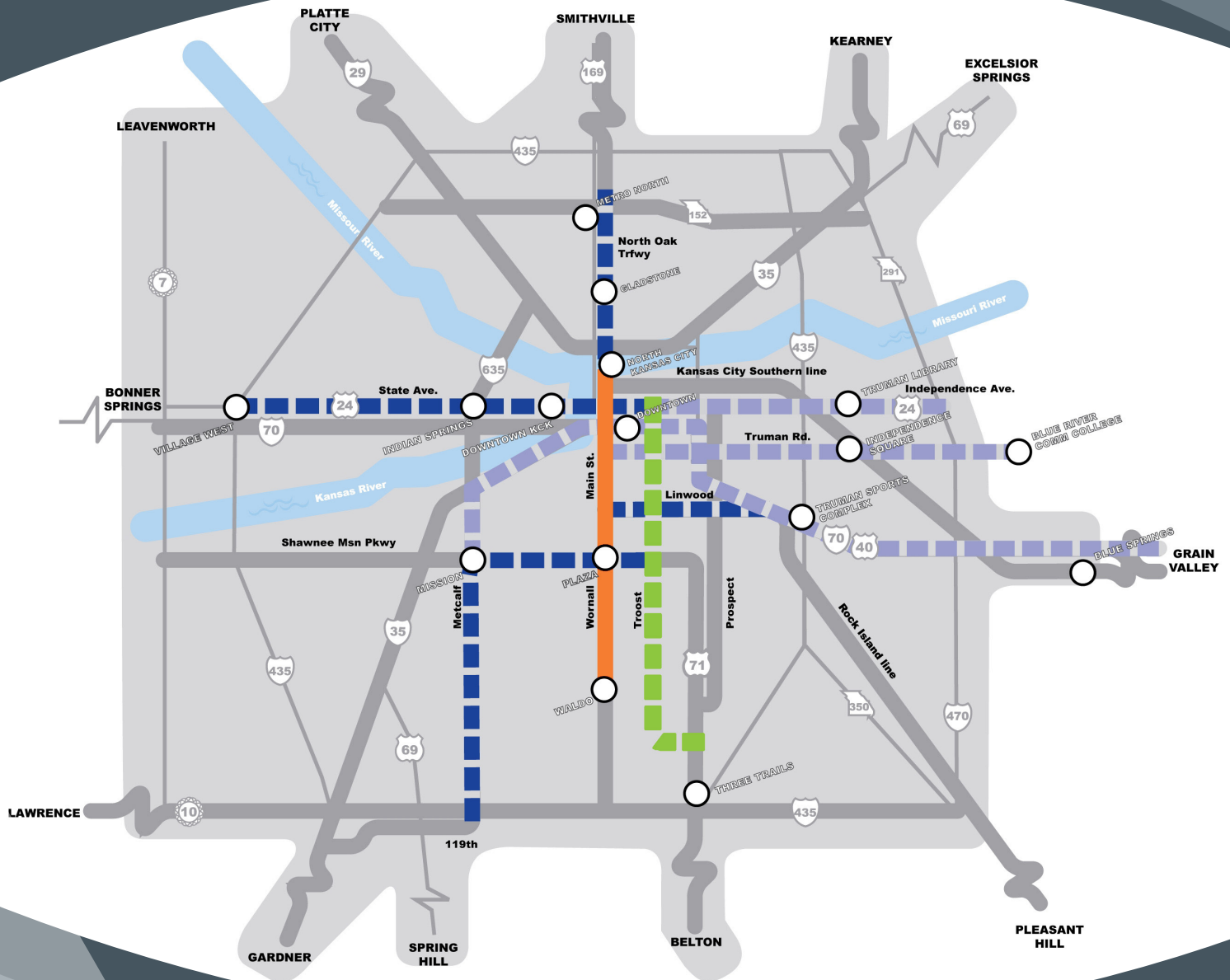


REGIONAL TRANSIT IMPLEMENTATION PLAN

PHASE III

PREPARED FOR MID-AMERICA REGIONAL COUNCIL
BY OLSSON ASSOCIATES



DECEMBER 2011

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1.0 Introduction

Area officials, planners, and transportation providers in the Kansas City metropolitan area have been moving towards planning and implementing an expanded regional transit system. The concept for this area-wide transit system was unveiled in the 2002 *Smart Moves* plan, and subsequently updated in 2008. The *Smart Moves* initiative articulated a vision for how transit could service the Kansas City area in the years ahead. Since that unveiling, the transit community has been steadily progressing towards implementing the higher quality and higher level of transit service first presented in *Smart Moves*. This work includes implementing the Bus Rapid Transit (BRT) routes of Main Street MAX and Troost Avenue MAX, carrying out BRT planning studies on multiple area corridors, studying commuter rail feasibility and examining the potential for a streetcar line. As corridors that were originally conceived in *Smart Moves* have been further defined and implemented on an individual scale, it was recognized that an implementation plan would be required to ensure that an integrated regional plan consisting of a variety of services is developed to support and serve the greater Kansas City area transit network.

1.1 Purpose of this Project

This project's purpose is to integrate the findings of the two earlier phases of the *Regional Transit Implementation Plan: Phase 1 and Phase 2*. Redundancies in service strategies between the urban corridors and commuter corridors will be identified, as well as system-wide connectivity strategies and potential methods for integrating and connecting the urban corridor and commuter corridor networks. This will include identifying connectivity and distribution strategies to link the urban corridor hub in or near downtown Kansas City, Missouri, with the commuter corridor hub at Union Station. Local service needs will be analyzed in regard to the development of the urban corridors and commuter corridors. Finally, an integrated financial strategy will be developed to support the implementation and continued operation of urban corridors, commuter corridors, as well as the underlying local transit service and community-based services.

1.2 Smart Moves

Approaches to providing a higher level of transit service on key regional travel

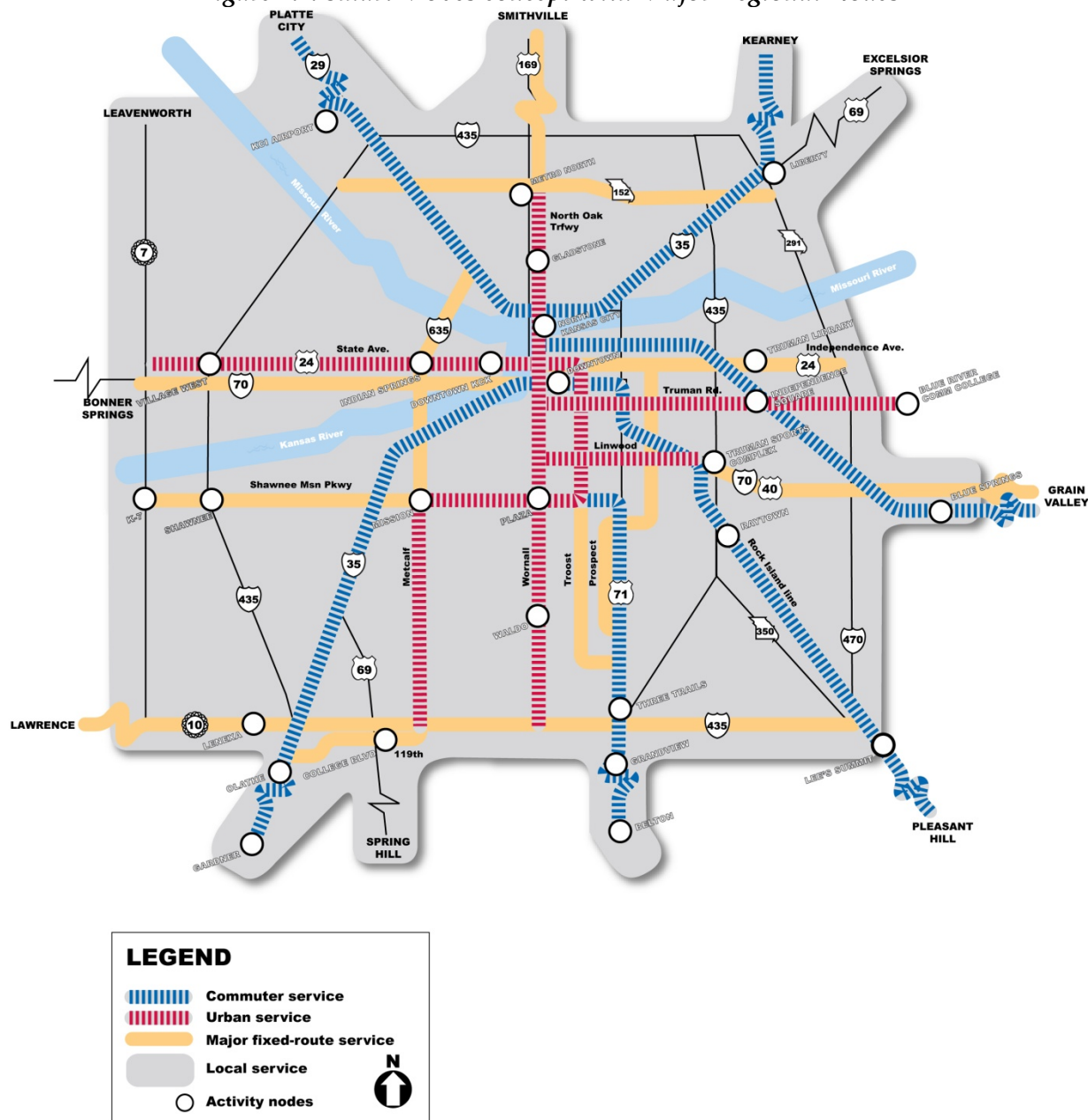
corridors are documented in a plan entitled *Smart Moves*. This regional transit plan is the result of a collaborative process between area residents, local cities, Mid-America Regional Council (MARC), Kansas City Area Transportation Authority (KCATA), Unified Government Transit (UGT), and Johnson County Transit (JCT). The subsequent plan phases, *Regional Transit Implementation Plan Urban - Corridors (Phase I)* and *Regional Transit Implementation Plan - Commuter Corridors (Phase II)*, further defined the urban corridors and commuter corridors originally envisioned in *Smart Moves*.

Smart Moves was initially completed in 2002 by the regional metropolitan planning organization, MARC, and updated in 2008. The *Smart Moves* plan defines higher capacity transit corridors that would serve the Kansas City metropolitan area.

The public transportation system envisioned in *Smart Moves* would provide the Kansas City region with viable and cost-effective transportation choices. The plan's goal is to develop public transit to make the regional community more accessible, walkable, healthy, efficient, and attractive.

Smart Moves resulted in a conceptual, regional transit network of urban service routes, commuter service routes, higher capacity transit service on major urban corridors, and community-based services consisting of local fixed-route service and special transportation services. As described in *Smart Moves*, urban corridor service would balance speed and accessibility utilizing higher capacity transit modes such as Bus Rapid Transit (BRT), light rail, and streetcar. The commuter service would connect outlying suburbs and the urbanized core using express bus or commuter rail. Community-based services would provide neighborhood connections and use local fixed-route service and special transportation services to transport passengers to higher speed transit services. Figure 1.1 displays the *Smart Moves* concept.

Figure 1.1: Smart Moves concept with Major Regional Nodes



Source: Smart Moves Regional Transit Vision – 2008 Update

In 2009, MARC initiated a process to develop the *Smart Moves* concept into an implementable plan. Two phases of this effort concentrated on different components in *Smart Moves*. *Regional Transit Implementation Plan - Urban Corridors (Phase I)* focused on an implementation strategy to develop the urban corridors as first envisioned in *Smart Moves*. *Regional Transit Implementation Plan - Commuter Corridors (Phase II)* focused on

developing an implementation strategy for the commuter corridors identified in *Smart Moves*, which is typically associated with express bus or commuter rail.

The *Regional Transit Implementation Plan - Urban Corridors (Phase I)* was funded by a \$23.8 million grant through the U.S. Department of Transportation's TIGER (Transportation Investment Generating Economic Recovery) program. The grant was funded by federal stimulus dollars as part of the American Recovery and Reinvestment Act (ARRA). The plan captured the ongoing work proceeding on several separate corridors identified in *Smart Moves* as candidates for BRT. Two corridors have current BRT service, two other corridors are in project development, and other corridors require additional planning efforts. *Phase I* examined how these corridors, operating in different areas and through different transit agency partners, would be integrated into a single urban corridor system with enhanced connectivity. The recommended steps included coordinating Transit Signal Priority (TSP) technology, uniform branding elements, uniform fare and transfer policies, communications, and a further study for a single downtown transfer location. Long-term steps to fully optimize the system included developing a regional framework similar to Operation Green Light, increasing branding coordination to include vehicle type, interline routes, adopting a single communication system for the urban corridor routes, and moving operations of the urban corridor system to a single operator.

Regional Transit Implementation Plan Commuter Corridors (Phase II) addressed the physical, operational and ownership components necessary to develop a commuter rail system in the Kansas City metropolitan area as first envisioned in *Smart Moves*. The plan detailed strategies for additional review of corridors where rail is deemed feasible, including initial system setup strategies, ridership, service feasibility, potential funding, and community and political acceptance. Of the six corridors studied, the short-term strategy recommended continuing express bus service on five corridors and implementing the service on another, while also pursuing the rail option for two corridors. Rail would be pursued as a medium-term option on three corridors. In December 2010, the U.S. Department of Transportation awarded the region funds to perform alternatives analysis for two commuter corridors that will help local officials select preferred service options to address transportation needs based on their benefits, costs, and impacts.

2.0 Existing Conditions

2.1 Previous Studies

Smart Moves and its subsequent phases *Regional Transit Implementation Plan - Urban Corridors (Phase I)* and *Regional Transit Implementation Plan - Commuter Corridors (Phase II)* are only the latest of several major efforts to enhance transit service in the Kansas City region. Other major studies include:

The *Commuter Rail Feasibility Study* (2002) examined existing freight rail lines for their potential to carry commuter rail trains. A number of lines throughout the metro were identified for more in-depth evaluation.

The *I-35 Fixed Guideway Corridor Alternatives Analysis* (2008) examined transit alternatives to increase transit capacity of the I-35 corridor in Johnson County, Kansas. The study arrived at a locally preferred alternative of bus-on-shoulder. The *I-35 Fixed Guideway Phased Implementation Plan* (2009) presented a phasing plan, service strategy, and cost estimates for the implementation of bus-on-shoulder service.

The *I-70 Corridor Alternatives Analysis* (2007) analyzed the I-70 corridor east of Kansas City, Missouri. It determined that transportation related problems could be addressed through transit improvements, and recommended express bus for near-term implementation, and commuter rail would be viewed as a longer term proposition.

The *State Avenue Bus Rapid Transit Planning Report* (2010) analyzed and began project development of Bus Rapid Transit (BRT) on State Avenue in Kansas City, Kansas.

The *Metcalf Avenue and Shawnee Mission Parkway Transit Planning Study* (2009) examined different alternatives to provide improved transit between Johnson County, Kansas and Kansas City, Missouri. Enhanced bus service, BRT mixed traffic, and BRT exclusive lanes were forwarded in the planning process. The *Metcalf Avenue and Shawnee Mission Parkway Alternatives Analysis* (2011) examined these alternatives in greater detail and presented BRT in Mixed Traffic as the Locally Preferred Alternative.

The *Lee's Summit Transit Demand Assessment Final Report* (2009) provided information for city leaders on how much unmet need for transit service exists, and ways to meet

that unmet need. Expansion of intra-community bus service and increased levels of commuter bus service, including reverse commute services, were identified as needs.

The *Johnson County Strategic Plan* (2011 Update) identified Johnson County Transit's service plan for five, ten, and twenty-year horizons. The service plan includes implementing bus-on-shoulder operations on I-35, increasing transit service in key urban corridors, and providing additional local fixed route service to provide greater access to the transit system.

The *City of Independence Community Transit Study* (2009) evaluated fiscally-constrained transit service options within the city of Independence, Missouri. Several alternatives were evaluated with the goals of providing access to jobs, providing non-traditional work trips, access to social services and hospitals, and minimize disenfranchisement of current riders. The forwarded service option reduced the number of intra-city routes, and also reduced midday service.

The 2010-2011 *KCATA Comprehensive Service Analysis* evaluated opportunities to provide better transit with existing resources. The service analysis performed a market analysis, conducted route evaluations, and developed service scenarios. The resulting recommendations reinforced the Main Street MAX service as a major system spine, expanded service in underserved areas, streamlined specific routes, consolidated duplicative services, and converted some metroflex routes to fixed routes. In addition, service levels would be balanced with service demand, so some low service routes would be cut, others have additional service in high demand periods, and service spans would be adjusted. Phased implementation of the service changes will begin in Spring, 2012.

The *Unified Government Comprehensive Service Analysis* (2010) examined transit in Wyandotte County to improve transit service efficiency and effectiveness without increasing costs. This analysis was performed in the context of increasing economic development in the western areas of Wyandotte County, and in preparation for a possible State Avenue BRT route in Kansas City, Kansas. Transit routes serving Wyandotte County have remained largely unchanged, although transit needs may have shifted. The UGT fixed-route system performs less effectively in comparison to transit systems in peer communities and KCATA routes with similar characteristics.

The Study identified key policy related issues, key service related issues, recommended certain capital improvements and proposed modifications to several existing transit routes, all aimed at improving the efficiency and effectiveness of the UG transit system.

The *KCATA Transit Gateways Study* (1999) was aimed at helping ATA staff explore the Transit Center Concept and to understand how the concept could be implemented in Kansas City. In addition, it delineated prototype designs for regional, local and neighborhood transit centers.

2.2 Transit Context

Kansas City's transportation system was developed over many decades to provide high quality vehicle accessibility. The Federal Highway Administration lists the Kansas City region as possessing the most freeway miles per person for all urbanized areas with populations greater than 500,000, as well as the fourth highest roadway miles per person, and the thirteenth most daily vehicle miles traveled⁽¹⁾.

While many of the regions resources have been directed towards the roadway system, transit services are provided in much of the Kansas City region. Bus-based fixed-route transit is provided by three agencies – the Kansas City Area Transit Authority (KCATA), Unified Government Transit (UGT) and Johnson County Transit (JCT). These agencies provide bus-based fixed route service and paratransit service over eight counties, and extensive levels of transit service in six counties. Several non-profit agencies receive federal funding to provide additional special transportation services. Kansas City currently has a 2% transit mode share². In 2010

Rail-based transit service has a long history in the Kansas City region. Many of the established transit corridors were first served by trolley, including the Brookside/Wornall corridor now served by the Main Street MAX, Troost Avenue now served by Troost BRT, and Independence Avenue now served by fixed-route bus service.

¹ Chapter 2 MARC 2030 Long Range Transportation Plan; 2003 Highway Statistics, Table HM-72, FHWA

² http://www.fhwa.dot.gov/planning/census_issues/ctpp/data_products/journey_to_work/jtw4.cfm

In addition to trolley service, the Kansas City area has long served as a freight rail hub. This legacy has resulted in numerous current and legacy rail lines throughout the region, including lines from Kansas City Southern (KCS), Union Pacific (UP), Kansas City Northwestern (KCN), and Burlington Northern Santa Fe (BNSF). Some of these lines continue to be used for freight traffic, while others are underutilized or have been discontinued.

There currently is no rail-based transit service in the greater metropolitan area.

2.2.1 Fixed Route

The KCATA, JCT, and UGT, provide fixed route service in the Kansas City metropolitan area.

Kansas City Area Transportation Authority

KCATA operates 67 routes in the Kansas City metropolitan area, including contracted routes in Independence, Missouri, and Kansas City, Kansas. The KCATA system is primarily a hub-and-spoke system, with the majority of routes connecting in downtown Kansas City, Missouri, and secondary hubs throughout the Kansas City area. KCATA operates peak-hour commuter service, local service that operates on days, evenings, weekends, and metroflex service which operates as a general public demand response service. KCATA also operates the Kansas City area's only BRT lines, the Main Street MAX and the Troost MAX, both in Kansas City, Missouri. Average daily ridership is approximately 52,000.

Johnson County Transit

JCT offers 23 fixed routes operated under contract by First Transit. The service is primarily designed to transport commuters between Johnson County and downtown Kansas City, Missouri, as well as serve other major employment centers. JCT routes operate during weekday peak periods, with some midday service offered through a combination of fixed routes and flex routes. Evening service is provided only on the K-10 Connector; weekend service is not provided. Average daily ridership is approximately 1,200.

Unified Government Transit

Transit service within Wyandotte County, Kansas is provided by Unified Government of Wyandotte County's transit service called "UG Transit", and through service contracted to the KCATA. The two service providers coordinate to provide urbanized areas within the county all-day transit service with select weekend and evening service. "UG Transit" operates four fixed-routes and jointly operates one route with KCATA. The KCATA service operates five routes into Wyandotte County that connect with Jackson County, Missouri. Average daily ridership on those routes operated by UG Transit is approximately 600.

2.2.2 Paratransit

In addition to their fixed route services, KCATA, JCT, and UGT directly provide or contract paratransit service within their respective service areas. ADA service complementing fixed-route operation is a component of these paratransit services.

Kansas City Area Transportation Authority

KCATA's Share-A-Fare program provides complementary paratransit trips throughout the KCATA service area. Users must be certified through an application process. Fares for non-ADA eligible trips are mileage based. KCATA also operates eight Metroflex routes in outlying regions of its service area. This general demand response service serves these areas instead of fixed route service or dedicated paratransit service. In 2009, KCATA provided 450,500 demand response trips.

Johnson County Transit

JCT's Special Edition service provides eligible customers demand response trips within the Johnson County service area, and into specific locations within Kansas City, Kansas, and Kansas City, Missouri, for medical trips only. JCT provided 108,800 demand response rides in 2009³. JCT also operates "Local Links" flex midday service in Spring Hill and De Soto, which are not within the Special Edition service area.

Unified Government Transit

³ National Transit Database for KCATA 2009, accessed at http://www.ntdprogram.gov/ntdprogram/pubs/profiles/2009/agency_profiles/7005.pdf

UGT operates a Dial-A-Ride service and an Aging Transit Service. Dial-A-Ride is provide to ADA clients that are certified being disabled. Aging Transit service is provided to seniors 60 years of age and older for trips to area grocery stores, and medical appointments anywhere in the Wyandotte County area.

2.2.3 Special Services

In addition to those fixed route and paratransit services provided by JCT, KCATA, and UGT, several non-profit agencies receive funding to provide additional special transportation services. These local community-based services provide a variety of services. These transportation services include the KCATA's regional van pool program in addition to services that may include meal-delivery or nutritional programs, medical appointments, or providing connections to the larger transit network.

2.2.4 Transit Centers

Transit centers in communities throughout the metropolitan area create connections between multiple transportation modes and allow residents and employees to access transit service.

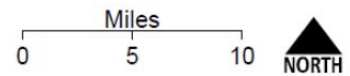
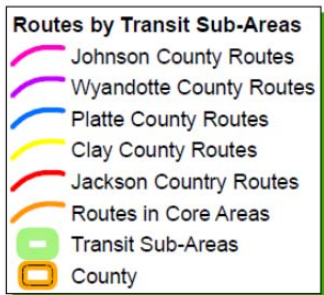
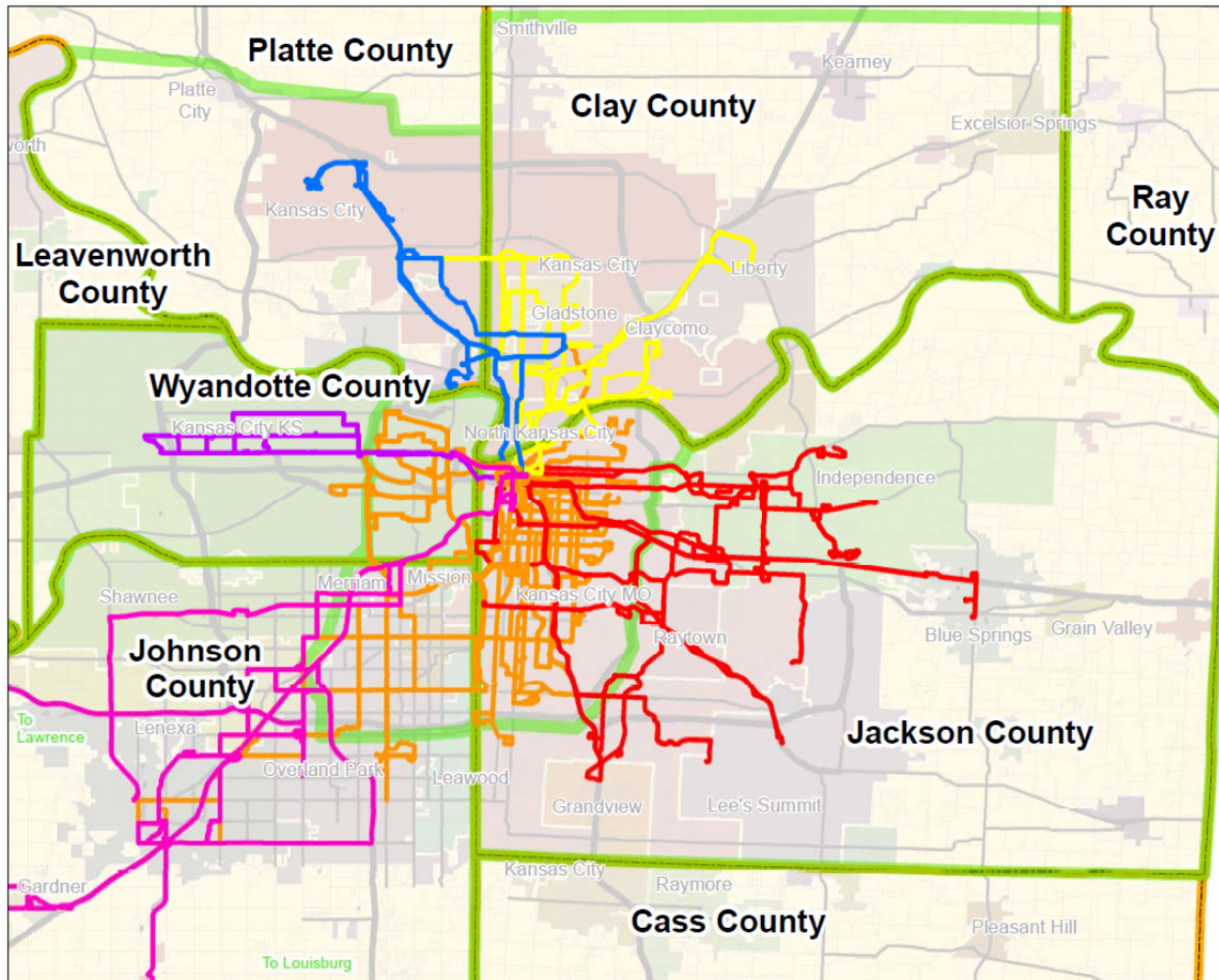
The *KCATA Transit Gateway Study* (1999) defined three levels of transit centers.

- **Neighborhood transit centers** provide service at the neighborhood level. This center may provide minimal shelter and few amenities, and may be only a step beyond a traditional bus stop.
- **Local transit centers** serve multiple neighborhoods and are a connection point for three to five bus routes. A local transit center generally would be planned to support more dense land use and greater access to businesses such as banks, hospitals and local commercial establishments. Local transit centers generally have a higher level of passenger amenities, including shelters, benches and information kiosks.
- **Regional transit centers** serve as the transportation hub for entire geographic regions of the metropolitan area. Regional Transit Centers would be located at major regional shopping centers or office centers.

2.3 Overview of Existing Transit Service

Transit service zones originally defined in Smart Moves were adapted and modified to provide an overview of the region's service levels and ridership. This allowed transit service to be analyzed at a regional scale while still allocating service levels, ridership, and costs to specific areas. Platte County and Clay County in Missouri each have one sub-area. Jackson County in Missouri, and Johnson County and Wyandotte County in Kansas each have two smaller sub-areas. These sub-areas for each county include a core area near the region's urbanized core, and the remainder of each county. Eight transit sub-areas were created. Routes from each transit provider were assigned to a sub-area generally based on the route purpose and length within a sub-area. Figure 2.1 displays the transit sub-areas and routes.

Figure 2.1: Existing Transit Service



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2.4 Description of Current Funding Mechanisms

2.4.1 Capital Funding

Funding support for transit capital projects totaled approximately \$57 million in 2010. Over eighty percent or \$48 million of this funding comes from Federal sources and can vary by source and amount from year-to-year and it should be noted that in 2010 grants from the Federal “New Starts” program totaling nearly \$25 million were awarded to the region for the Troost “MAX” projects.

Local funding in the amount of approximately \$9 million makes up the balance of capital funding. Following is a representative description of each of the capital funding sources showing sources and approximate amounts for 2010.

Table 2.2: 2010 Capital Funding Sources

	Missouri	Kansas	Combined
Federal Capital Funding			
Section 5307 Formula	\$4,888,000	\$1,812,000	\$6,700,000
Section 5309 Discretionary			
Bus & Facilities	\$587,795	\$4,150,000	\$4,737,795
New Starts	\$21,693,812	\$2,955,000	\$24,648,812
ARRA Grants	\$4,450,000	\$2,050,000	\$6,500,000
TIGER Grants	\$1,900,000	\$2,600,000	\$4,500,000
CMAQ Grants	\$760,000		\$760,000
Other	\$160,000		\$160,000
SubTotal	\$34,439,607	\$13,567,000	\$48,006,607
Local			
KCATA	\$7,050,000	\$1,190,000	\$8,240,000
JCT		\$938,000	\$938,000
SubTotal	\$7,050,000	\$2,128,000	\$9,178,000
Total Capital Funding	\$41,489,607	\$15,695,000	\$57,184,607

2.4.2 Operations Funding

Funding support for transit service operations currently totals approximately \$86 million. This funding comes from a number of Federal, State and local sources and can vary by source and amount from year-to-year. In particular, Federal funding comes from various grant programs, some of which are not necessarily available

from one year to the next. In addition, the only dedicated local funding comes from a one-half cent transit sales tax and three-eighths cent transit sales tax levied in Kansas City, Missouri. Local transit funding from all other communities that provide funding support for transit services comes from general revenues and is subject to review with the possibility of reduction or elimination every budget cycle.

Following is a representative description of each of the operational funding sources showing the source and approximate amounts for 2010.

Table 2.1: FY 2010 Operations Funding Sources

	Missouri	Kansas	Combined
Federal Operations Funding			
Preventive Maintenance Funds (KCATA)	\$8,500,000	\$200,000	\$8,700,000
ARRA (Stimulus) Grants	\$5,300,000		\$5,300,000
Jobs Access/Reverse Commute Grants	\$590,000	\$1,050,000	\$1,640,000
Congestion Mitigation/Air Quality Grants –	\$520,000	\$1,600,000	\$2,120,000
Other	\$2,400,000		\$2,400,000
Sub Total:	\$17,310,000	\$2,850,000	\$20,160,000
State			
Kansas (Distributed to JCT and UG Transit)		\$1,800,000	\$1,800,000
Missouri (Distributed to KCATA)	\$120,000		\$120,000
Sub Total:	\$120,000	\$1,800,000	\$1,920,000
Local			
Blue Springs	\$75,000		\$75,000
Gladstone	\$72,000		\$72,000
Independence	\$900,000		\$900,000
Johnson County		\$5,500,000	\$5,500,000
Kansas City, MO	\$40,000,000		\$40,000,000
Lee's Summit	\$150,000		\$150,000
Liberty	\$50,000		\$50,000
North Kansas City	\$290,000		\$290,000
Raytown	\$105,000		\$105,000
Riverside	\$40,000		\$40,000
Unified Government		\$4,600,000	\$4,600,000
Sub Total:	\$41,682,000	\$10,100,000	\$51,782,000
Operating Revenue			
KCATA	\$10,618,000	\$582,000	\$11,200,000
JCT		\$1,000,000	\$1,000,000
UGT		\$60,000	\$60,000
Sub Total:	\$10,618,000	\$1,642,000	\$12,260,000
Total Operation Funding:	\$69,730,000	\$16,392,000	\$86,122,000

3.0 Development of Future Regional System

This section describes the characteristic cs of the urban corridor system, commuter corridor system, and local and paratransit services proposed for the Kansas City region. The primary focus of this section is to compare the function of proposed urban corridor service with proposed commuter corridor service to determine any gaps or service overlaps between these two service types. Strategies to integrate the two service types

are described. Infrastructure improvements to support the two transit service types are also identified.

3.1 Planned Urban Corridor System and Commuter Corridor System

3.1.1 Regional Service Plan

A set of urban corridors have been defined in the *Smart Moves* plan that would be served by higher speed, higher quality transit typically associated with Bus Rapid Transit (BRT) and are intended as a higher speed, higher quality service to move people across and throughout the metropolitan area.

Smart Moves identifies commuter corridors as high speed services that may parallel major commuter routes along an arterial road, operate in the right-of-way of an interstate or expressway, or run in a separate right-of-way. The service would connect residents with jobs in both the central core and in emerging employment centers. The two service types would function with community-based services, to deliver passengers between population and employment centers in the central core and the suburban areas. Passengers coming into the Kansas City core areas may first use a commuter corridor service to travel to a regional transit center where they would transfer to an urban corridor service. Their final trip may occur by transferring from the urban corridor route to a community-based service that would deliver passengers to their final destinations.

3.1.2 Urban Corridor Service Characteristics

Smart Moves identified BRT as the predominate transit mode on the identified urban corridor routes. BRT has been defined as “a flexible, rubber-tired rapid transit mode that combines stations, vehicles, services, running ways, and Intelligent Transportation Systems (ITS) elements into an integrated system with a strong positive identity that evokes a unique image...and collectively improves the speed, reliability, and identity of bus transit (page 1)”⁽⁴⁾ The Kansas City region has primarily focused on implementation of BRT where

⁴ Clinger, J., et al. (2003). *TCRP 90 Bus Rapid Transit* (Vol 1). Washington, D.C., Transportation Research Board

factors such as cost, available funding, and ridership demand influence the level of BRT characteristics that would be employed on a particular route.

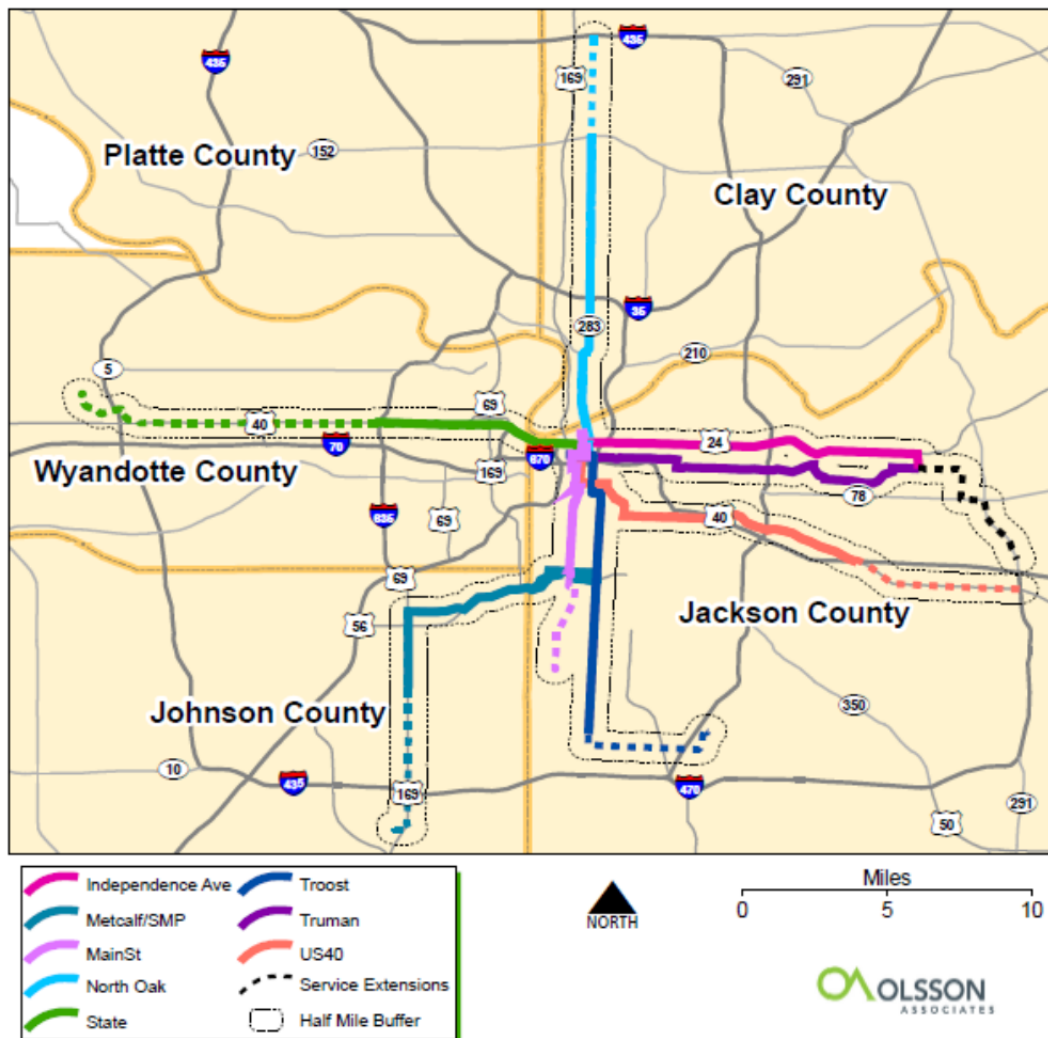
3.1.3 Urban Corridor Coverage

The *Smart Moves* Plan identifies an urban corridor network. The urban corridors include a number of major arterial routes located within the I-435/I-470/US-291 loop that circles much of the Kansas City metropolitan area. The Urban Corridors are shown in Figure 2.1 and include:

- Main Street. The Main Street MAX route operates in Kansas City, Missouri, between the River Market, the Kansas City Central Business District (CBD), Crown Center, Westport and the Country Club Plaza. The route extends in a lower frequency service to 75th Street.
- Troost Avenue. The Troost MAX route operates from the Kansas City, Missouri CBD south on Troost Avenue to 75th Street. From this point the route continues as a lower frequency service to Bannister Road.
- State Avenue. The State Avenue route alignment is planned to connect the Kansas City, Missouri CBD to downtown Kansas City, Kansas, and the employment concentrations at the Village West Shopping Center in Wyandotte County, Kansas. Service from 47th Street & State Avenue to Village West would be lower frequency.
- Metcalf Avenue/Shawnee Mission Parkway. This transit route is planned to extend between the 119th Street and Metcalf Avenue area in Overland Park, Kansas, to the 47th Street and Troost Avenue area in Kansas City, Missouri, using Metcalf Avenue, Martway Street, Johnson Drive, and Shawnee Mission Parkway in Johnson County, Kansas.
- North Oak. The North Oak corridor has been defined to extend from downtown Kansas City, Missouri, north along Burlington Street and North Oak Trafficway to Barry Road or Missouri Highway 152. Service from Missouri Highway 152 to I-435 would be at a lower frequency.

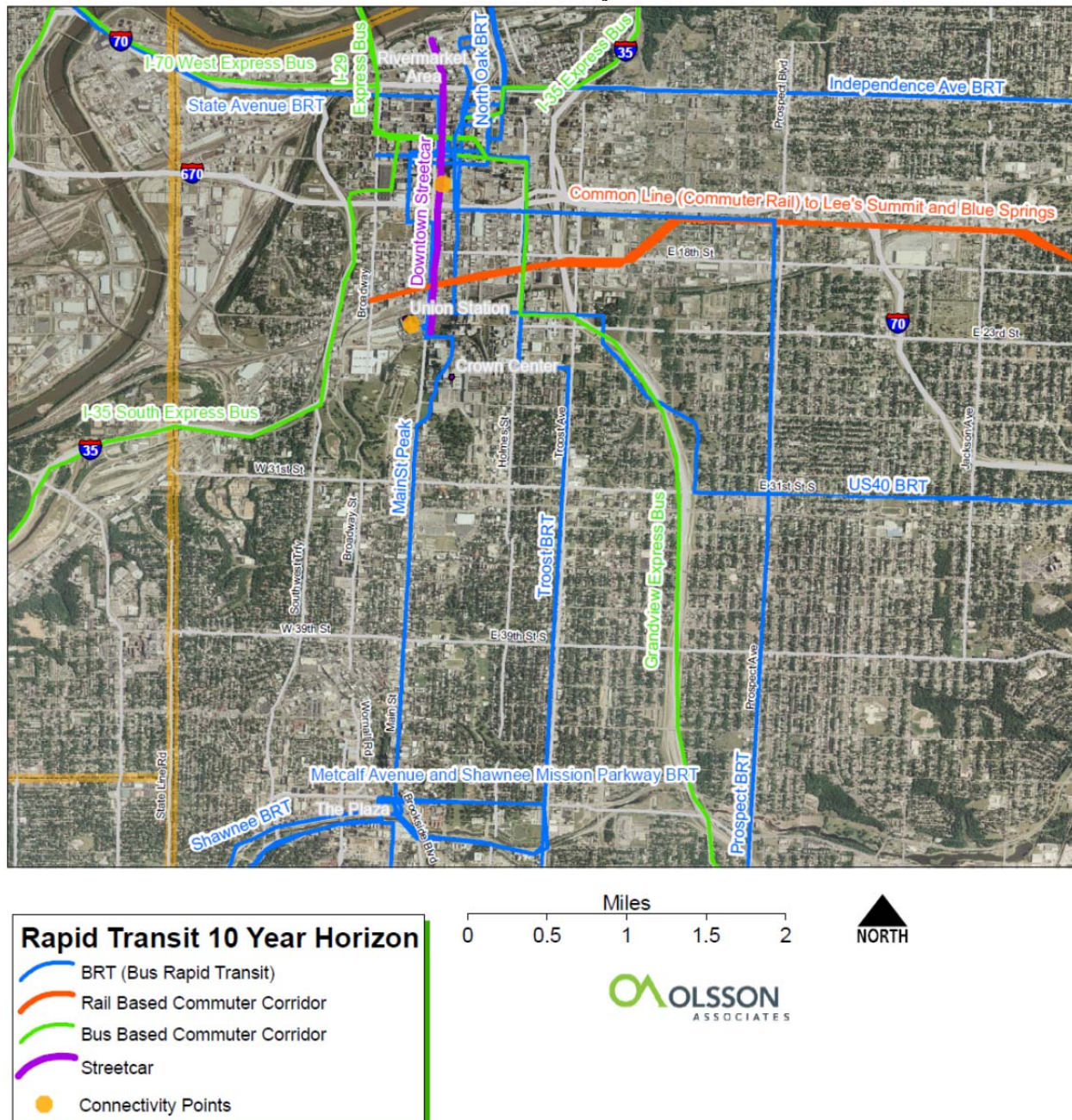
- Eastern Jackson County routes have been defined to roughly follow US-24/Truman Road and/or US-40. It could include one or two of three possible eastern corridors: US-24/Independence Avenue, Truman Road, and US-40. Each of these alignments has an eastbound service addition that can be added at a lower frequency of service.

Figure 3.1: High Capacity Corridors – Kansas City Metro Area



The urban corridors displayed in Figure 3.1 can be seen as an initial system of BRT corridors. Additional corridors, such as Prospect Avenue in Kansas City, Missouri, and 7th Street Trafficway in Kansas City, Kansas may merit further study for possible implementation as part of an expanded urban corridor system. Figure 3.2 displays the 10 year horizon in downtown Kansas City, Missouri.

Figure 3.2: Rapid Transit Service 10 Year Horizon between River Market and the County Club Plaza (Kansas City, Missouri)



3.1.4 Commuter Corridor Service Characteristics

Smart Moves identified express bus or commuter rail as the best transit modes to serve the commuter corridors. These modes are oriented toward serving work commute trips that would occur during weekday peak periods. Commuter corridor service operates primarily on highways and railways to provide connections between

the Kansas City core areas with outlying communities. This service would utilize transit centers, local fixed route system, urban corridor system, and community-based transit to connect passengers to their final trip origin and destination.

The possibility of providing non-peak, non-commuter service in the commuter corridors was discussed in the *Phase II* study.

3.1.5 Commuter Corridor Service Area

Smart Moves emphasized commuter corridors as highways currently serviced by express buses and several Park & Ride lots or existing freight rail corridors that could be used for passenger use primarily for commute trips. The commuter rail system assessed by the *Regional Transit Implementation Plan - Commuter Corridors (Phase II)* investigated existing rail corridors and new rail corridors that relate to the needs identified in *Smart Moves*. Using Union Station as a hub, six rail lines would radiate out to the region and, in general, roughly follow the highway corridors. The commuter corridor network includes three rail lines east of Union Station in Jackson County, Missouri, and three lines west of Union Station.

I-70 East Corridor (Blue Springs Line)

The rail line utilizes the existing rail of Kansas City Southern's (KCS) Mexico Subdivision as well as Unions Pacific's (UP) Pixley Subdivision to extend eastward from Union Station to roughly parallel I-70 through Jackson County. Currently there are five trains per day on the KCS line with four of those occurring at night. The junction of the KCS and UP lines to the former Rock Island Line is a congested location for freight operations and would likely require construction of new track and possibly a grade separation in order to provide passenger rail service. The *Phase II* study indicated that there may be an opportunity to obtain temporal separation for passenger rail operations for an undetermined annual fee. This corridor has the potential for further extension beyond Jackson County east to the City of Odessa, Missouri. The *Phase II* study identifies rail as a short-term strategy in this corridor.

Rock Island Line (or Lee's Summit Line)

This rail line includes UP's former Rock Island Line. No trains have run on the Rock Island line since 1982, yet portions of the track remain. The Rock Island Line is also

parallel to UP's Sedalia Subdivision which currently has 27 trains per day. The *Phase II* study indicated that in order for passenger trains to access Union Station from the east, a new rail track would need to be constructed from Leeds Junction to Union Station and is referred to as the common line. A portion of this new alignment could occur along Truman Road or in other locations. Details of any new alignment would need to be determined in future study phases. Preliminary discussions with UP indicate the opportunity to purchase the entire Rock Island Line. It is estimated that approximately one-third of the rail track would need to be upgraded to passenger rail standards. New track could include sidings to allow for passing. The line has the potential for further extension to Pleasant Hill, Missouri. Bike trails are also envisioned adjacent to the rail that could eventually connect with the Katy Trail State Park. The *Phase II* study identifies rail as a short-term strategy in this corridor.

US-71 Corridor (or Grandview Line)

The rail line includes a combination of the existing KCS Pittsburg Subdivision and its Grandview branch. As the rail line heads northward, it swings to the east to join the Rock Island Line near Leeds Junction where passenger service would require new construction of the "common line" portion to access Union Station. Currently there are 13 trains per day on the Pittsburg Subdivision and only one train per week on the Grandview branch. The new rail corridor involves a connection from Swope Park in Kansas City, Missouri to Leeds Junction and from approximately US-71 to I-435. Preliminary discussions with KCS indicate the need to add capacity along the Pittsburg Subdivision while having the opportunity to obtain temporal separation for passenger rail operations along the Grandview branch for an annual undetermined fee. This corridor has the potential for further extension beyond Jackson County south to Pleasant Hill, Missouri. The *Phase II* study identifies express bus service as a short-term strategy in this corridor, and rail as a mid-term strategy.

I-35 North Corridor (or Liberty Line)

The rail line includes the BNSF Railway's Kearney Spur serving industrial plants. Currently there are two trains per week that are switched by Watco. New tracks would be needed before entering BNSF's Brookfield Subdivision because of heavy

train traffic of 32 trains per day. A portion of this line may be able to utilize portions of the former interurban rail corridor near North Kansas City, Missouri. The operating plan seeks to obtain temporal operations for passenger rail service along the Kearney Spur. The new track alignment could mix with the former interurban rail corridor before connecting to the Kansas City International (KCI)/Airport Corridor in Riverside, Missouri. Any future extension is limited because I-35 bisects the rail corridor north of Missouri Route 92 in Kearney. The *Phase II* study identifies express bus service as a short-term strategy in this corridor, and rail as a mid-term strategy.

I-29 Corridor (or KCI/Airport Line)

The rail corridor includes the right-of-way from the former interurban rail line that extended between Riverside and St. Joseph, Missouri, which ended trolley service in 1933. A portion of the former rail corridor appears intact although the ownership may have reverted to adjacent property. New rail right-of-way and tracks are needed north of Missouri Highway 152 to the KCI Airport. In addition, new rail track would be needed to cross the Missouri and Kansas Rivers along with a combination of connecting pieces to Union Station. This corridor bears the cost of major river crossings as well as significant portions of new track. Future extensions are possible to St. Joseph. The *Phase II* study identifies express bus service as a short-term strategy in this corridor, and rail as a mid-term strategy.

I-70 West Corridor (or Wyandotte Line)

The rail line includes just over three miles of the former Kansas City Northwestern (KCNW) line. New rail right-of-way and tracks would be needed between the Kansas Speedway and Park Avenue in Wyandotte County, Kansas. Portions are contemplated to operate with the road right-of-way for State Avenue and/or Parallel Parkway. The operating plan includes purchase of the former KCNW line (cost not yet determined). This corridor may require a significant portion of new right-of-way to construct rail. Future extensions are possible to Lawrence and Topeka, Kansas. The *Phase II* study identifies express bus service as a short-term strategy in this corridor.

The commuter corridor system would be expanded to better connect outlying communities. Many of these connections will ultimately be provided by rail-based

service. Commuter corridor service in the medium term would be provided by both highway-orientated buses and rail transit. Rail based commuter corridor service would connect Pleasant Hill and Grain Valley to downtown Kansas City, Missouri along existing rail corridors. Buses would provide connections on eight other commuter corridor routes. These routes connect outlying communities to the urban core using freeways and highways. Generally, these routes are:

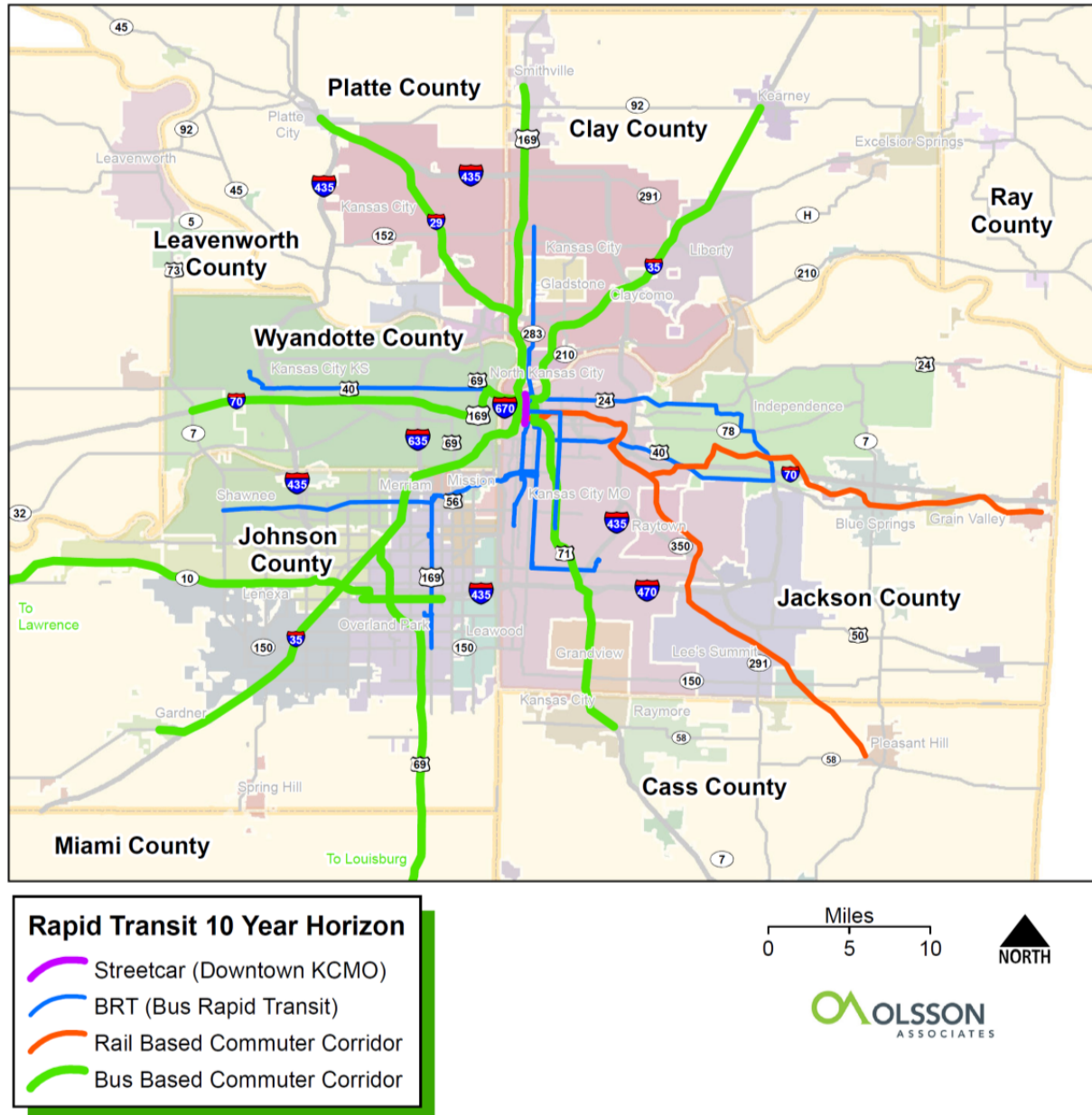
- US 69 connecting Louisburg to downtown Kansas City, Missouri.
- I-35 connecting Gardner to downtown Kansas City, Missouri.
- K-10 connecting Lawrence to Overland Park.
- I-70 connecting K-7 at Village West in Kansas City, Kansas with downtown Kansas City, Missouri.
- I-29 connecting Platte City to downtown Kansas City, Missouri.
- US 169 connecting Smithville to downtown Kansas City, Missouri.
- I-35 connecting Kearney and Liberty to downtown Kansas City, Missouri.

The bus-based commuter corridor service would operate as a peak only service, with peak hour frequency of between 20 minutes to 30 minutes. Rail-based commuter corridors would operate on a 30 minute peak hour frequency, with 60 minute off-peak frequency, and Saturday and Sunday service. As demand increases and funding opportunities become available, the bus based commuter corridors may transition to rail service in select corridors.

Peak-hour commuter service is already initiated on several of the identified commuter corridors. This includes K-10 service connecting Lawrence to Overland Park, I-35 service connecting downtown Kansas City, Missouri, and Liberty, and service on US-69 connecting Paola and Spring Hill with downtown Kansas City, Missouri. JCT has initiated Bus On Shoulder (BOS) service on I-35 for routes coming from southern Johnson County into downtown Kansas City, Missouri.

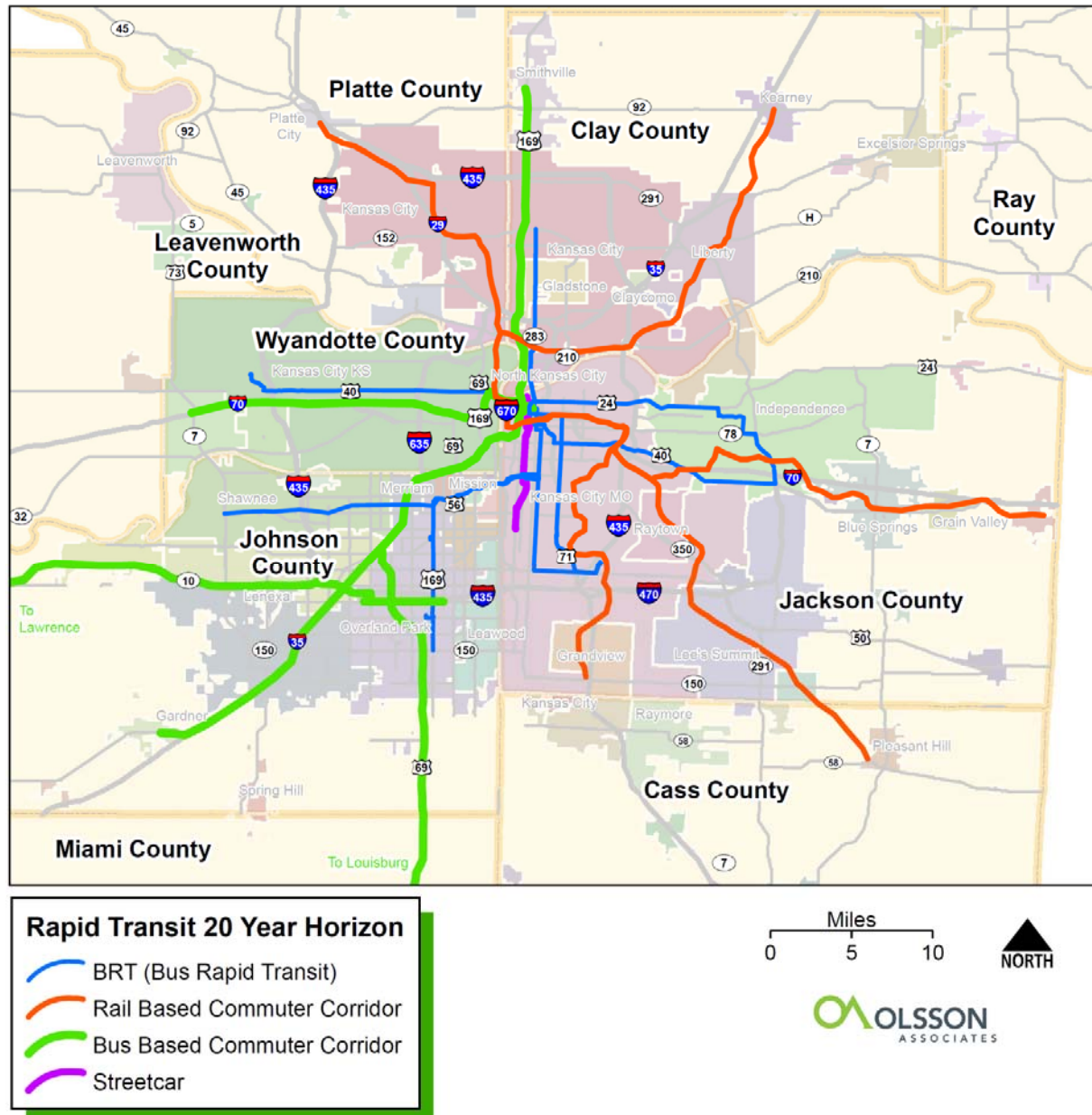
Figure 3.3 displays the 10 year horizon of the Kansas City region's rapid transit system.

Figure 3.3: Rapid Transit Service 10 Year Horizon



The twenty year horizon, as displayed in Figure 3.4, envisions bus based service being replaced by commuter rail service to Platte City, Kearney, and Grandview in Missouri.

Figure 3.4: Rapid Transit Service 20 Year Horizon



3.2 Local Service Description

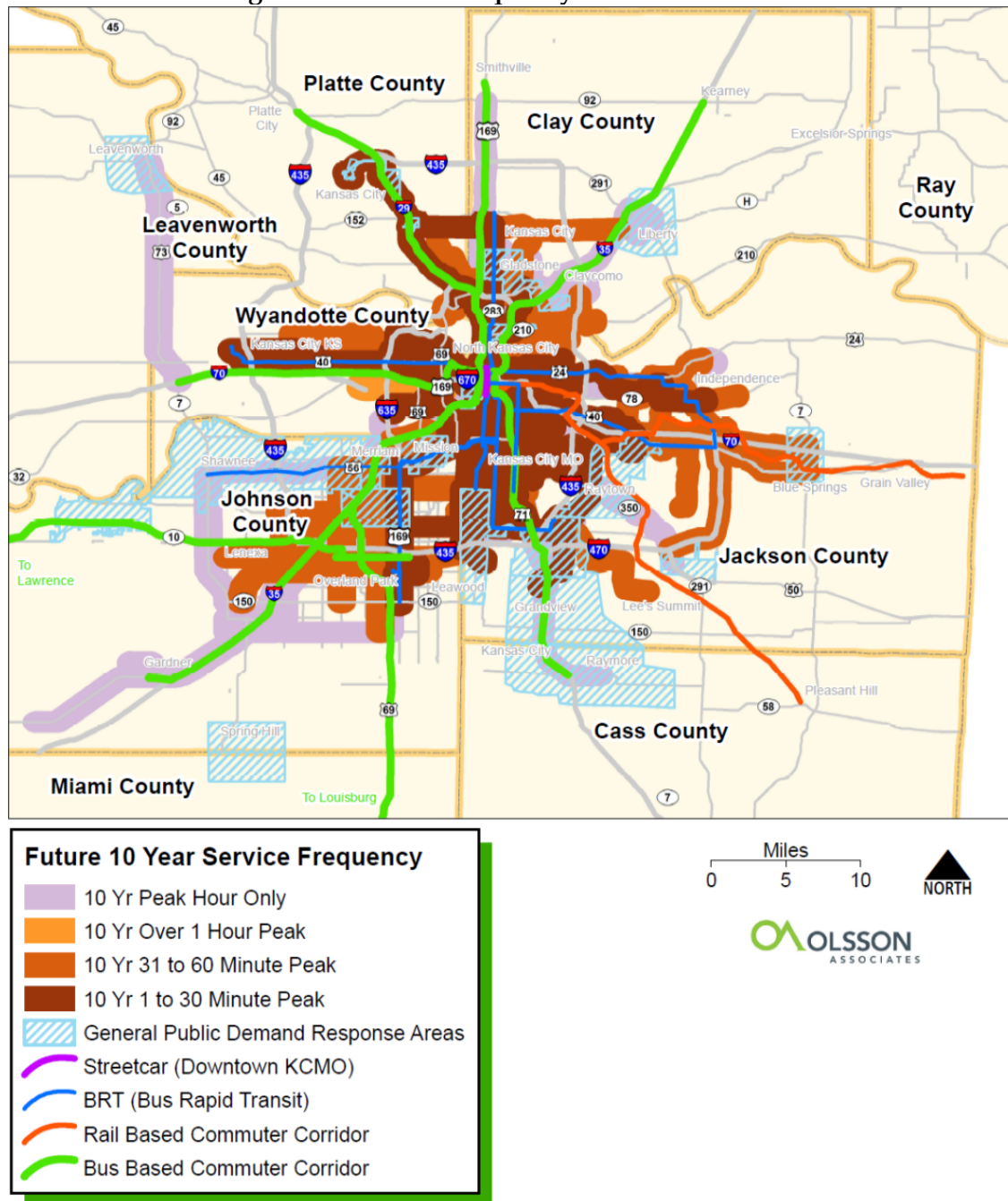
Future local fixed route service is characterized by a slight expansion of fixed route coverage area, and a general increase in service frequency throughout the coverage area. This expansion supports and corresponds with the development of a bus-based commuter corridor and BRT system. There would also be an expansion of general public demand response services.

Fixed route service areas would be expanded to better serve outlying communities. Service would be added or increased to connect outlying communities such as Leavenworth and Platte City to connect with the metropolitan core area. Other fixed route service would be added to provide direct connections among areas on the perimeter. These connections would include connecting northern Kansas City to Liberty along Highway 152, and a commuter service on I-470 between Independence, Lee's Summit, and possible points further west. Peak hour only service would also be expanded to Raymore. Johnson County transit service would have more local routes developed as identified in Johnson County Transit's strategic plan. In addition to the commuter-oriented service that exists today, intra-county service would become developed along major cross streets.

Service frequency would be increased throughout the metropolitan area. Johnson County would see the intra-county routes increase frequency from providing peak-hour only service to an all-day service, with key routes operating at a 30 minute or below service frequency. Service frequency in remaining portions of the metropolitan area would increase to better serve area residents and employers. The most frequent routes would have below 15 minute frequency. Most core areas and corridors would have below 30 minute frequency. Most periphery routes would have below one hour frequency.

Figure 3.5 displays the local service frequency of the 10 year horizon.

Figure 3.5: Service Frequency of 10 Year Horizon



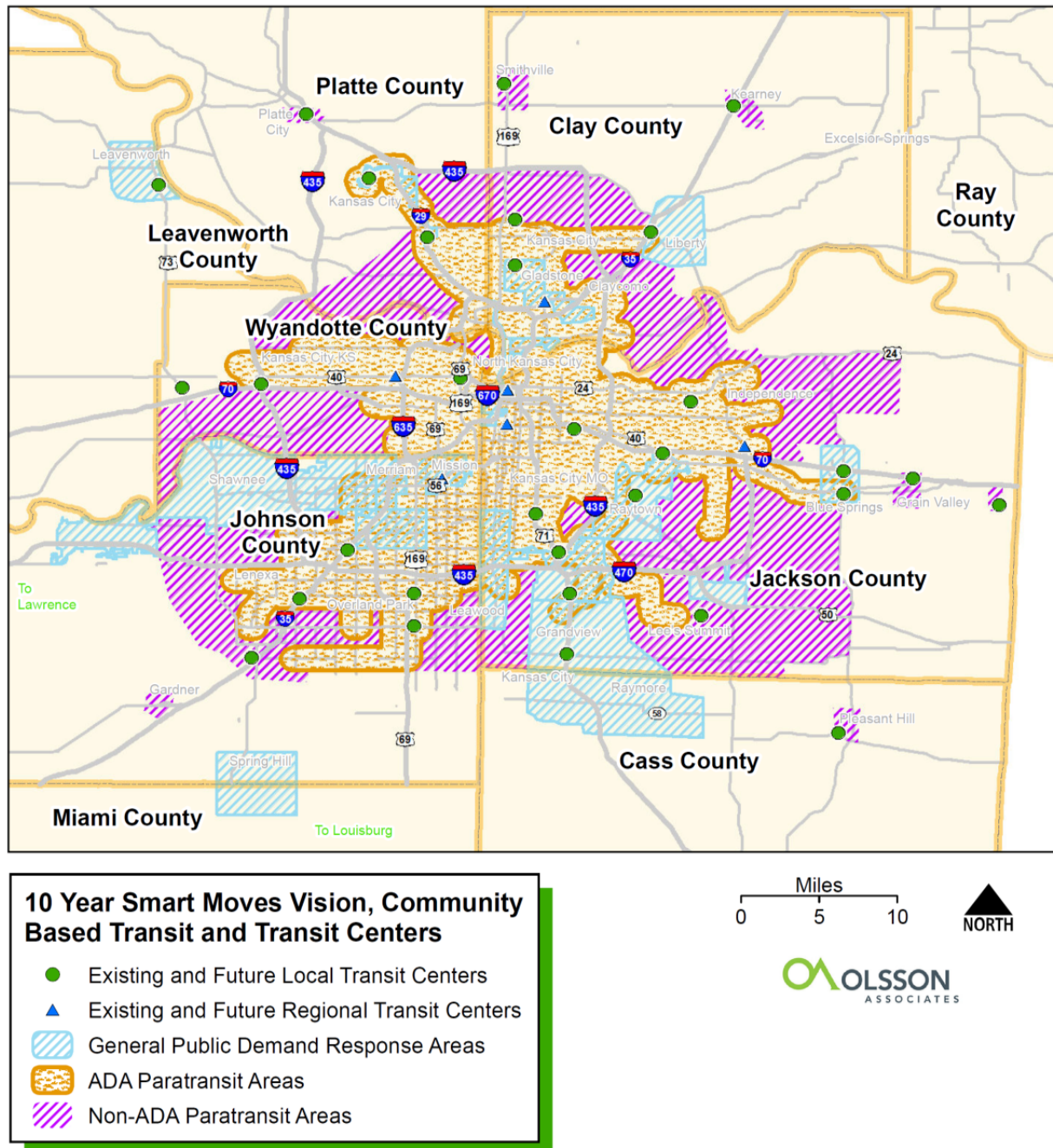
3.3 Community Based Transit

Community based transit is non-fixed route transit services that typically operate as a reservation, curb-side service. These services can be operated by either transit agencies

that also operate fixed route, or by other city, social, or community based organizations. The three general service types currently offered would be expanded to new areas and further support the local, urban corridors, and commuter corridors transit system. The three service types are general public demand response areas, ADA paratransit areas, and non-ADA paratransit areas. General public demand response service would be introduced in areas such as Leavenworth, Spring Hill, and expanded further into Cass County. These services would operate much like the current Metro Flex service. Smaller vehicles would operate on a demand response basis in areas with lower transit demand. This service would deliver passengers to local transit centers to transfer into the local and regional fixed route system. Complimentary ADA paratransit service would be provided in areas served by the fixed route system. This would include the areas of Johnson County served by all-day fixed route service. Non ADA paratransit service would operate at the perimeter of the fixed route service area, and would provide service for mobility impaired and elderly.

Figure 3.6 displays the 10 year horizon of community based transit.

Figure 3.6: Community Based Transit 10 Year Horizon



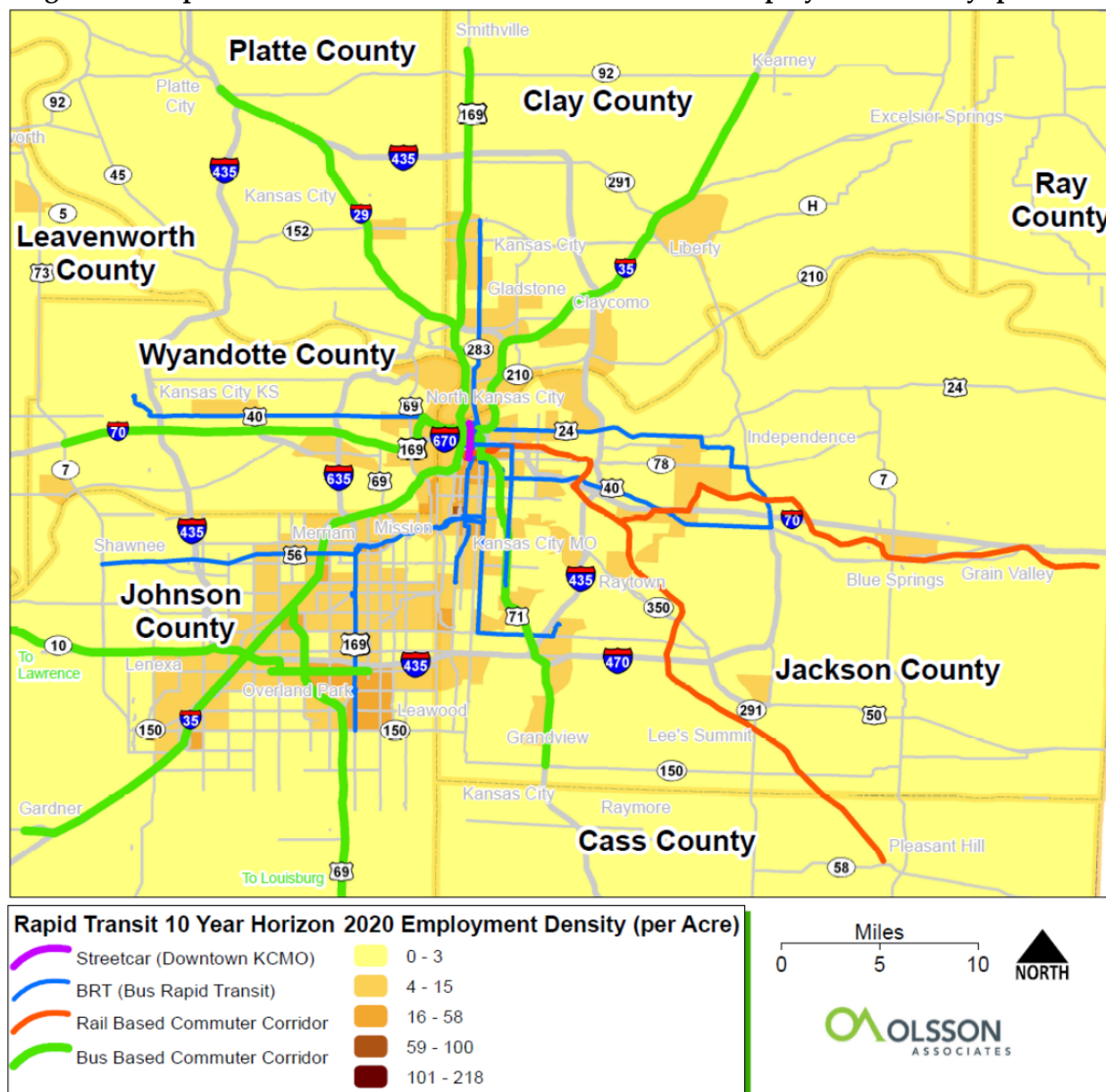
3.4 Travel Sheds Served

The characteristics of the households and employment that would be served by transit services in the urban corridors and commuter corridors are described. The

characteristics examined are residential density, employment density, income characteristics, and minority populations.

Figure 3.7 illustrates that the urban corridor and commuter corridor network is anticipated to provide access to many of the regions employment concentrations in 2020.

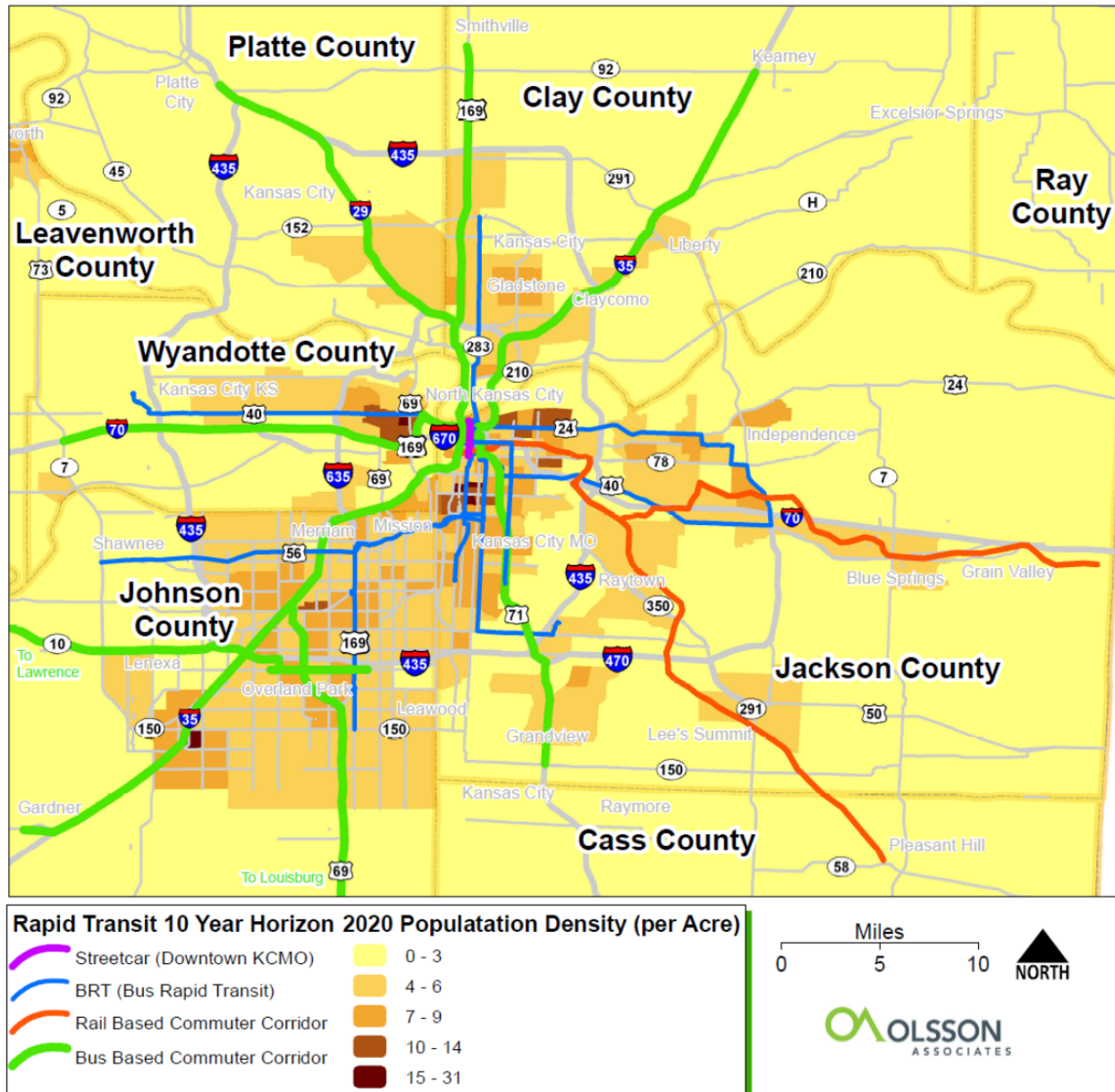
Figure 3.7: Rapid Transit Service 10 Year Horizon and 2020 Employment Density (per Acre)



Source: MARC Long Range Forecast (2004)

Figure 3.8 illustrates the anticipated urban corridor and commuter corridor network coverage by residential density in 2020.

Figure 3.8: Rapid Transit Service 10 Year Horizon and 2020 Population Density (per Acre)

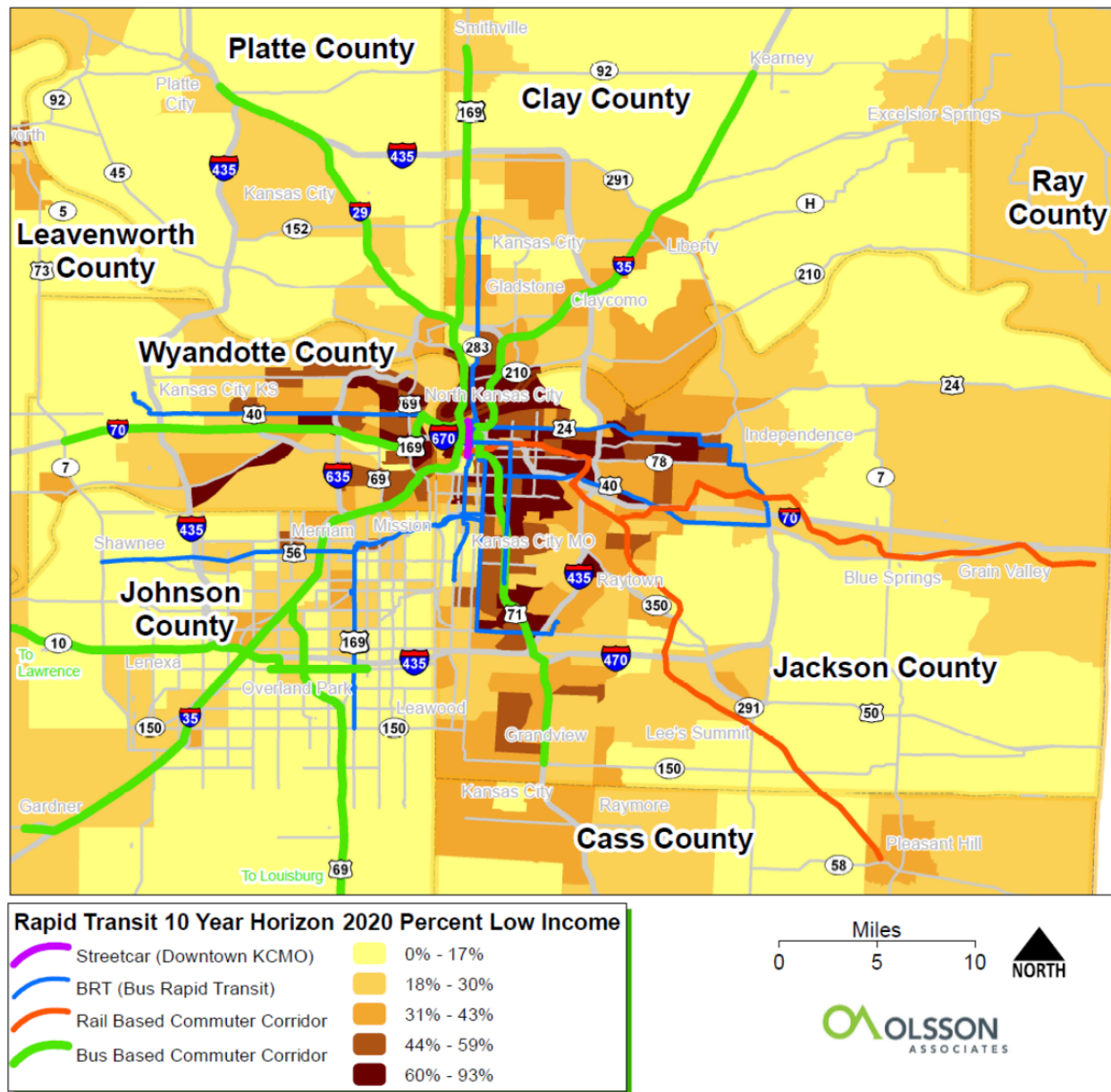


Source: MARC Long Range Forecast (2004)

Figure 3.9 illustrates the anticipated percentage of low income residents in 2020 and the urban corridor and commuter corridor network coverage. According to the MARC

Long Range Forecast (2004) low income is defined as income less than \$17,441 in 1989 dollars

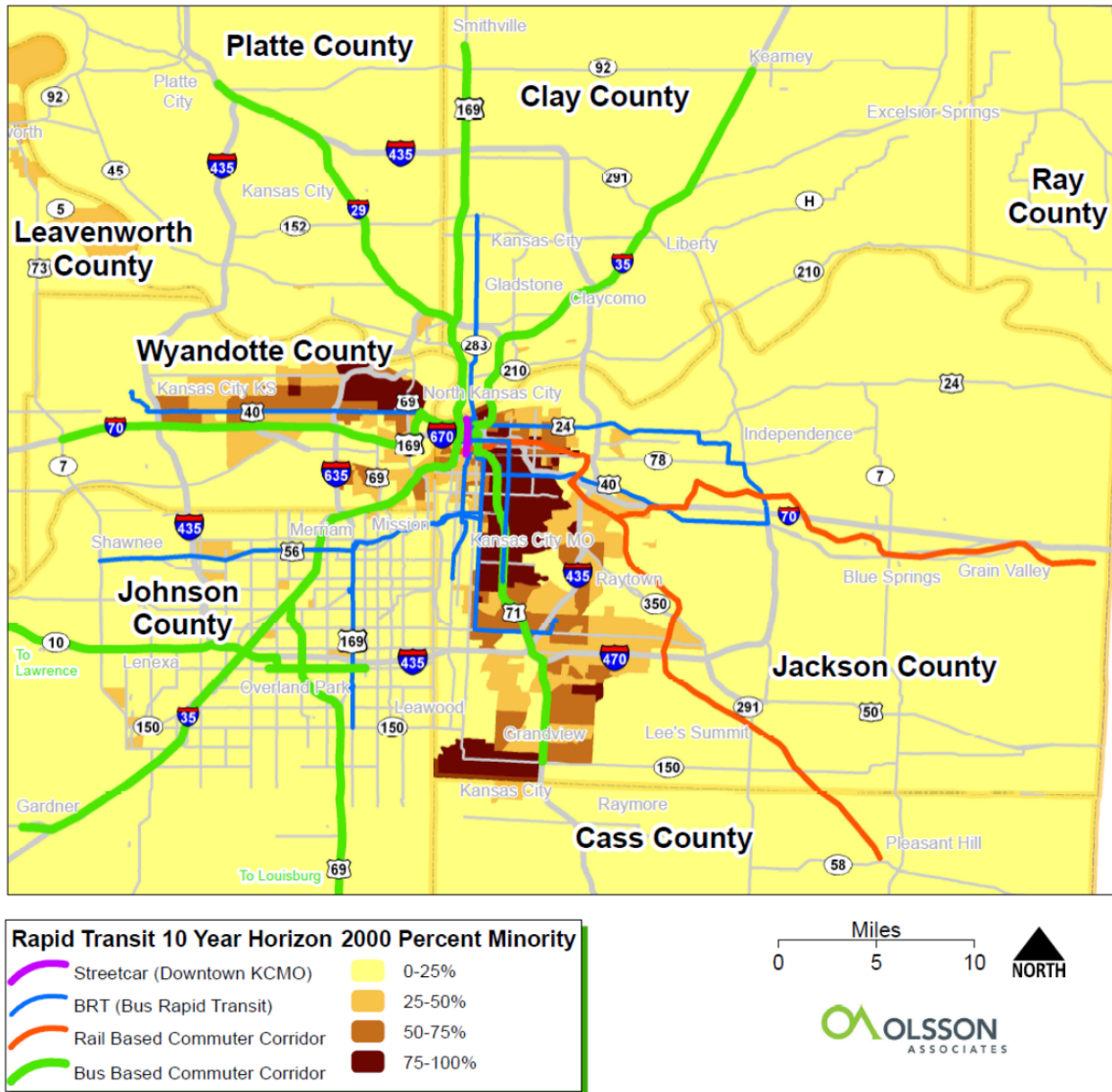
Figure 3.9: Rapid Transit Service 10 Year Horizon and Percentage of Low Income Residents (2020)



Source: MARC Long Range Forecast (2004)

Minority populations served by the corridor network are shown in Figure 3.10. According to 2000 U.S. Census numbers, five of the seven urban corridors have high minority population densities.

Figure 3.10: Rapid Transit Service 10 Year Horizon and Percentage of Minority Residents (2000)



Source: U.S. Census (2000)

Figure 3.11 displays the coverage of the urban corridor and commuter corridor network with forecasted employment density for 2030.

Figure 3.11: Rapid Transit Service 20 Year Horizon and 2030 Employment Density (per Acre)

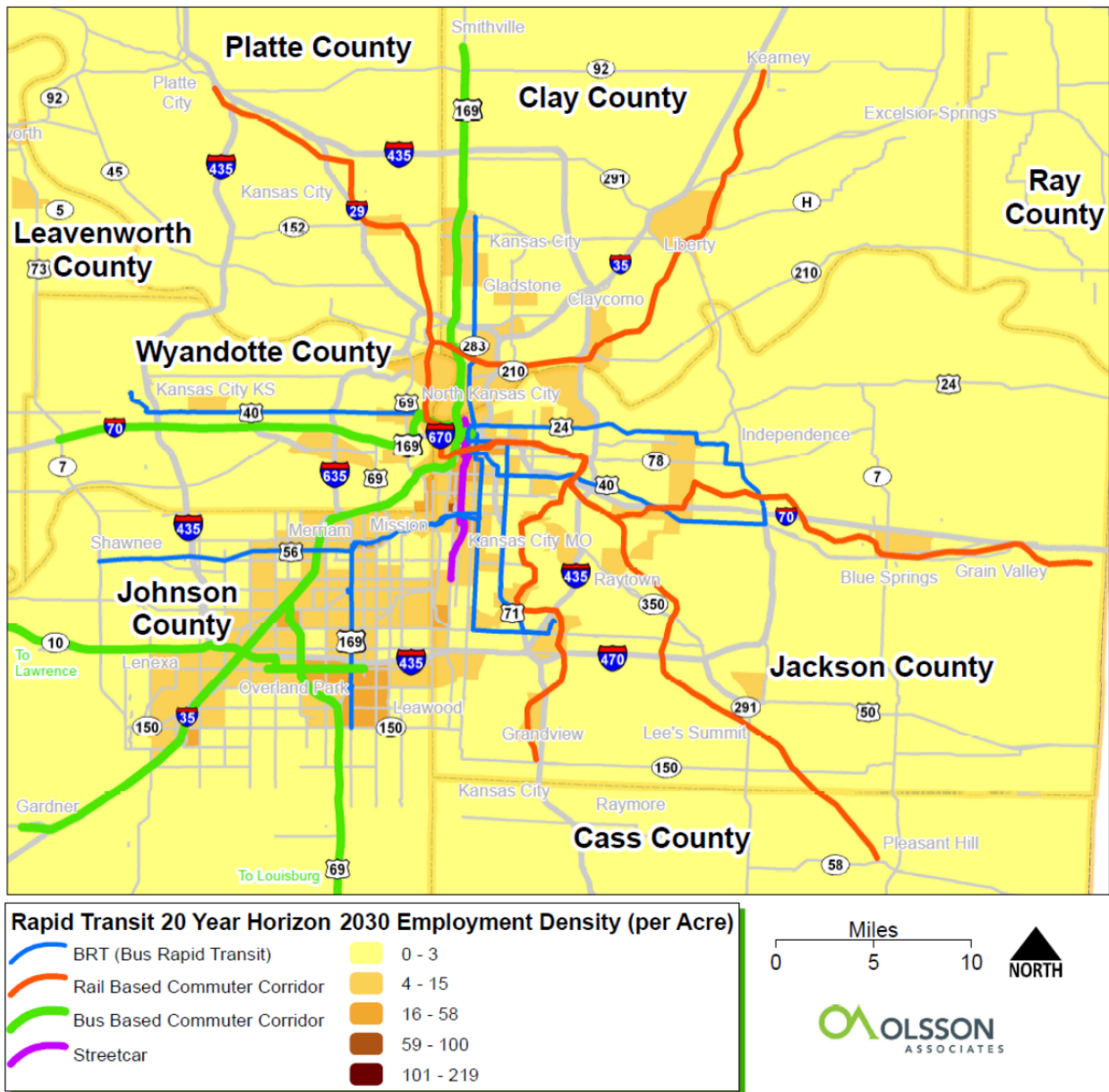
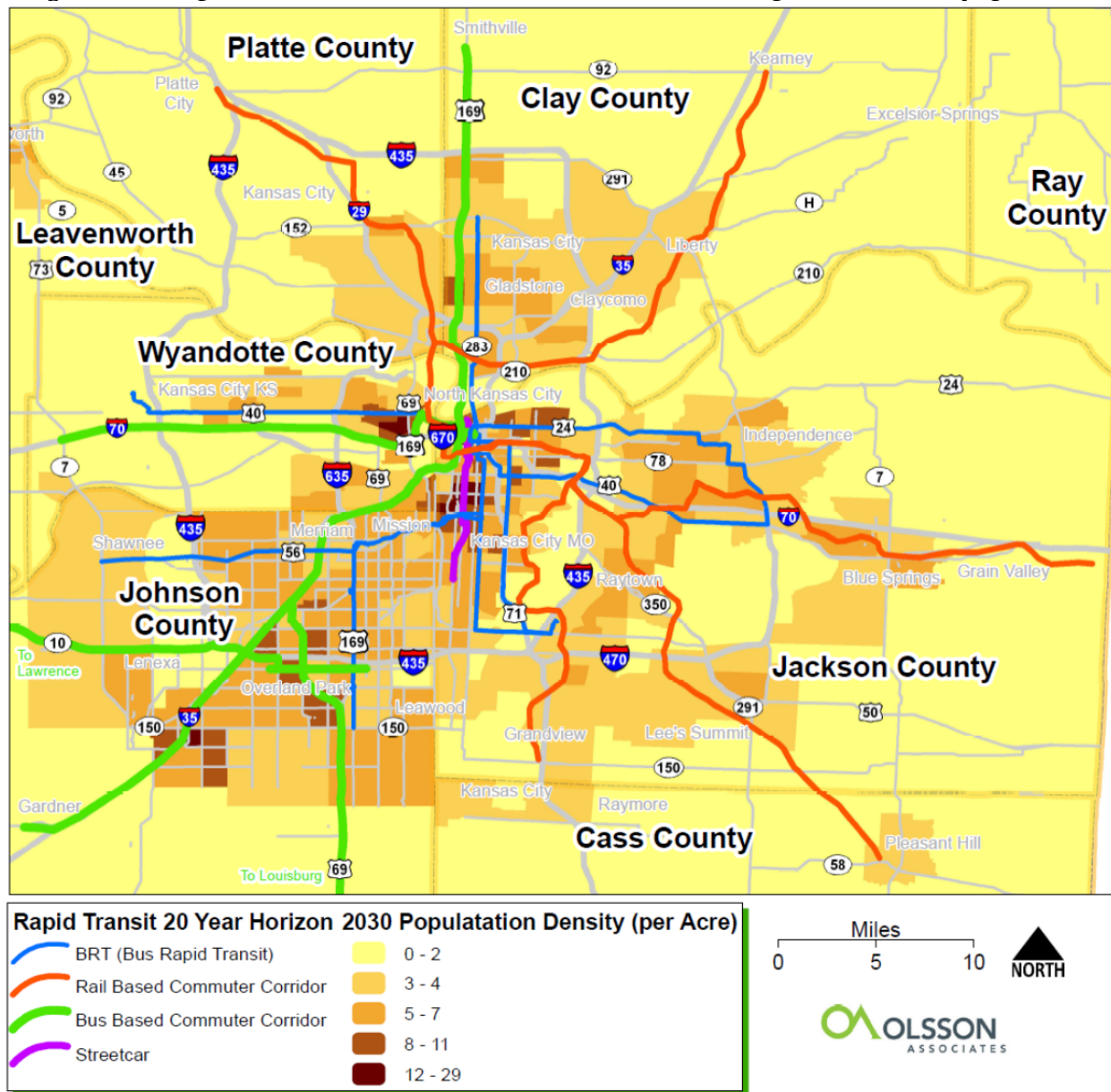


Figure 3.12 displays forecasted population density for 2030 with the urban corridor and commuter corridor network.

Figure 3.12: Rapid Transit Service 20 Year Horizon and 2030 Population Density (per Acre)



3.5 System-wide Connectivity

The urban corridor system and commuter corridor systems were examined for service integration opportunities and implementable timeline. The areas identified as commuter corridors would be served by bus-based commuter service, including service connecting the following communities:

- Blue Springs, Missouri
- Gardner, Kansas
- Grandview, Missouri
- Kearney, Missouri
- Lawrence, Kansas
- Leavenworth, Kansas
- Lee's Summit, Missouri
- Louisburg, Kansas
- Platte City, Missouri
- Western Kansas City, Kansas

The above communities are among the cities identified in the previous future horizon and demographic maps.

Urban corridors that may be in operation at this point include Main Street, Troost Avenue, and US-40 in Kansas City, Missouri; Metcalf Avenue and Shawnee Mission Parkway in Johnson County, Kansas; State Avenue in Kansas City, Kansas; North Oak Trafficway in Gladstone and North Kansas City; and Truman Road in Kansas City and Independence, Missouri.

The *KCATA Transit Gateway Study Report (1999)* has grouped together transit center types as defined by the KCATA and Kansas City, Missouri's FOCUS City-Wide Physical Framework Plan. The two sets of definitions appear to overlap somewhat, but the following center types have been chosen for the purpose of identifying transit center types that would support the *Smart Moves* implementation plans.

Neighborhood Transit Center

The **Neighborhood Transit Center** provides service at the neighborhood level. This transit center type may provide minimal shelter and few amenities, and may be only a step beyond a traditional bus stop.

Local Transit Center

The **Local Transit Center** serves multiple neighborhoods and several neighborhood commercial areas. The transit center would generally be planned to support denser land use than surround areas, with greater access to businesses. These are comparable to the Mixed Use Transit Centers defined in the FOCUS plan which may include community or regional shopping, residential densities greater than 14 units per acre, cultural facilities, medical and professional offices and financial institutions

Regional Transit Center

The **Regional Transit Center** serves as a transportation hub for entire geographic regions of the Kansas City metropolitan area, and would be located at major regional shopping centers or office centers. This transit center type is comparable to the FOCUS plan's Mixed-Use Regional Centers with major attractions such as hotels, regional shopping, cultural facilities, major office developments, hospitals, and college/universities and residential densities greater than 20 units per acre.

Park & Ride Transportation Centers

In addition, **Park & Ride Transportation Centers** would allow suburban residents to drive to the center and take express service to regional or local transit centers.

Regional Hubs

Regional hubs would allow connections to be made between commuter corridor services, urban corridor services, and community-based transportation services. These regional hubs could occur near the following intersections:

- Bannister Road and US-71, Kansas City, Missouri
- Downtown Kansas City, Missouri
- I-70 and I-435, Kansas City, Kansas
- I-70 and Little Blue Parkway, Independence, Missouri

- 135th Street and US-69, Johnson County, Kansas
- US-169 and Missouri Highway 152, Kansas City, Missouri

Figure 3.13 displays existing and future local or regional transit centers that will support the regional transit system.

Additional connectivity points may be developed near I-35 and Shawnee Mission Parkway in Shawnee, Kansas, and at Union Station in Kansas City, Missouri.

A streetcar line may be developed in Kansas City, Missouri to connect downtown with Union Station. This would act as a major connection point between local service, the urban corridors, and the commuter corridors. The streetcar line may replace the Main Street BRT service on this portion of the route.

3.5.1 Identification of Capital Infrastructure

The following infrastructure improvements have been identified to support system integration for the urban corridors and commuter corridors. The variety of transit facilities will range from simple Park & Ride lots to major transit centers. The infrastructure improvements are displayed in Figure 2-12.

Park & Ride

Facilities may be upgraded or built at the following locations:

Existing

- I-70 and I-435, Kansas City, Kansas (substantial)
- I-70 and 7 Highway, Blue Springs, Missouri (upgraded)
- I-70 and Woods Chapel Road, Blue Springs, Missouri (upgraded)
- Lee's Summit, Missouri
- Liberty, Missouri (upgraded)

Proposed

- Bannister Road and US-71, Kansas City, Missouri
- Blue Ridge Crossing, Independence, Missouri (transit center and Park & Ride)
- Grain Valley, Missouri
- Kansas City International Airport, Kansas City, Missouri

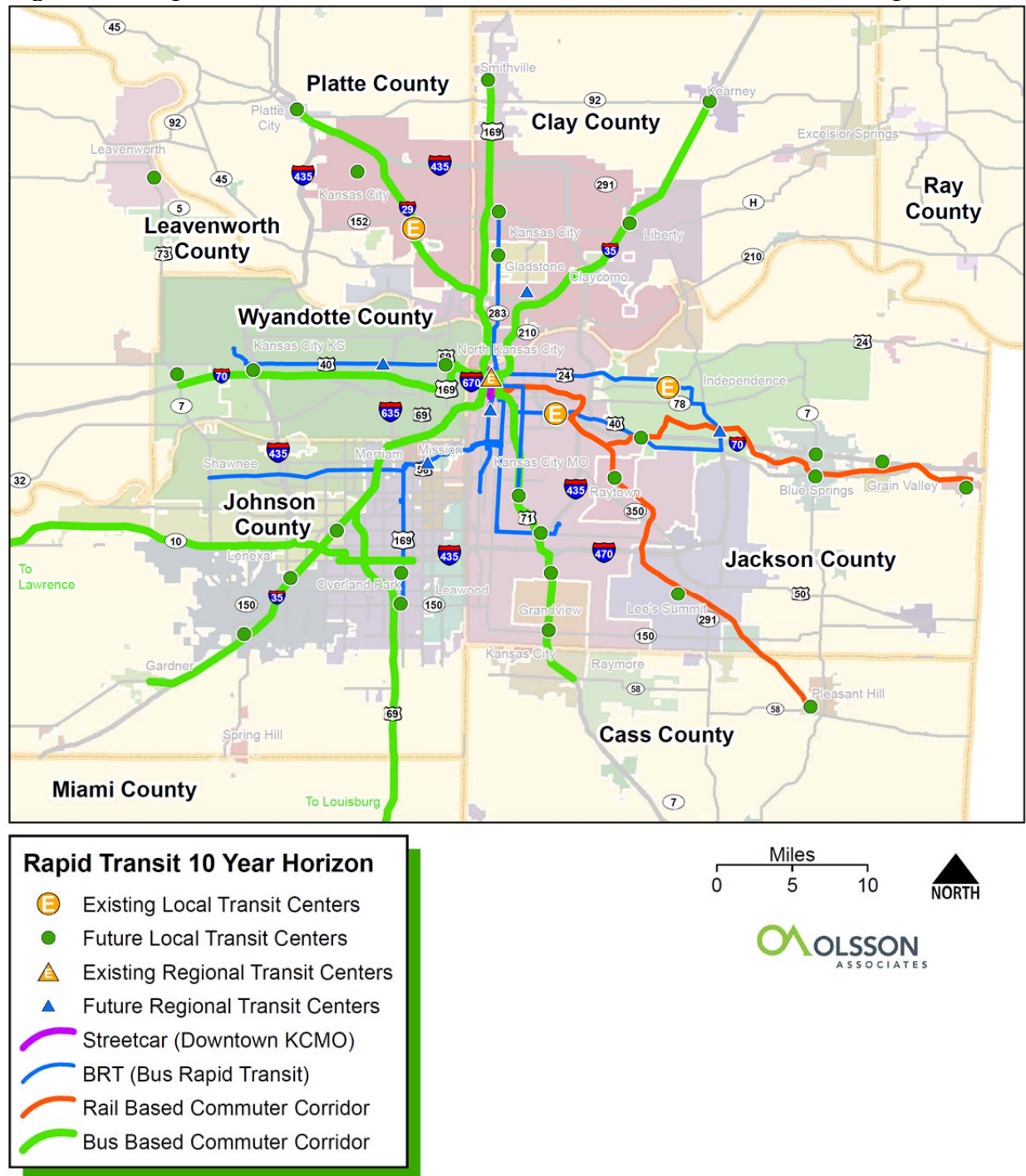
- Kearney, Missouri
- Lee's Summit, Missouri
- Missouri Highway 152 and North Oak Trafficway, North Kansas City, Missouri
- 135th Street and US-69, Johnson County, Kansas
- 150 Highway, Grandview, Missouri
- Platte City, Missouri
- Pleasant Hill, Missouri
- Raytown, Missouri
- 63rd Street and Bruce Watkins Parkway, Kansas City, Missouri
- US-169 and Missouri Highway 152, Kansas City, Missouri

Transit Center

Proposed

- Downtown Kansas City, Missouri (major transit center)
- I-35 and Shawnee Mission Parkway, Shawnee, Kansas
- I-70 and Little Blue Parkway, Independence, Missouri
- I-29 and Barry Road, Kansas City, Missouri
- Kansas City, Kansas (Indian Springs Transit Center)
- Mission, Kansas (Mission Transit Center)
- 31st Street and Van Brunt Boulevard, Kansas City, Missouri
- Union Station, Kansas City, Missouri
- Vicinity of 70th Street and North Oak Trafficway , Gladstone, Missouri

Figure 3.13: Rapid Transit Service 10 Year Horizon and Future Infrastructure Improvements



4.0 Financial Outlook Assessment

4.1 Current System Costs

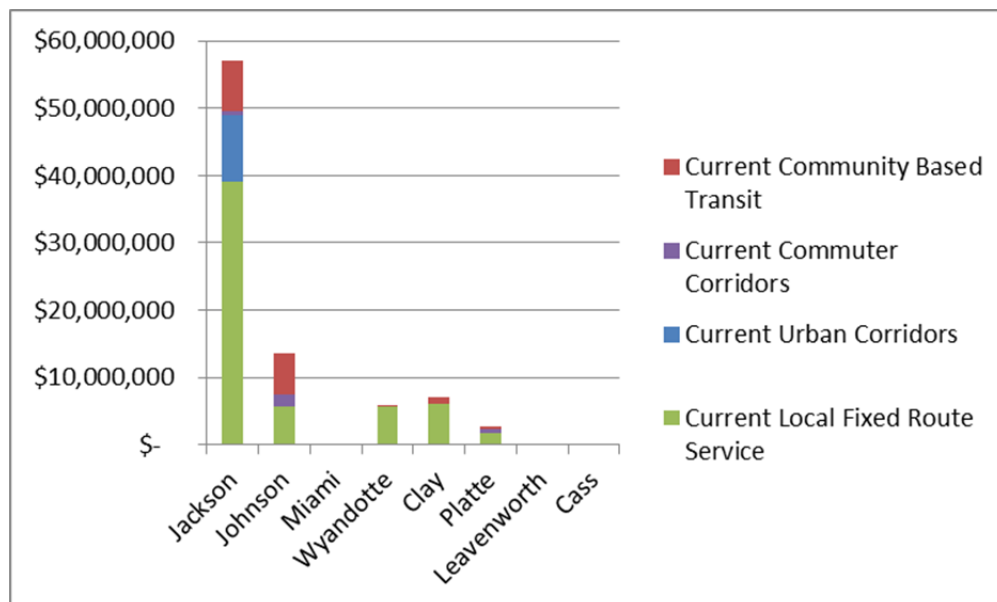
4.1.1 Current Capital Costs

While the actual capital investment required for the support of transit services currently being provided in the region can vary from year to year depending on vehicle replacement strategies, facility projects, investments in technology, etc., the average annual investment over the five-year period from 2006 through 2010 has been approximately \$40 million.

4.1.2 Current Operating Costs

Annual operating costs for the transit services currently being provided in the region total approximately \$86 million. The largest investment in transit service in the region is in Jackson County, Missouri. Services provided in this county have a total annual cost of approximately \$57 million, which represents two-thirds of the entire regional investment. Figure 4.1 illustrates the amount of investment in transit operations within the region by county and by service mode.

Figure 4.1 Current (2010) Operating Costs



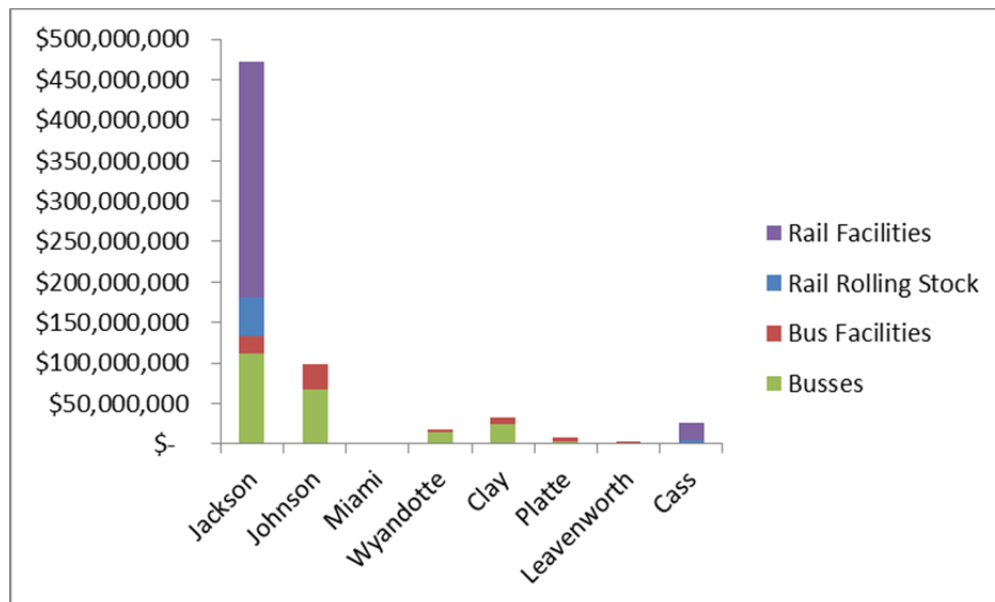
4.2 Projected Future System Costs

4.2.1 Projected Future Capital Costs

Projected future capital costs are displayed in Figure 4.2. The eight counties of the MARC service area experience a wide variety of capital costs. Rail investment is primarily focused in Jackson County, with some investment in Cass County. Jackson County and Johnson County experience similar levels of capital costs associated with fixed routes. Wyandotte County and Clay County have lower levels of bus capital investment. The levels of bus capital investment in Miami, County, Platte County, and Leavenworth County correspond to the relatively lower level of transit offered in those counties.

These costs were calculated based on existing equipment costs and the future service levels. Costs were assigned to each county by the amount of individual route lengths within each county. A more detailed description of costing methodology is provided in Appendix A.

Figure 4.2: Ten-year Estimated Capital Costs



4.2.2 Projected Future Operating Costs

Projected future operating costs are displayed in Figure 4.3. The eight counties of the MARC service area experience a wide variety of operating costs. Operating costs are primarily concentrated in Jackson County, and Johnson County, with higher levels of commuter corridors and urban corridors. Both counties have higher amounts of fixed route operating costs, and higher amounts of community based transit. Clay County and Wyandotte County also have sizable operating costs which are divided between local fixed-route services, community based transit, and urban corridors, with some commuter corridor costs. Platte County, Leavenworth County, Cass County, and Miami County have operating costs corresponding with their level of transit service. Operating costs for these four counties are primarily composed of community based transit or commuter corridors.

A cost model utilizing future service characteristics of each route was used to project future operating costs. The operating cost for rail-based commuter corridors, and fixed-route service was extracted from previously published documents. A more detailed description of operating costing methodology is provided in Appendix A.

Figure 4.3: Ten-year Estimated Annual Operating Costs

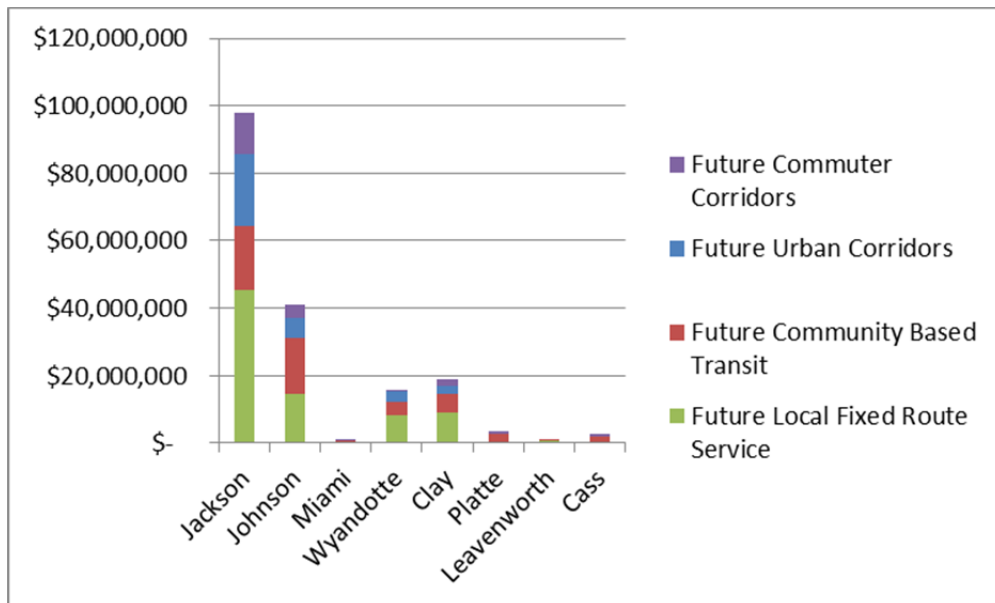
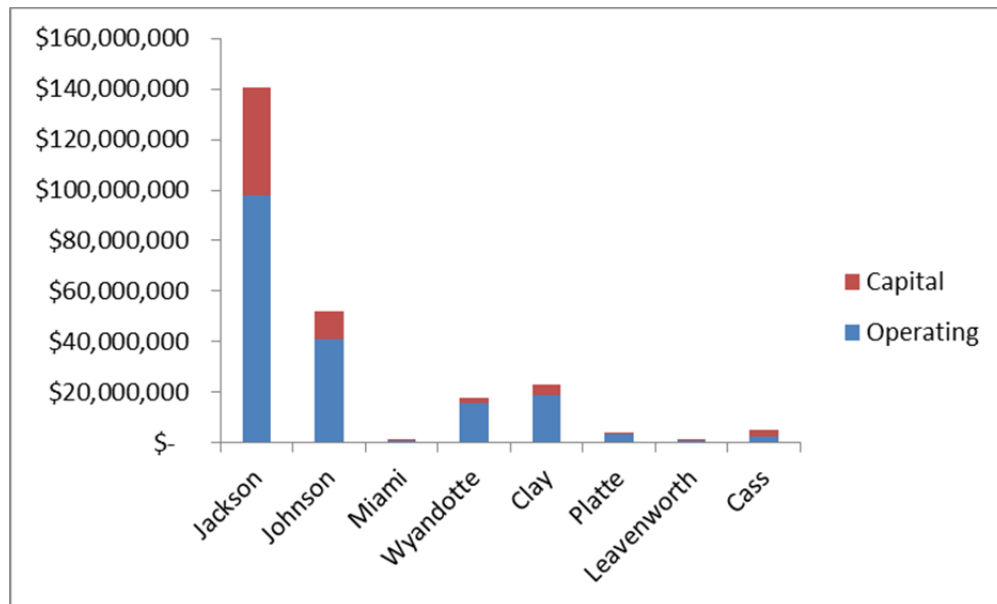
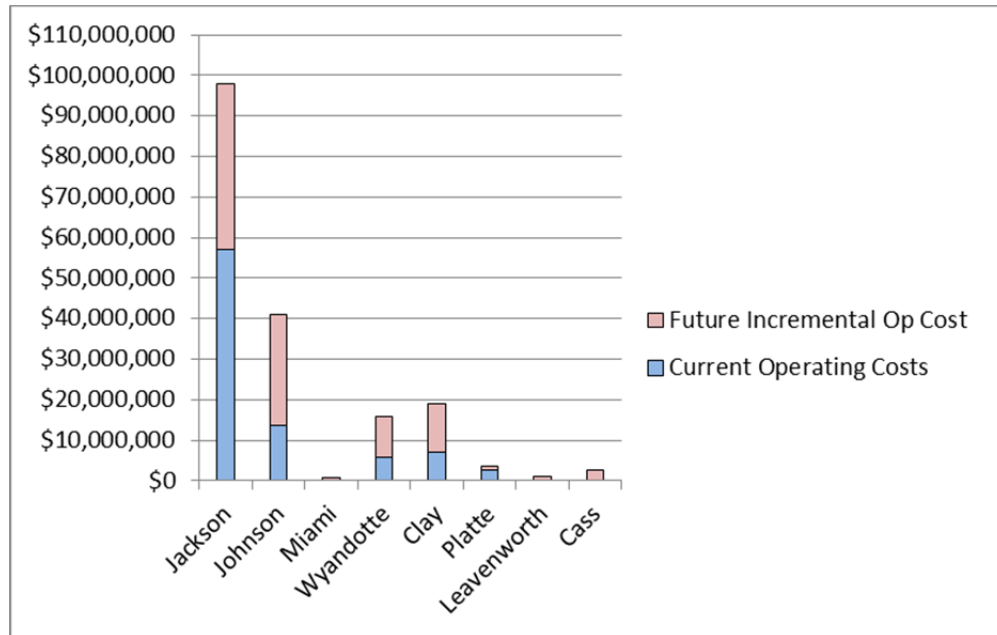


Figure 4.4: Ten-year Estimated Annual Capital and Operating Costs

4.3 Integrated Financial Outlook

4.3.1 Operating Costs

The additional annual cost of operating the fully developed ten-year transit vision described in this report is approximately \$96 million, expressed in current dollars. This would bring the total operating costs to \$182 million annually, which represents more than a doubling over current transit operating costs (see Figure 4.5).

Figure 4.5: Current vs. Future Operating Costs

4.3.2 Capital Costs

The additional capital cost required to fully develop the ten year transit vision is approximately \$275 million. This was calculated by subtracting the total estimated capital cost of the fully developed ten year vision from the average annual transit capital investment for the region over the last five years multiplied by ten.

5.0 Implementation Strategies

5.1 Distribution and Integration Strategies

5.1.1 Distribution

An important component of a regional transit plan is creating connections between different transit modes and fostering the distribution of passengers among different transit modes. Individual components of the urban corridor system and commuter corridor system will only be successful if integrated with distribution strategies that allow passengers to easily transfer between different transit components to reach their ultimate destination. The strategies may strengthen connections between the urban corridors, commuter corridors, and local transit service corridor system, and improve circulation in the downtown Kansas City, Missouri area.

In downtown Kansas City, Missouri, over a mile separates the presumed commuter corridor terminus of Union Station and the current transit terminus of the 10th & Main Transit Center. In addition, implementing all of the identified higher frequency urban corridor routes, additional bus-based commuter corridor routes, and maintaining the current number of transit routes into downtown Kansas City, Missouri, may result in exceeding the capacity of the current 10th & Main transit center. The current transit pattern in downtown Kansas City, Missouri provides many passengers with one-seat rides directly to the transit center, but also increases service duplication in a condensed area of downtown, resulting in additional congestion and wear and tear on city streets. These challenges create an opportunity to examine the connections between the urban corridor routes and commuter corridors, as well as examine the pattern of transit traffic into and through downtown Kansas City, Missouri.

Rail-Based Service

While some connections between urban corridors and commuter corridors may occur on the perimeter of the regional transit system, most may occur in downtown Kansas City, Missouri. Within the 10 Year horizon, these connections may occur as the rail-based commuter corridors serving Lee's Summit and Blue Springs, Missouri access

Union Station, and the bus-based urban corridors and commuter corridors access the downtown transit center. In the 20 Year horizon, rail-based service to Liberty, Platte City, and Grandview, Missouri would be added and serve Union Station, and the streetcar line may extend south past the Country Club Plaza to allow a stronger connection between a downtown transit center, Union Station, and the Country Club Plaza.

Streetcar Line

A downtown streetcar line in Kansas City, Missouri has at various times in recent history been discussed to support the regional tourism and conference industries, act as a starter line for a light rail system, and act as a circulation system for part of downtown. An initial streetcar line connecting the River Market area south past the 10th and Main Transit Center, to Union Station would connect the rail-based commuter corridor routes accessing Union Station with the urban corridor service, local transit service, and bus-based commuter corridor service (i.e. express buses) serving the 10th and Main Transit Center. At a later date, this streetcar line could extend to the Country Club Plaza and replace a portion of the MAX BRT service currently in place.

Bus-Based System

A bus-based system distributes passengers between the multiple transit modes. This bus-based system may be a completely new route, or additional service on a specific route such as the Main Street MAX. A bus-based distribution system could be implemented relatively quickly, and could also act as a temporary measure until a streetcar line is operational.

New Transit Center

Distribution and circulation issues between the transit modes could be mitigated if a new transit center was constructed closer to Union Station. This transit center, which would replace or supplement the 10th and Main Transit Center, would serve local bus service, urban corridor service, express bus, and bus-based commuter corridor service.

A new transit center location, combined with a streetcar spine, could support the creation of a transit mall between a downtown transit center and Crown Center or Union Station. The streetcar line could serve as the spine of the mall, while routes from the north could serve the downtown transit center, while local routes from the south would serve Union Station, and the streetcar would connect the two. Commuter and express buses from the south would likely continue accessing the downtown transit center due to its proximity to highways. Modifying Kansas City, Missouri's downtown transit circulation pattern would decrease the number of transit vehicles accessing the downtown loop.

5.1.2 Integration

Transit Signal Priority

TSP technology allows communication to occur between transit vehicles and traffic signals. TSP can be deployed to extend green lights or delay red lights when transit vehicles are behind schedule. This signal preemption allows transit vehicles to go through intersections before lights turn red, resulting in increased service reliability. This technology is typically not used to increase travel speed.

Different municipalities throughout the Kansas City metropolitan area set different standards for the application of TSP technology and may utilize different equipment. This will require transit agencies to coordinate with various municipalities to implement TSP, and may result in routes experiencing uneven TSP results along their alignment. The different TSP systems may also require multiple sets of emitter equipment on each Commuter Corridor or Urban Corridor vehicles to allow TSP to be used along the entire alignment length.

Branding

While the regional system may be composed of different operators with their operational independence and a separate governing structure, consistent branding will communicate the idea of one regional transit system to the public. Different agencies may also acquire different vehicles for specific route types, and may have station or transit facility designs specific to one location or one city. However, consistent and key branding features to be applied among the different elements of the regional system should be identified for regional public awareness of a transit

system, composed of multiple elements, spanning the metropolitan area and beyond. Key logos at stations, on vehicles, and system literature, will signify the relationship with a regional transit system. Consistent branding elements within the name of each urban corridor route and commuter corridor route will signify a relationship with other routes in that system.

Consistent brand identified on timetables listing Urban Corridor routes and Commuter Corridor routes will allow passengers unfamiliar with the local transit system to quickly identify those routes that connect regions of the metropolitan area.

Uniform Fare and Transit Policies

The rapid transit system operates routes within various transit agency jurisdictions. At this level, a consistent fare and transfer policy based on specific transit mode should be applied to all routes and corridors in order to reinforce the function of the regional transit network. This will allow passengers to easily transfer among different Urban Corridor routes, Commuter Corridor routes, or local fixed routes even though different agencies operate different elements.

Communication

Different routes within the Urban Corridors or Commuter Corridors may be operated by different transit agencies or operators. The major transit agencies in the area currently utilize three distinct radio communication systems. Agencies operating Urban Corridors or Commuter Corridors should create policies detailing how communication among and between the different elements of regional transit will be handled.

Downtown Kansas City, Missouri Transfer Location

Current fixed route connections in Kansas City, Missouri are currently located at or around the 10th and Main Transit Center. There is also much discussion about the specific alignment a downtown streetcar, as well as discussion on how future Commuter Corridor routes or Urban Corridor routes will access and serve downtown. Much of this discussion is focused on utilizing Union Station as a terminus point or hub for these transit services. The role, structure, and location downtown transfer locations will need to be evaluated and discussed. Opportunities

include creating a new transfer location, increasing and streamlining connections between a bus-based transfer location and a rail-based transfer location, or locating both facilities at the same location.

Transfer Opportunities

Transfer opportunities among elements of the regional transit system will need to be coordinated in order to successfully function and provide connections for passengers on long-haul routes from homes to local services accessing their final destination. These transfer opportunities can occur at downtown, or at various activity and employment centers along routes. There may also be transfer opportunities between ADA paratransit trips and the fixed-route system.

Interline Routes

Route interlining involves a single vehicle alternating operation between two separate routes. This increases the number of “one seat ride” passengers that are not required to transfer between these two routes. Interlining different routes in the Urban Corridor, Commuter Corridor system, or local fixed route system will allow passengers to travel from one side of the metropolitan region to the opposite side without transferring buses. In addition, cost efficiencies may be realized in cases where two interlined routes require fewer vehicles to operate than would be required if the routes were operated independently of one another.

Single Operator for Regional System Elements

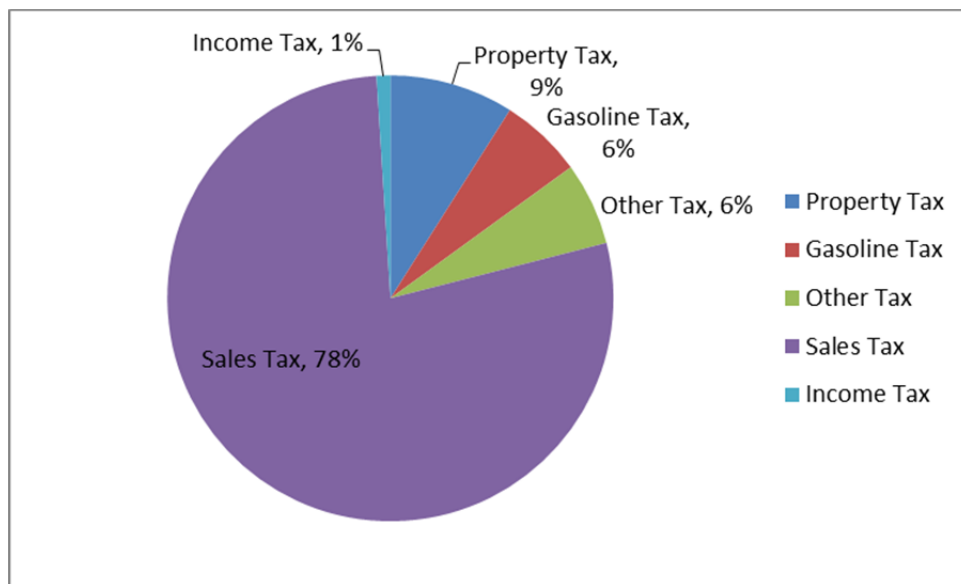
Operating the Urban Corridor system, Commuter Corridor system, or both, under one agency or operator would offer several operational benefits. A single operator could use a single dispatching center and radio communication system to improve intra- route communications. Operational issues such as TSP coordination with local municipalities, interlining of routes, and vehicle rotation among routes would be simplified through the use of a single agency.

5.2 Funding Mechanisms

5.2.1 Summary of Commonly Used Funding Mechanisms

Dedicated funding can come from many sources, including sales and use taxes, utility taxes, property taxes, motor fuel taxes, and business taxes. Some jurisdictions also impose impact fees, special assessments, or tax increment financing approaches to raise needed revenues. Figure 5.1 shows the proportionate use of each of the commonly used funding mechanisms by transit agencies serving populations of one million or more.

Figure 5.1: Common Funding Mechanisms - Transit Agencies Serving 1 Million + ⁽⁵⁾



5.2.2 Choosing an Appropriate Funding Mechanism

There are a variety of important considerations to the selection of potential revenue sources for transit operations and capital investments. Table 5.1 offers a summary of the general advantages and disadvantages of the most commonly used state and local sources.

Beyond these general considerations, transit system managers often use some form of the following criteria to select from among the alternative revenue sources:

⁵ TCRP Report 89, *Financing Capital Investment: A Primer for the Transit Practitioner*. Washington D.C.: TRB. 2003

- Revenue yield—a measure of the level of revenues that can be generated from a given increment of a tax or charge (e.g., dollars per sales tax percentage or dollars per penny of a gas tax);
- Ease and efficiency of collection—with the ease of collection affecting the net revenues associated with implementing the new or supplemental charge;
- Equity—a measure of the degree to which those who are subject to the new charge are those who will benefit from the investment, either directly or indirectly; and
- Legal and institutional barriers—the extent to which there are statutory or administrative impediments to implementing a particular tax or charge.

Table 5.1 Summary of Revenue Sources ⁽⁶⁾

Revenue Source	Use	Advantages	Disadvantages
Sales Tax	<ul style="list-style-type: none"> Operating Capital 	<ul style="list-style-type: none"> Generates significant revenue at low rates Easy to administer Successfully implemented by many transit agencies 	<ul style="list-style-type: none"> Requires State action and/or voter approval Hurts retailers Can be regressive Subject to economic cycles
Wage/Income Tax	<ul style="list-style-type: none"> Operating Capital 	<ul style="list-style-type: none"> Generates significant revenue at low rates Long-run growth potential Wage tax can capture commuter beneficiaries 	<ul style="list-style-type: none"> Unpopular with voters and the business community Subject to economic cycles Difficult to administer
Property Tax	<ul style="list-style-type: none"> Operating Capital 	<ul style="list-style-type: none"> Broad coverage of business and individuals Easy to administer Generates significant revenue at low rates 	<ul style="list-style-type: none"> Requires voter approval Generally unpopular with taxpayers Heavy competition from school districts and other beneficiaries of tax
Motor Fuel Tax	<ul style="list-style-type: none"> Operating Capital 	<ul style="list-style-type: none"> Possible deterrent to driving Less visible to taxpayers Significant revenues from small increment Easy to administer 	<ul style="list-style-type: none"> Requires state action (Constitutional amendment in MO) Revenues subject to decline as fuel economies improve
Vehicle Registration Fee/Tax	<ul style="list-style-type: none"> Operating Capital 	<ul style="list-style-type: none"> Possible deterrent to driving Easy to administer 	<ul style="list-style-type: none"> Requires state action No direct link to transit Regressive, depending to structure
Farebox Revenue	<ul style="list-style-type: none"> Operating 	<ul style="list-style-type: none"> Direct users pay Ease of revenue collection 	<ul style="list-style-type: none"> Limited revenues Regressive
Business Tax(es)	<ul style="list-style-type: none"> Operating 	<ul style="list-style-type: none"> Employers pay for labor force mobility 	<ul style="list-style-type: none"> Unpopular with business Disincentive for business location decisions
Special Assessments	<ul style="list-style-type: none"> Capital 	<ul style="list-style-type: none"> Revenue tied to development Direct beneficiaries of improvement pay Small base of opposition 	<ul style="list-style-type: none"> May counter location incentives Limited revenues Complex administration
Impact Fees	<ul style="list-style-type: none"> Capital 	<ul style="list-style-type: none"> Revenues tied to development Direct users pay Small base of opposition 	<ul style="list-style-type: none"> Possible legal challenges Limited revenues
Tax Increment Financing	<ul style="list-style-type: none"> Capital 	<ul style="list-style-type: none"> Revenue tied to economic development Can tie to transit development specifically No direct new effect on taxpayers 	<ul style="list-style-type: none"> Limited and less certain revenues Complex administration Competition from school and other local governments

⁶ TCRP Report 89, *Financing Capital Investment: A Primer for the Transit Practitioner*. Washington D.C.: TRB. 2003.

5.3 Funding Strategies

5.3.1 General Strategies

The increase in annual operating revenues required to operate the 10-year transit vision outlined in this report is estimated at \$100 million. Farebox revenue generated from the various services that comprise the transit vision is estimated to be approximately \$15 million per year, leaving an additional need of \$85 million for annual operations. While federal funding often pays for a significant amount of capital costs, operating expenses are generally a local responsibility. Obtaining a source of dedicated funding for annual operations will be the largest financial challenge.

As illustrated in the previous section, the estimated operating cost of the 10-year transit vision varies by county. Figure 4.5 provides a county level comparison of current transit operating costs and the estimated operating cost of the 10-year transit vision. Because of the disparity in funding requirements between counties it is recommended that funding to support transit operations should be generated at the county level and allocated to support service operation respective to where the funding was generated. This will allow each county to move forward with the implementation of service improvements identified in this study at their discretion. Decisions regarding specific funding mechanisms and implementation timing and sequencing would be made at the county level allowing each county to move forward at its own pace.

The increase in annual capital expenditures required to fully develop the 10-year transit vision outlined in this report will average approximately \$25 million. It is assumed that Federal funding in the form of grants and FTA formula funding allocated to the region will cover approximately fifty to eighty percent of this cost, which is consistent with current Federal percentages in the region. The remaining funding required to support the transit vision development would come from local and State sources. Consistent with the funding strategy described for operations funding, local capital funding would also be generated at the county level and allocated to support capital development activities respective to where the funding was generated.

5.3.2 Hypothetical Smart Moves Funding Strategies

Numerous strategies exist to fund the improved transit service identified in this report. Sales tax is the most common dedicated source to fund transit. Table 5.2 displays the amount of sales tax rate that would be required in each county should that county implement improved transit service at the Smart Moves year 2020 level. The costs and tax rates identified are incremental operating and capital costs above the current service funding requirements and tax revenue.

Table 5.2 Summary of Revenue Sources

Sales Tax Levels to support Identified Transit Improvements					
	1 Cent Sales Tax Revenue	Smart Moves 2020 Incremental Costs	15% Fare Recovery Ratio	Additional Sales Tax Rate (1 Cent Increment)	
<u>Jackson</u>	\$ 78,767,000	\$ 54,700,000	\$ 6,130,000	5/8	
<u>Johnson</u>	\$ 88,250,000	\$ 29,780,000	\$ 4,120,000	1/2	
<u>Miami</u>	\$ 2,500,000	\$ 950,000	\$ 130,000	1/3	
<u>Wyandotte</u>	\$ 12,500,000	\$ 10,360,000	\$ 1,490,000	3/4	
<u>Clay</u>	\$ 26,255,600	\$ 12,810,000	\$ 1,800,000	7/16	
<u>Platte</u>	\$ 14,070,500	\$ 1,010,000	\$ 130,000	1/16	
<u>Leavenworth</u>	\$ 3,200,000	\$ 1,240,000	\$ 180,000	1/3	
<u>Cass</u>	\$ 9,738,600	\$ 3,620,000	\$ 420,000	1/3	

As the table displays, the sales tax rate would differ based on each county's transit service costs and sales tax multiplier. The necessary sales tax rate would range from 0.00625 for Platte County to 0.075 for Wyandotte County.

6.0 Appendices

6.1 Appendix A – Costing Methodology

The purpose of this methodology is to determine the cost of providing expanded express bus, BRT, and local bus services as defined in the Mid-America Regional Council (MARC) Regional Transit Implementation Plan. The following methodology is primarily based on excel spreadsheets from the original Smart Moves process that forecasted cost of implementing the Smart Moves plan. Cost parameters have been updated with 2010 KCATA parameters. Costs were taken directly from Johnson County's Strategic Plan, which may use different costing parameters. Costs were taken directly from the MARC Regional Transit Implementation Plan: Commuter Corridors plan

Using a GIS of KCATA and UGT current routes, and JCT future routes, routes were classified into general future (10 yr) peak frequencies based on previous experience with the KCATA. Excel spreadsheets from the original smart moves plan were then modified to correspond with this future frequency. Costs were not created for most Johnson County Routes, but were rather pulled directly from the Johnson County strategic plan.

Costs were calculated for future community based, general public demand response services using a riders per capita ratio. Baseline cost was determined by applying and merging a three-quarter mile buffer around current KCATA routes. This represented the geographic area where ADA service provision is required. KCATA provided the total number and cost of non ADA and ADA Share-A-Fare trips within this area. The total population living within this area was determined through GIS using the 2010 population from MARC's 2004 Long Range model. The ratio of Share-A-Fare trips over population provided a per capita number of Share-A-Fare trips. This Share-A-Fare rides per capita was applied to projected population figures in future Share-A-Fare areas to arrive at the projected number of ADA and non ADA rides. Projected costs were determined by multiplying this number of future Share-A-Fare rides by the current KCATA cost per ride.

6.2 Appendix B – Estimated Future Costs

6.2.1 Future Capital Costs

ESTIMATED CAPITAL COSTS BY COUNTY (Smart Moves Implementation Plan Year 2020) 2010 \$'s										
	Assumed Federal Share	Jackson	Johnson	Miami	Wyandotte	Clay	Platte	Leavenworth	Cass	Total
Facilities		\$ 311,463,517	\$ 30,801,563	\$ -	\$ 3,900,000	\$ 8,400,000	\$ 5,300,000	\$ 1,500,000	\$ 21,555,183	\$ 382,920,263
Annualized Cost		\$ 23,927,512	\$ 2,230,680	\$ -	\$ 275,416	\$ 593,204	\$ 374,283	\$ 105,929	\$ 1,688,082	\$ 29,195,108
Percent by County		81%	8%	0%	1%	2%	1%	0%	6%	
Rail ROW, Stations, and Rail	60%	\$ 230,813,517	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 21,555,183	\$ 252,368,700
Streetcar Rail	60%	\$ 60,000,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 60,000,000
Regional Transit Center	80%	\$ 2,000,000	\$ 2,000,000	\$ -	\$ -	\$ -	\$ 2,000,000	\$ -	\$ -	\$ 6,000,000
Local Transit Center	80%	\$ 10,500,000	\$ 1,500,000	\$ -	\$ 3,000,000	\$ 7,500,000	\$ 3,000,000	\$ 1,500,000	\$ -	\$ 27,000,000
Neighborhood Transit Center	80%	\$ 3,150,000	\$ 3,450,000	\$ -	\$ 900,000	\$ 900,000	\$ 300,000	\$ -	\$ -	\$ 8,700,000
Other	80%	\$ 5,000,000	\$ 24,751,563	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 29,751,563
Vehicles (w/20% spare)		\$ 160,062,500	\$ 67,425,000	\$ 1,500,000	\$ 14,500,000	\$ 23,650,000	\$ 3,375,000	\$ 1,200,000	\$ 4,337,500	\$ 276,050,000
Annualized Cost		\$ 18,565,739	\$ 8,754,416	\$ 224,250	\$ 1,825,579	\$ 3,338,522	\$ 469,165	\$ 186,479	\$ 550,386	\$ 33,914,536
Percent by County		58%	24%	1%	5%	9%	1%	0%	2%	
Railway Rolling Stock	60%	\$ 39,737,500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,762,500	\$ 42,500,000
Streetcar	80%	\$ 8,000,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 8,000,000
Over The Road Coach	80%	\$ 6,000,000	\$ 13,800,000	\$ 1,200,000	\$ 2,400,000	\$ 7,800,000	\$ 3,000,000	\$ -	\$ 600,000	\$ 34,800,000
BRT	80%	\$ 47,250,000	\$ 12,000,000	\$ -	\$ 6,000,000	\$ 5,250,000	\$ -	\$ -	\$ -	\$ 70,500,000
Large Bus	80%	\$ 45,900,000	\$ 37,975,000	\$ -	\$ 900,000	\$ 4,950,000	\$ -	\$ 900,000	\$ -	\$ 90,625,000
Small Bus	80%	\$ 10,400,000	\$ 1,400,000	\$ -	\$ 5,200,000	\$ 4,600,000	\$ -	\$ -	\$ -	\$ 21,600,000
Gen. Pub. Demand Response Veh.	80%	\$ 2,775,000	\$ 2,250,000	\$ 300,000	\$ -	\$ 1,050,000	\$ 375,000	\$ 300,000	\$ 975,000	\$ 8,025,000
Total:		\$ 471,528,017	\$ 98,226,563	\$ 1,500,000	\$ 18,400,000	\$ 32,050,000	\$ 8,675,000	\$ 2,700,000	\$ 25,892,683	\$ 658,970,263
Annualized Cost		\$ 42,493,251	\$ 10,985,097	\$ 224,250	\$ 2,100,995	\$ 3,931,726	\$ 843,448	\$ 292,408	\$ 2,238,468	\$ 63,109,643
Annualized Local Portion		\$ 13,809,930	\$ 2,291,379	\$ 44,850	\$ 420,199	\$ 833,755	\$ 168,690	\$ 58,482	\$ 832,720	\$ 18,460,004
Percent by County		72%	15%	0%	3%	5%	1%	0%	4%	

6.2.2 Future Annual Operating Costs

ESTIMATED ANNUAL OPERATING COSTS BY COUNTY (Smart Moves Implementation Plan Year 2020) 2010 \$'s										
		Jackson	Johnson	Miami	Wyandotte	Clay	Platte	Leavenworth	Cass	Total
Commuter Corridors		\$ 12,177,171	\$ 4,060,483	\$ 283,761	\$ 558,669	\$ 1,970,416	\$ 801,305	\$ -	\$ 696,890	\$ 20,079,360
Rail-based		\$ 11,078,159	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 608,450	\$ 11,686,609
Percent by County		95%	0%	0%	0%	0%	0%	0%	5%	
Bus-Based		\$ 1,099,012	\$ 3,591,148	\$ 283,761	\$ 558,669	\$ 1,970,416	\$ 801,305	\$ -	\$ 88,440	\$ 8,392,751
Percent by County		13%	43%	3%	7%	23%	10%	0%	1%	
Urban Corridors		\$ 21,347,421	\$ 5,734,300	\$ -	\$ 2,903,952	\$ 2,583,146	\$ -	\$ -	\$ -	\$ 32,568,819
BRT		\$ 20,439,758	\$ 5,734,300	\$ -	\$ 2,903,952	\$ 2,583,146	\$ -	\$ -	\$ -	\$ 31,661,155
Percent by County		63%	18%	0%	9%	8%	0%	0%	0%	
Streetcar		\$ 907,664	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 907,664
Percent by County		100%	0%	0%	0%	0%	0%	0%	0%	
Local Fixed Route Service		\$ 45,342,911	\$ 14,408,977	\$ -	\$ 8,117,787	\$ 8,880,637	\$ 486,178	\$ 543,212	\$ -	\$ 77,779,702
Percent by County		58%	21%	0%	10%	11%	1%	1%	0%	
Comm. Based Special Transp.		\$ 19,022,043	\$ 16,880,718	\$ 612,897	\$ 4,150,317	\$ 5,637,158	\$ 2,249,117	\$ 633,327	\$ 2,087,514	\$ 51,273,089
ADA Paratransit		\$ 12,751,378	\$ 10,418,645	\$ -	\$ 3,832,932	\$ 3,520,948	\$ 1,315,193	\$ -	\$ -	\$ 36,353
Non-ADA Paratransit		\$ 958,893	\$ 946,002	\$ -	\$ 317,384	\$ 481,819	\$ 321,027	\$ -	\$ -	\$ 36,353
General Public Demand Response		\$ 5,311,772	\$ 9,558,852	\$ 612,897	\$ -	\$ 1,634,391	\$ 612,897	\$ 633,327	\$ 2,051,161	
Percent by County		34%	38%	1%	8%	10%	4%	1%	4%	
Total:		\$ 97,889,546	\$ 41,084,478	\$ 896,657	\$ 15,730,724	\$ 19,071,357	\$ 3,536,599	\$ 1,176,538	\$ 2,784,405	\$ 182,170,305
Percent by County		53%	25%	0%	9%	10%	2%	1%	2%	