Macedonia is construction of two transit centers and could be completed within two years
- No overlap of projects should occur, meaning only one project will be under construction at any given time.
- The funding allocation for Commuter Rail projects was assumed to be through FTA New Starts grant program, with a 10% local/10% state/80% Federal split.
- For Funding allocation for Primary Transit Corridor projects was assumed to be through the FTA Very Small Starts grant program, with a 20% local/80% Federal split.
- All fleet upgrades were assumed to include a split of 20% local/80% Federal
- Inflation was assumed at 2% each year

METRO staff developed a priority list for implementation, including start and end years. Table 1 displays the priority list for capital projects. The four year construction schedule along with the desire to not overlap projects means only the first five projects can be implemented over the twenty years of the TMP.

The above capital costs do not include vehicle costs for bus-based services. These were estimated separately, based on the operations plan developed for each potential service. Vehicles recommended for purchase include the following:

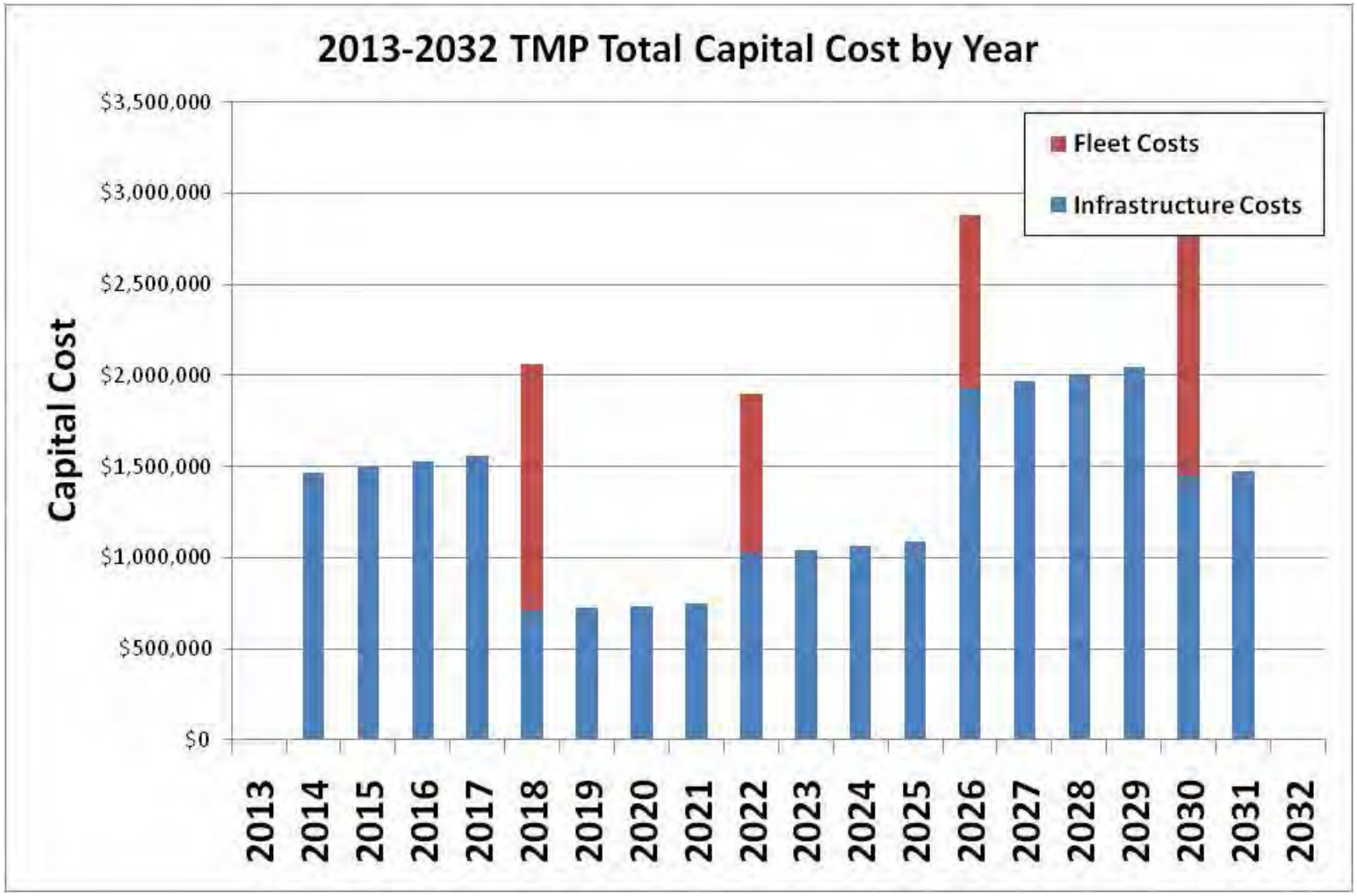
- Ten 40-ft BRT buses with CNG (including spares) for Line AB West Market+Arlington in 2018
- Six 40-ft BRT buses with CNG (including spares) for Line E Howard/State in 2022
- Six 40-ft BRT buses with CNG (including spares) for Line C Copley in 2026
- Eight 40-ft BRT buses with CNG (including spares) for Line D Kenmore in 2030

The cost of the capital implementation is shown in Appendix K Table K-2. A bar chart showing the expenditures over the twenty years of implementation is shown in Figure 7-2. The “peaks” of the bar chart result from the one-time purchase of articulated vehicles in order to begin service on each of the Primary Transit Corridor alignments.

Table 7-1: TMP Capital Project Priority List

Capital Construction	Start	End
Line AB - West Market+Arlington	2014	2017
Line C - Copley	2022	2025
Line D - Kenmore	2026	2029
Line E - Howard/State	2018	2021
Line F - Twinsburg-Macedonia	2030	2031
Copley Extension	Future	
Norton Extension	Future	
Stow Extension	Future	
Line A - Merriman-Akron-Goodyear	Future	
Line B - Hudson-Cuyahoga Falls-Akron	Future	
Line C - Kent-Tallmadge-Akron	Future	

Figure 7-2: Total Capital Costs (Infrastructure + Vehicles), Years 2012-2032



Note: Costs shown account for inflation at 2% each year

Proposed Service Improvement Implementation

A total of fourteen (14) service improvements were considered for implementation within the Transit Master Plan. Proposed service improvements fall into two categories: improvements to existing routes to provide 15-minute headways during peak periods, and service improvements connected with future capital projects. These improvements, along with the total annual operating cost in FY 2011 dollars include:

- Commuter Rail Line A - Merriman-Akron-Goodyear: $3.5m
- Commuter Rail Line B - Hudson-Cuyahoga Falls-Akron: $2.0 m
- Commuter Rail Line C - Kent-Tallmadge-Akron: $1.8 m
- Primary Transit Corridor Line AB - West Market+Arlington: $3.1m
- Primary Transit Corridor Line C – Copley: $1.1m
- Primary Transit Corridor Line D – Kenmore: $1.9m
- Primary Transit Corridor Line E – Howard/State: $1.8m
- Primary Transit Corridor Line F – Twinsburg-Macedonia: $533,000
- Primary Transit Corridor Copley Extension: $666,000
- Primary Transit Corridor Norton Extension: $548,000
- Primary Transit Corridor Stow Extension: $674,000

Other assumptions made for the service improvements include:

- While 15 min peak period service is recommended for METRO routes, these costs were not considered here because the service is unaffordable with these other capital commitments and will be usurped by the Primary Transit Corridors in the future.
- METRO is assumed to be responsible for 100% of the cost of the service, and no additional fare revenues were assumed.
- For estimating purposes, costs were expected to be incurred the year after the capital project is completed.
- Inflation was assumed at 2% each year.

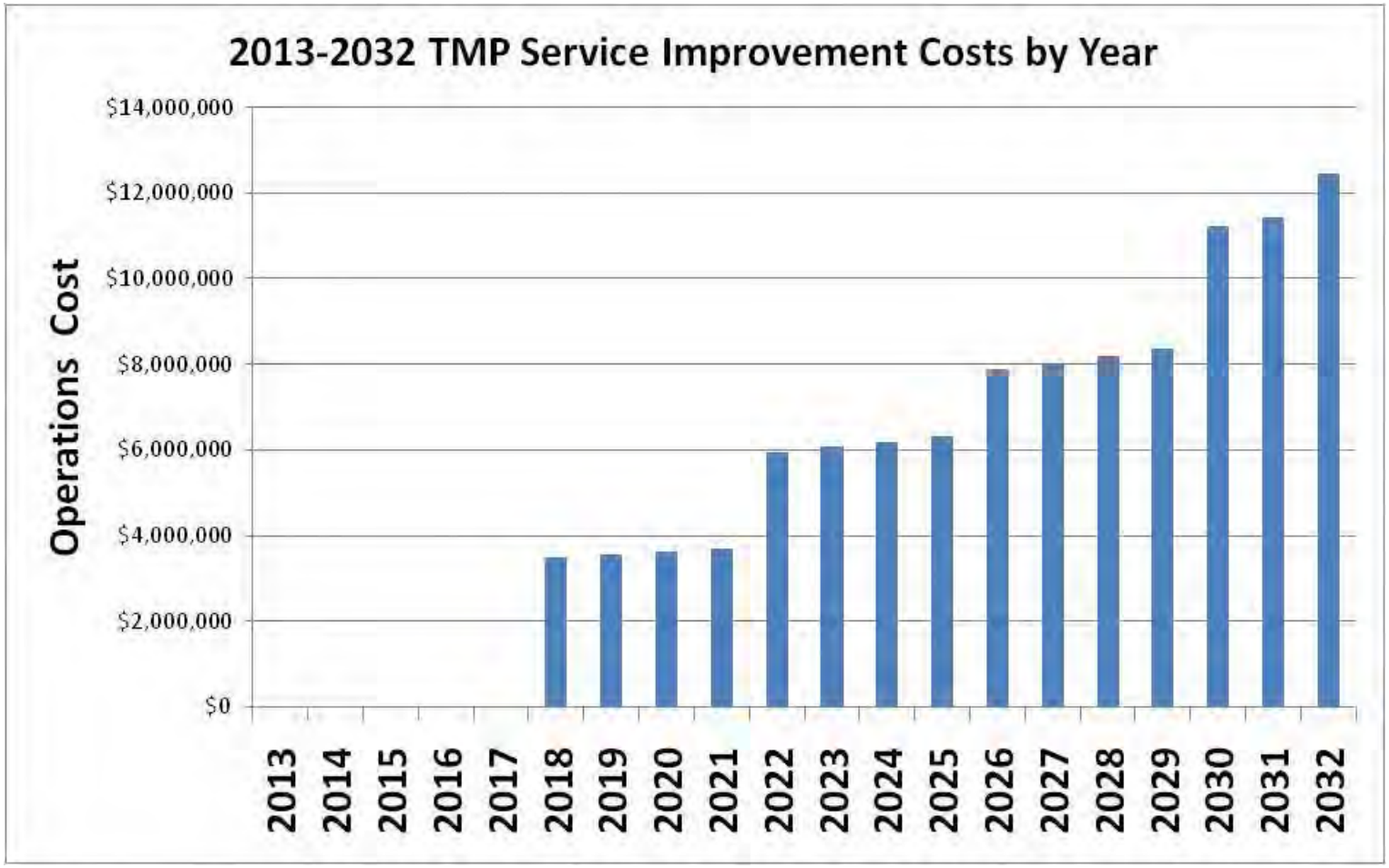
Table 2 details the proposed priority list for service improvements.

The cost of the service improvements by year is shown in Table K-3 in Appendix K. A bar chart showing the cost of service improvements over the twenty years of implementation is shown in Figure 7-3.

Table 7-2: TMP Service Improvement Priority List

Operations Improvements	Start
15 min peak period service on Routes 1, 2, 3, 8, 10	N/A
Primary Transit Corridor Line AB - West Market+Arlington	2018
Primary Transit Corridor Line C - Copley	2026
Primary Transit Corridor Line D - Kenmore	2030
Primary Transit Corridor Line E - Howard/State	2022
Primary Transit Corridor Line F - Twinsburg-Macedonia Improvements	2032
Commuter Rail Corridor Line A - Merriman-Akron-Goodyear	Future
Commuter Rail Corridor Line B - Hudson-Cuyahoga Falls-Akron	Future
Commuter Rail Corridor Line C - Kent-Tallmadge-Akron	Future

Figure 7-3: Total Service Improvement Costs, Years 2013-2032



Note: Costs shown account for inflation at 2% each year

Financial Analysis of TMP Implementation

The existing METRO budget and TMP implementation costs were established in previous sections of this chapter so that an analysis could be conducted to determine if the TMP is financially tenable within METRO's existing revenue source and dedicated costs.

Three scenarios were analyzed. Scenario 1 looks at the twin goals of implementing the TMP along with simultaneously dedicating six months' worth of operating funds. The analysis of the existing budget showed that METRO cannot achieve six months' worth of operating funds in a separate account even if the agency put every spare dollar into said account over a 20-year period. So, it appears that simultaneously implementing the TMP and increasing the operating fund is not financially feasible.

Scenario 2 looks at implementing the TMP without dedicating any funds to the six months operating funds goal. Scenario 2 shows that METRO cannot implement the TMP by itself, as the twenty year local cost of the TMP (~$135 million) far outweighs the surplus of METRO's existing funding streams (~$18 million).

Scenario 3 considers the twin goals of TMP and six months of operating funds and assumes additional revenues have been secured for the agency to meet its goals.

Figure 7-4 presents the costs of the three scenarios.

Scenario 1 – Full TMP + Six Months Dedicated Operating Funds

Scenario 1 assumes TMP implementation and the six months worth of operating funds have the same priority. Therefore this scenario has three tenets:

- METRO funding remains at existing levels (0.5% sales tax in Summit County)
- A separate fund is set up for six months worth of Operating Funds. It contributes $3.0 million per year until the fund reaches the six month target. After that, only small amounts are added to the fund in order to maintain six months of funds in reserve.
- TMP implementation occurs as detailed in Section 2.

The results, shown in Table K-4 in Appendix K, show that under this scenario, by 2014 the agency will be running a deficit that grows by millions each year. Even after 2021 when the operating fund reaches its six month goal, the deficit continues to grow as this is when the bulk of the TMP service and capital projects are being implemented. The conclusion is that METRO cannot implement the TMP and build six months of operating funds within its current funding structure.

Scenario 2 – Partial TMP with no Additional Revenue

As notes in the introduction to this section, the local cost of the TMP (~135 million) is more than the total surplus METRO will generate over the next twenty years (~18 million). Therefore, Scenario 2 assesses a partial TMP implementation of just Line AB West Market+Arlington Primary Transit Corridor. This scenario assumes:

- METRO funding remains at existing levels (0.5% sales tax in Summit County)
- The costs associated with Partial TMP implementation (just Primary Transit Corridor Line AB) are paid first from the general fund.
- Any additional yearly surplus is placed into an operations fund.

The results, shown in Table K-4, are that METRO can pay the local share of the Line AB West Market+Arlington Primary Transit Corridor improvement. However, the assumption for Line AB is that it would be constructed through FTA's Very Small Starts program, which includes mandatory 10 minute

peak/15 minute offpeak service on the corridor. If Line AB includes these service thresholds starting in 2018, METRO will still go into deficit unless other cuts are made to the operations budget. Table K-4 shows the additional cuts to METRO's existing service that would need to be made in order to pay for Line AB and continue with a balanced budget.

Scenario 3 – Full TMP + Six Months Dedicated Operating Funds + Additional Revenue Stream
Scenario 3 assumes that the TMP and Dedicated Operating Fund again have the same priority. In order to keep the agency from running into debt, this scenario also assumes METRO has secured an additional revenue stream for the year 2020.

Therefore Scenario 3 makes four assumptions:

- METRO revenues remain at existing levels (0.5% sales tax in Summit County) between 2013 and 2019
- METRO revenue stream increases beginning in 2020
- The separate fund of six months of operating funds would not be established until 2020, after additional revenues are available.
- TMP implementation would begin in 2013 as recommended in section 2 of this chapter.

The analysis, presented in Table K-4, Shows that the first six years of this Scenario would result in losses for the agency. However, additional revenues would enable METRO to implement the full TMP and establish a separate operations fund.

Analysis
None of the financial scenarios outlined here are desirable. In Scenarios 1 and 2, METRO would run into financial losses if it tries to do too much within its limited revenue stream. Scenario 3, with additional revenues, paints a healthier financial picture for METRO and would allow the agency to implement the TMP and reach their operating fund savings goal. However, it is uncertain where this revenue would come from.

The conclusion from this analysis is that additional funding will be needed in order to implement this Transit Master Plan and move the agency in the direction presented in the master plan. The key question is whether or not the financial resources required can be raised. This plan has shown what the benefits of additional transit improvements could do for the city of Akron and the region. However, it is up to METRO and local leaders to tie economic competitiveness and population growth to the transit service and infrastructure improvements recommended in this plan. Ultimately, this connection will determine the additional funding the future path for the agency.

Figure 7-4: Rolling Surplus (Deficit) of Existing and Financial Scenarios 1-3