



State Avenue Corridor Transit Planning Study Alternatives Analysis

August 18, 2008

**KANSAS CITY AREA TRANSPORTATION AUTHORITY
UNIFIED GOVERNMENT OF WYANDOTTE COUNTY/
KANSAS CITY, KANSAS**



Executive Summary

The “State Avenue Corridor Transit Planning Study Alternatives Analysis” was commissioned by KC ATA and the Unified Government of Wyandotte County to use objective screening criteria and public input to analyze alternative transit modes and service levels against the currently provided transit service. Modes analyzed were: Bus Rapid Transit (BRT) – exclusive lanes, BRT – mixed lane, Enhanced Bus service, Express Bus, and Light Rail. This report recommends BRT-mixed traffic to be advanced to a project planning phase due to its best meeting screening criteria and other pertinent factors such as required implementation time,. The expected development costs for this alternative is \$2 million to \$3 million per mile, with a total system capital cost of about \$30 million. It is also recommended that a service plan for the Enhanced Bus alternative be developed and implemented as an interim transit service enhancement to the corridor.

The State Avenue corridor has seen significant changes in the past few years with the development, of among others, the Sprint Arena and Power and Light district near downtown KCMO, the planned redevelopment of Indian Springs shopping center near I-635, and in western Wyandotte county, the Village West shopping center along with the planned developments of a Schlitterbahn Waterpark and a casino/convention center. During this time job opportunities have increased throughout the entire corridor, but particularly in the western third which increased from 627 in the year 2000 to a forecasted 7,050 by 2010. Population growth has been slow but steady, and corridor population demographics have higher levels of transit-dependent characteristics than Wyandotte County or the Kansas City metropolitan area in general, including low vehicle ownership rates, higher population and job density, and higher poverty levels. Corridor transit service has changed little during the recent development activity, while transportation destinations and needs have changed greatly.

Current corridor transit service provided by both the Kansas City Area Transit Agency and the Unified Government is characterized by roughly half hour to one hour weekday frequency with limited evening service. Transit riders can take an hour or more, and multiple buses, to travel from downtown Kansas City Missouri to Village West via transit whereas driving time is under thirty minutes. Transit facilities including bus shelters and park and rides are often undistinguished and lack comfortable pedestrian access.

Alternative modes were studied by analyzing current corridor transit service, and corridor population and economic characteristics. Corridor transit service goals and objectives were reached through a combination of public input meetings, stakeholders, and advisory groups. Along with these goals and objectives, alternatives were analyzed against screening criteria that included overall transit efficiency, potential to spur economic development, capital costs, connections with employment, medical and activity centers, and land use compatibility. The alternative BRT-Mixed traffic best measured up against these screening criteria due to its moderate roadway improvements, and little, if any right-of-way acquisition. This alternative would closely resemble KCATA’s Main Street MAX BRT route or the developing Troost Avenue MAX route.

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State Avenue Corridor Transit Alternatives Analysis

Background

The Unified Government of Wyandotte County/Kansas City, Kansas is experiencing a renaissance brought on by a newly established catalyst and an emerging one, separated from downtown Kansas City, Kansas by eleven miles and connected by the State Avenue Corridor. Village West, the newly established and phenomenally successful shopping, dining and entertainment center on the west end of State Avenue is drawing visitors at the rate of 12 million a year, making it the largest tourist destination in Kansas and one of the largest in the Midwest., Downtown Kansas City, Kansas on the east end of the State Avenue corridor has, as noted in its Master Plan document, “evolved in an opportunistic fashion.” Several new Downtown developments such as the EPA Building and the Federal Courthouse along with the established neighborhoods which surround them are anchoring a “community passion for advancing Downtown in the future.”

The bus service that currently serves this corridor is seemingly a pre-renaissance vestige when barely six years ago Village West was merely acres of undeveloped land and Downtown had more vacant buildings than occupied ones. The current transit experience from Downtown to Village West takes almost an hour, which is a significant obstacle for employees and shoppers alike. Considering the limited hours of current bus service, it is nearly impossible to use the State Avenue route in the evenings.

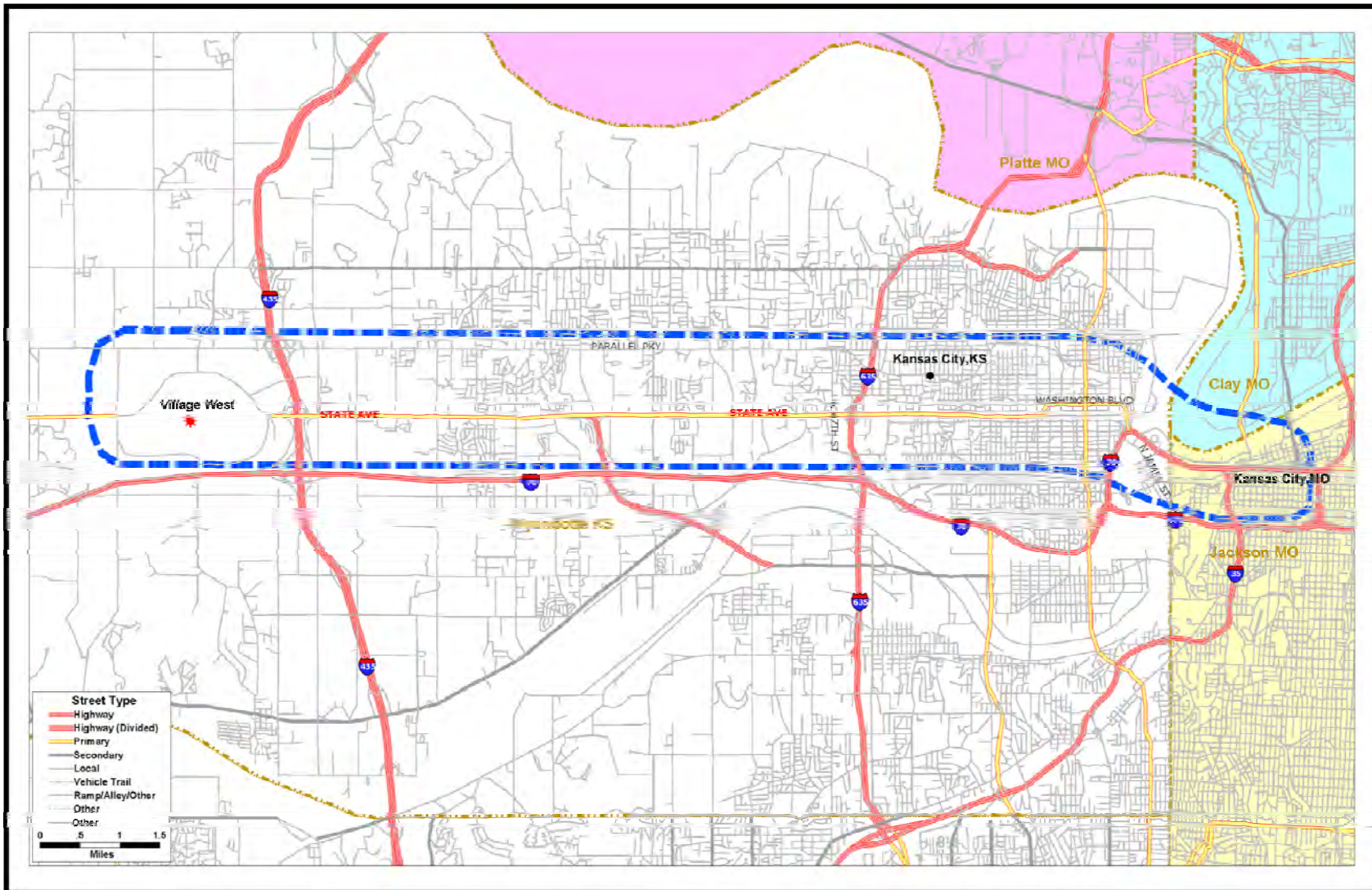
Because of the recent development momentum and the vision of the Mayor and Board of Commissioners, Wyandotte County and Kansas City, Kansas are providing direction for their community’s renaissance by undertaking a master planning effort. Throughout multiple community and work team meetings over the past year, improved public transportation has surfaced as a significant community need.

The intention of the Unified Government and the Kansas City Area Transportation Authority that this study “review different transit alternatives including bus rapid transit (BRT), improved local or express bus services, develop new transit centers and locations for possible park and ride lots” can be interpreted as an effort to bridge these two catalysts and ensure that the renaissance permeates the corridor between them.

Description of State Avenue Corridor Study Area

The location of the State Avenue Corridor within the Kansas City metropolitan area is shown in Map 1. The corridor is centered on State Avenue in Kansas City, Kansas and extends from the Kansas City, Missouri Central Business District (CBD) westward for approximately 13 miles through downtown Kansas City, Kansas to 110th Street. The corridor study area encompasses the Village West retail/entertainment and the Kansas Speedway. Today, five local bus routes traverse the corridor and provide connections to its major activity centers.

MAP 1 – STUDY AREA



Land Use and Activity Centers

Corridor Segment 1 (Downtown KCMO to I-635)

Segment 1 includes the central business districts of both Kansas City, Missouri and Kansas City, Kansas (see Map 1B). Land uses within the segment are characterized by a mix of high-rise and mid-rise office buildings, restaurants and urban residences in the two CBD's and a mix of commercial and residential uses in the remainder. The Kansas City, Missouri CBD is currently the Metropolitan Area's largest office center; is the Center of City and County government; home to the City's convention center and many of the Metro Area's important existing cultural institutions including the future Performing Arts Center; is the location of a major future retail and entertainment district; and a growing residential community. The Kansas City, Kansas CBD is also a center of City and County government and is home to a number of federal offices.

Activity Centers include:

- Downtown KCMO
- Downtown KCKS
- Kansas School for the Visually Impaired
- Westheight Manor
- Indian Springs

MAP 2A – SEGMENT 1 ACTIVITY CENTERS



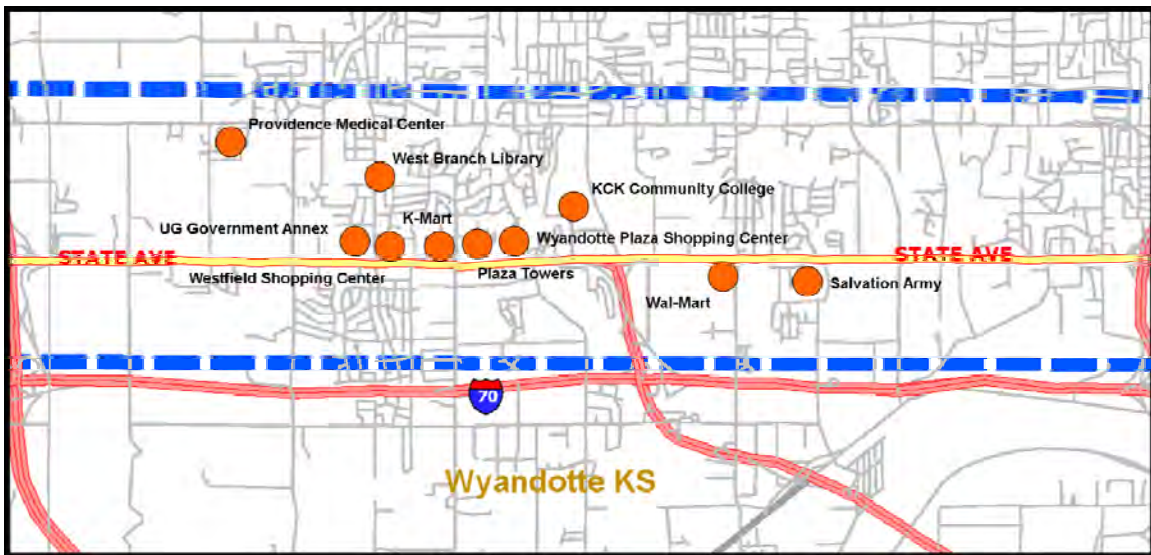
Corridor Segment 2 (I-635 to I-435)

Segment 2 includes several retail commercial shopping centers. It is characterized by a mix of suburban style commercial and residential uses (see Map 1C). The campus of The Kansas City, Kansas Community College is also located along this segment.

Activity centers include:

- Providence Medical Center
- KCK Community College
- UG Government Annex
- Salvation Army
- Wal-mart
- Plaza Towers
- Wyandotte Plaza Shopping Center
- K-Mart
- Westfield Shopping Center
- West Branch Library

MAP 2B – SEGMENT 2 ACTIVITY CENTERS



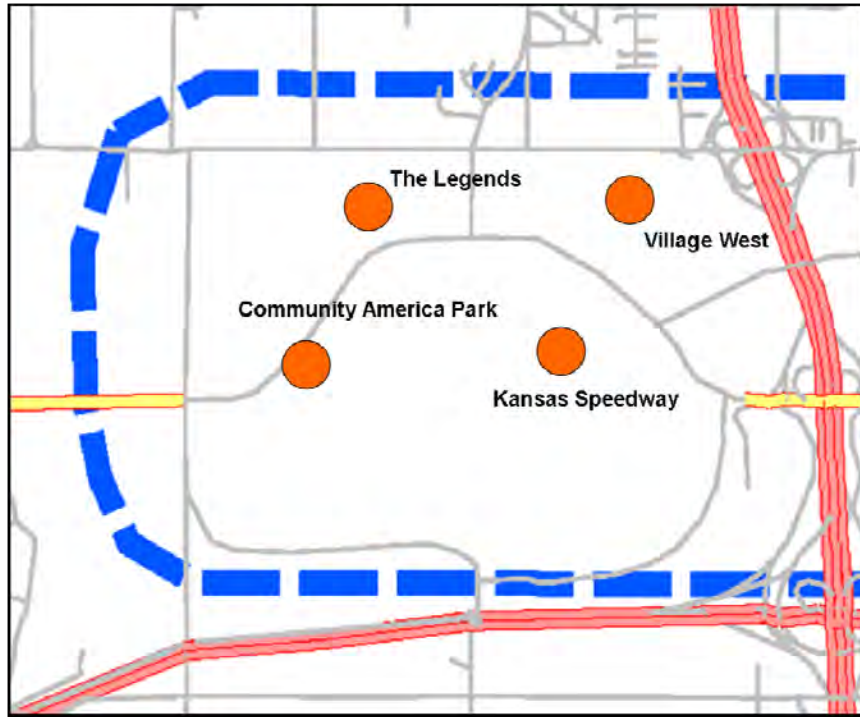
Corridor Segment 3 ((I-435 to 110th Street)

Segment 3 is encompassed by a rapidly developing retail commercial/entertainment district that includes The Kansas Speedway, The Legends shopping center, Comerica Park (a minor league baseball facility), several large box and specialty retailers, hotels and restaurants. The district is also the site of significant planned developments that include a large water park/resort, additional commercial retail and a casino/convention center.

Activity centers include:

- *Village West*
- *The Legends*
- *Kansas Speedway*
- *Community America Park*

MAP 2C – SEGMENT 3 ACTIVITY CENTERS



Demographic and Socio-economic Characteristics – 2000 Census

Population Characteristics

The population characteristics of the State Avenue corridor are shown in Tables 1 and 2, and in Maps 2 and 3.

Population/Population Density

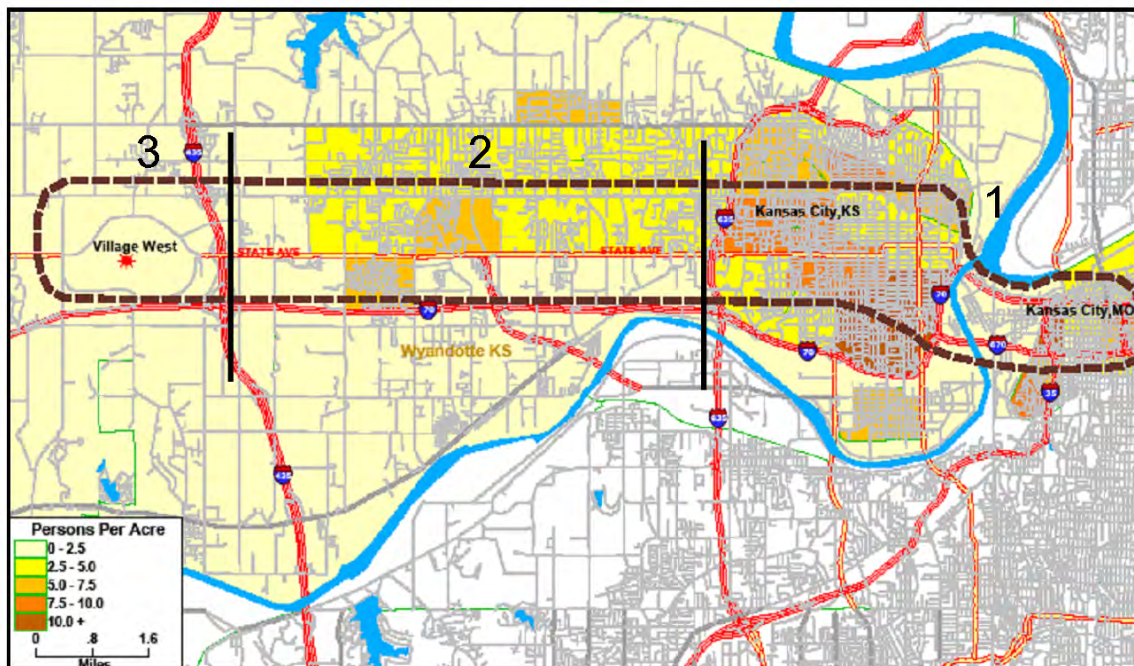
In general, the overall population density of the corridor is higher than that of Wyandotte County and of the Kansas City MSA. However, population density varies significantly between the three corridor segments. Segment 1 exhibits density characteristics that reflect its urban nature. Segment 2 is more reflective of the typical inner-ring suburban environment and segment 3 reflects neo-suburban density characteristics.

TABLE 1 – POPULATION AND POPULATION DENSITY

Corridor Section	Area (Acres)	Population 2000	
		Number	Pop./Acre
1	4,570	24,536	5.4
2	9,037	19,496	2.2
3	3,174	1,622	0.5
Corridor Total	16,781	45,654	2.7
Wyandotte County	96,890	157,882	1.6
Kansas City MSA	2,419,200	1,776,062	0.7

Source: US Census, 2000 and MARC

MAP 3 – POPULATION DENSITY



Race

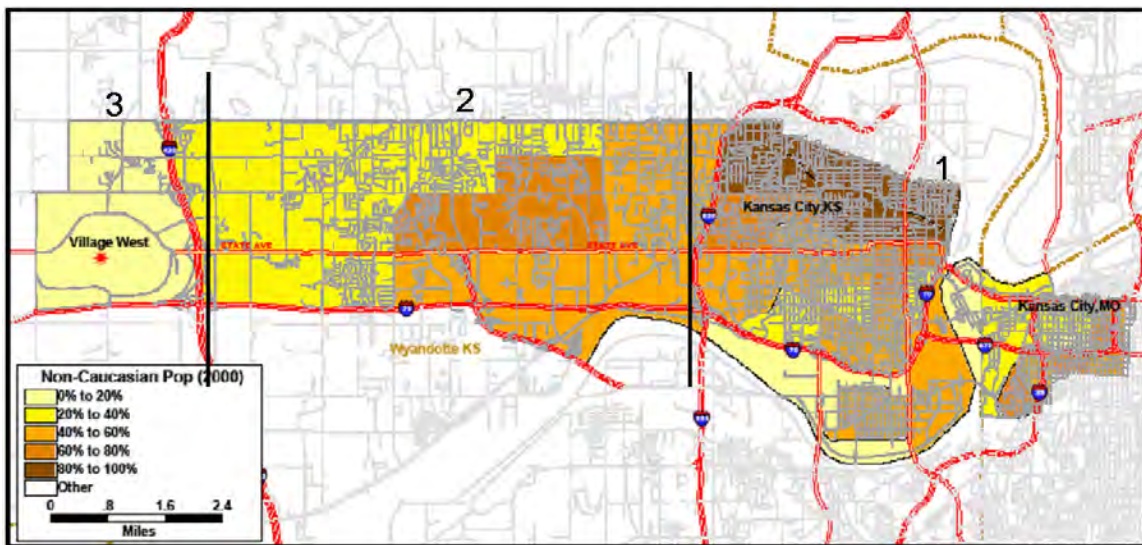
Corridor segments 1 and 2 reflect a racially diverse population with non-Caucasian population percentages of at least fifty-percent. These percentages exceed that of Wyandotte County as a whole as well as of the entire MSA. Corridor segment 3, on the other hand, reflects a non-Caucasian population of only eleven-percent. This is lower than that of Wyandotte County as a whole and the entire MSA.

TABLE 2 – RACIAL CHARACTERISTICS

Corridor Section	Population				
	Total	Caucasian		Non-Caucasian	
		Number	%	Number	%
1	24,536	10,337	42.1%	14,199	57.9%
2	19,496	9,860	50.6%	9,636	49.4%
3	1,622	1,441	88.8%	181	11.2%
Corridor Total	45,654	21,638	47.4%	24,016	52.6%
Wyandotte County	157,882	91,856	58.2%	66,026	41.8%
Kansas City MSA	1,776,062	1,434,512	80.8%	341,550	19.2%

Source: US Census, 2000

MAP 4 – RACE



Household Characteristics

The household characteristics of the State Avenue corridor are shown in Tables 3, 4, 5 and 6, and in Maps 4, 5, 6 and 7.

Household Density

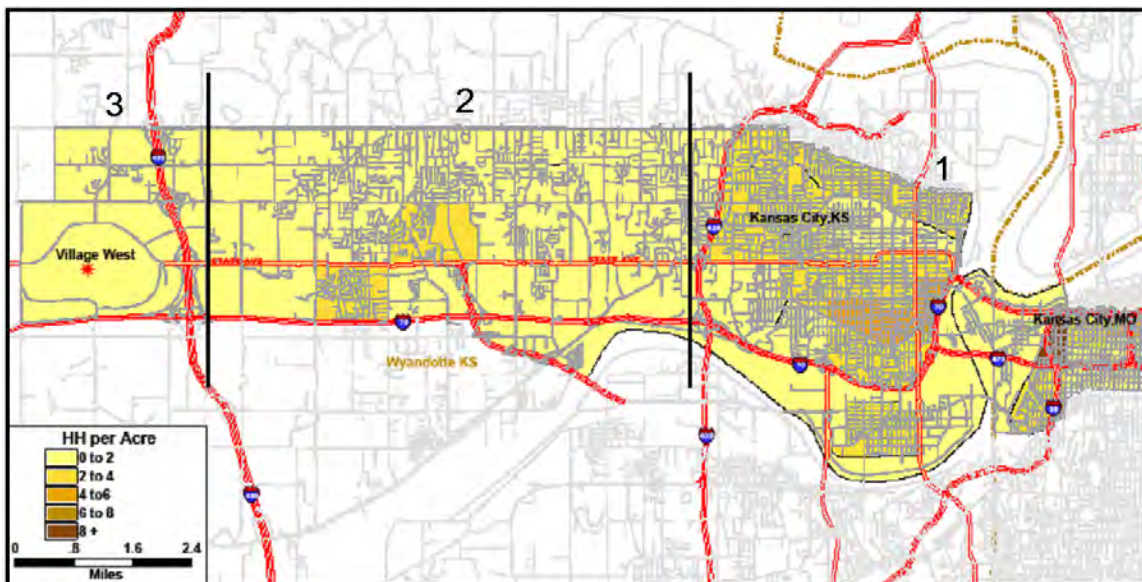
Household densities in the corridor are consistent with population densities. Densities in segment 1 are consistent with that segment’s urban nature. Densities in segment 2 are reflective of the segment’s inner-ring suburban nature, and densities in segment 3 reflect more neo-suburban/rural development characteristics.

TABLE 3 – HOUSEHOLD DENSITY

Corridor Section	Area (Acres)	Households	Household Density
1	4,570	9,831	2.2
2	9,037	7,683	0.9
3	3,174	492	0.2
Corridor Total	16,781	18,006	1.1
Wyandotte County	96,890	59,700	0.6
Kansas City MSA	2,419,200	694,971	0.3

Source: US Census, 2000

MAP 5 – HOUSEHOLD DENSITY



Owner-Occupied Housing

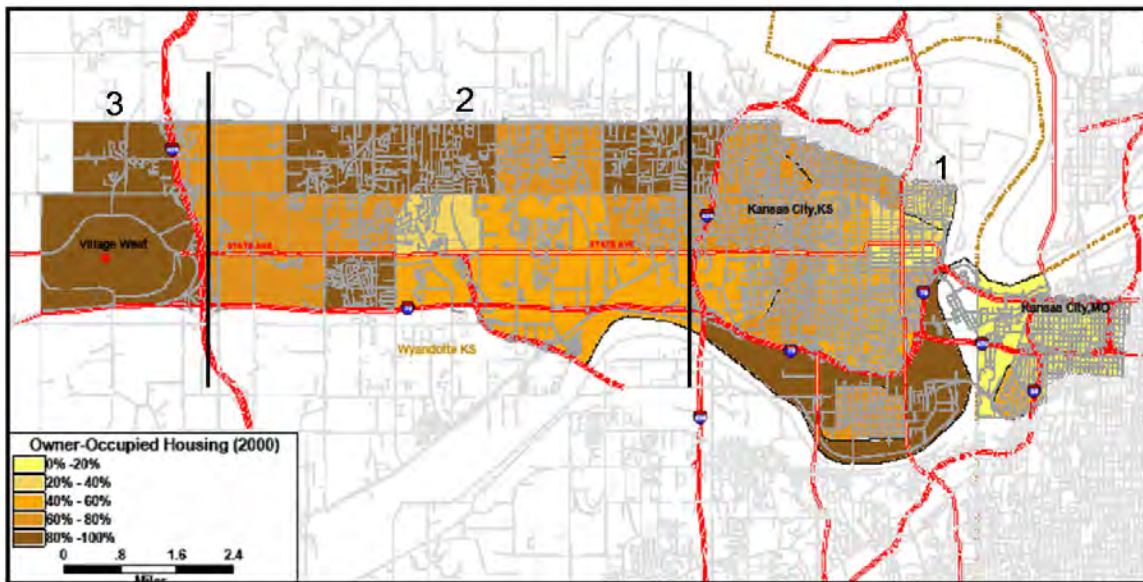
Only about fifty-percent of the homes in the corridor are occupied by the homeowner(s). This is significantly lower than the owner-occupancy percentages in both Wyandotte County as a whole and the metropolitan region. Segment 1 exhibits an even lower owner- occupancy percentage with less than forty-four-percent of homes occupied by the homeowner. At fifty-seven-percent, owner-occupancy in segment 2 is higher, but still below the County and metro area levels. Owner occupancy in segment 3 is much higher than that in the other two segments, Wyandotte County and the metro area, however, the number of households in segment three is only a fraction of those in segments one and two.

TABLE 4 – OWNER OCCUPANCY

Corridor Section	Households	Owner-occupied Households	Owner Occupancy
1	9,831	4,285	43.6%
2	7,683	4,377	57.0%
3	492	465	94.5%
Corridor Total	18,006	9,127	50.7%
Wyandotte County	59,700	37,531	62.9%
Kansas City MSA	694,971	471,886	67.9%

Source: US Census, 2000

MAP 6 – OWNER-OCCUPIED HOUSING



Household Income and Poverty Status

Median Household income can be used as an indicator of the level of transit dependency. Median household income in the State Avenue corridor study area is comparable to that of Wyandotte County as a whole, but, is significantly lower than that of the region as a whole. An examination of the corridor segments reveals that segment 1, with the highest number of households, has a median household income below the County’s and well below the regions, while segments 2 and 3 both have median household incomes higher than the County’s and segment 3 has a household median income higher than the region’s.

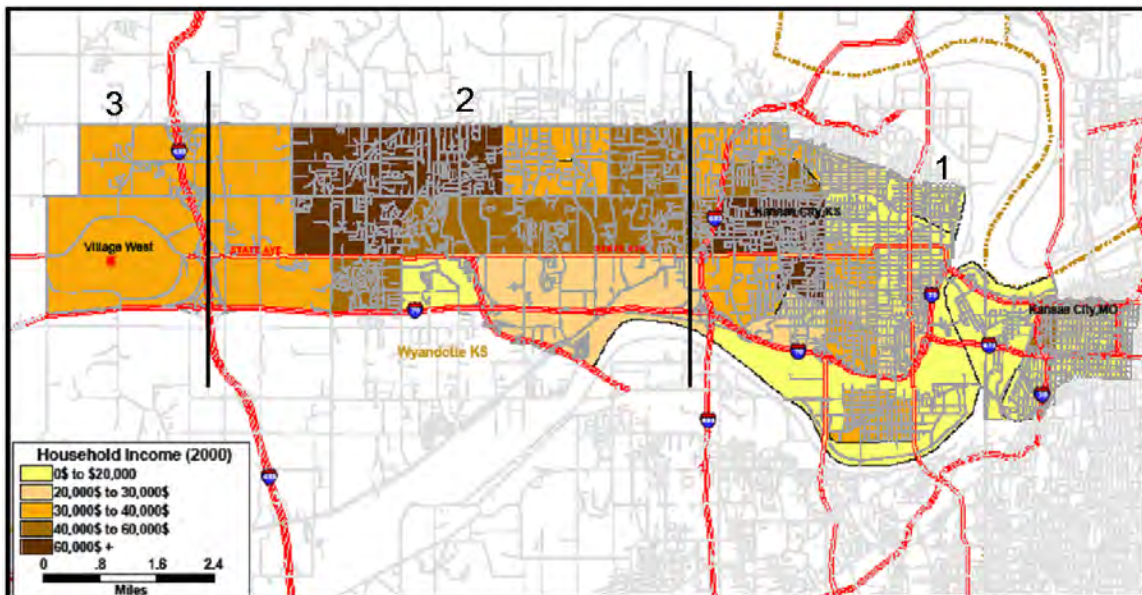
Likewise, the percentage of households in the corridor that are below the poverty level is comparable to that of Wyandotte County, but higher than the region as a whole. Segment 1 has a much higher percentage of households below the poverty level while segments 2 and 3 are both lower the County's and segment 3 is lower than the region's.

TABLE 5 – HOUSEHOLD INCOME AND POVERTY STATUS

Corridor Section	Households	Median Household Income	Households Below Poverty Level	% Below Poverty Level
1	9,831	\$ 26,099	2,061	21%
2	7,683	\$ 38,607	929	12%
3	492	\$ 58,333	28	6%
Corridor Total	18,006	\$ 32,399	3,018	17%
Wyandotte County	59,700	\$ 33,784	9,389	16%
Kansas City MSA	694,971	\$ 46,193	58,234	8%

Source: US Census, 2000

MAP 7 –MEDIAN HOUSEHOLD INCOME



0-1 Vehicles/Household

The number of vehicles per household is another indicator of transit dependence. Persons living in households with fewer than two vehicles are more likely to rely on public transit for their transportation needs than those in households with two or more

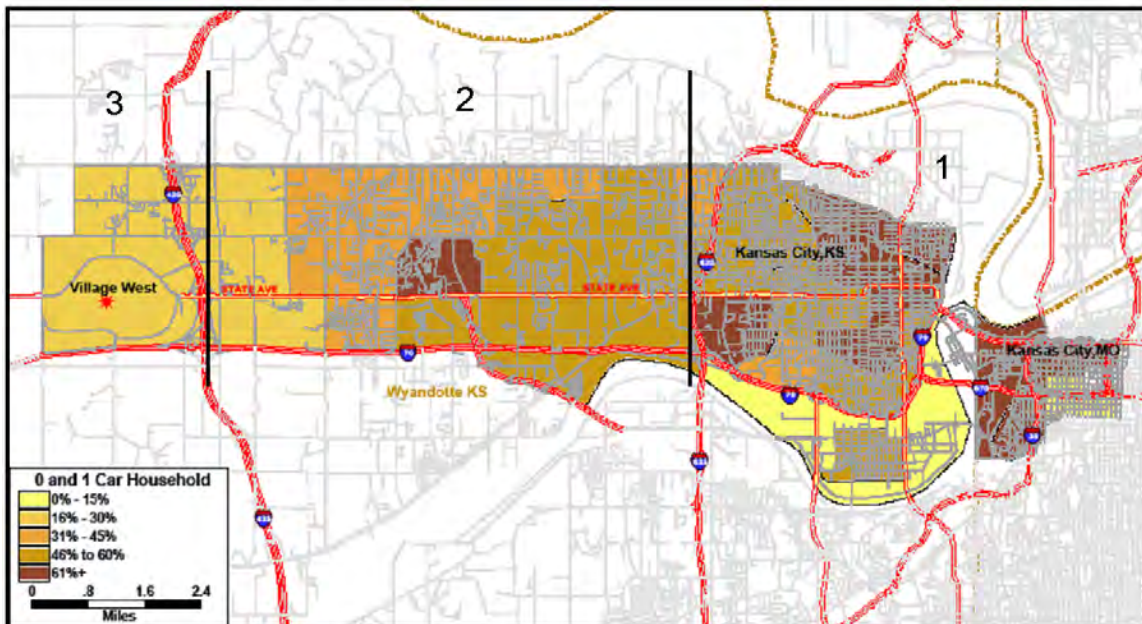
vehicles. In the State Avenue corridor study area the percentage of households with one or no vehicle available to the household is higher than that of the County and the region. An examination of the corridor segments reveals that the number of households in segment 1 with one or no vehicles is significantly higher than Wyandotte County and the region, while the percentage of households in segment 2 with one or no vehicles is comparable to the County and the percentage of households in segment 3 with one or no vehicle is significantly higher than the County and the region.

TABLE 6 – VEHICLES PER HOUSEHOLD

Corridor Section	Households	Vehicles per Household			% w/ 0 or1 Vehicle(s)/HH
		0	1	2 or more	
1	9,831	2,014	4,463	3,354	66%
2	7,683	832	3,112	3,739	51%
3	492	13	80	399	19%
Corridor Total	18,006	2,859	7,655	7,492	58%
Wyandotte County	59,700	6,751	23,041	29,908	50%
Kansas City MSA	694,971	50,455	232,951	411,565	41%

Source: US Census, 2000

MAP 8 – VEHICLES/HOUSEHOLD



Employment Characteristics

Employment Density

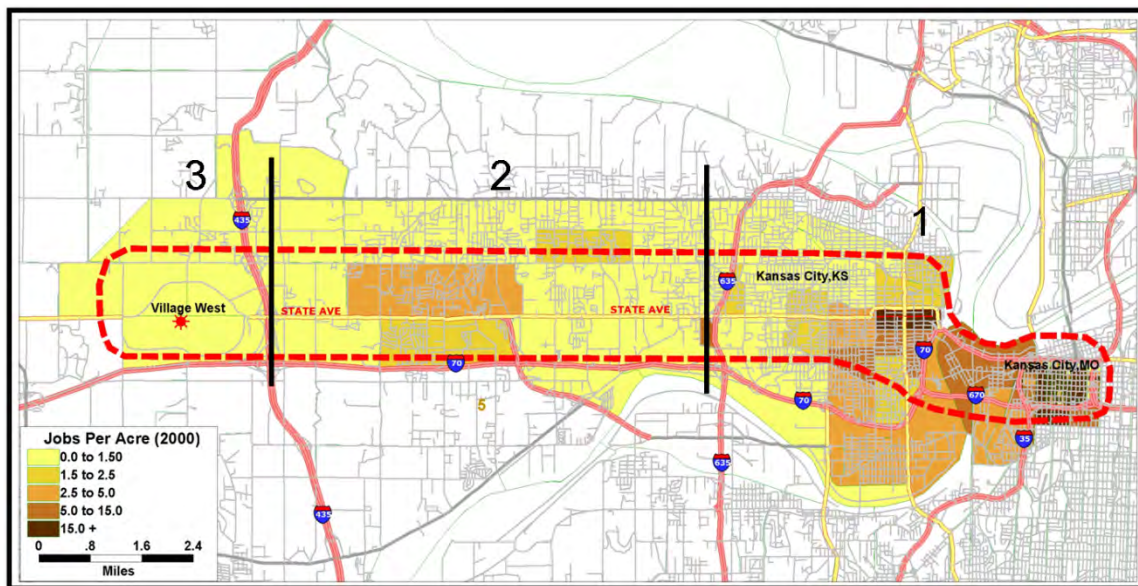
Employment density in segment 1 is significantly higher than employment density in Wyandotte County and the region. This reflects the presence of both the Kansas City, Missouri and the Kansas City, Kansas central business districts within the segment boundaries. Employment densities in segments 2 and 3 are comparable to the County and the region.

TABLE 7 – EMPLOYMENT DENSITY

Corridor Section	Area (Acres)	Employment 2000	
		Number	Employees/Acre
1	4,570	67,605	14.8
2	9,037	8,934	1.0
3	3,174	627	0.2
Corridor Total	16,781	77,166	4.6
Wyandotte County	96,890	94,594	1.0
Kansas City MSA	2,419,200	1,166,709	0.5

Source: US Census, 2000 and MARC

MAP 9 – EMPLOYMENT DENSITY



Demographic and Socio-economic Forecasts

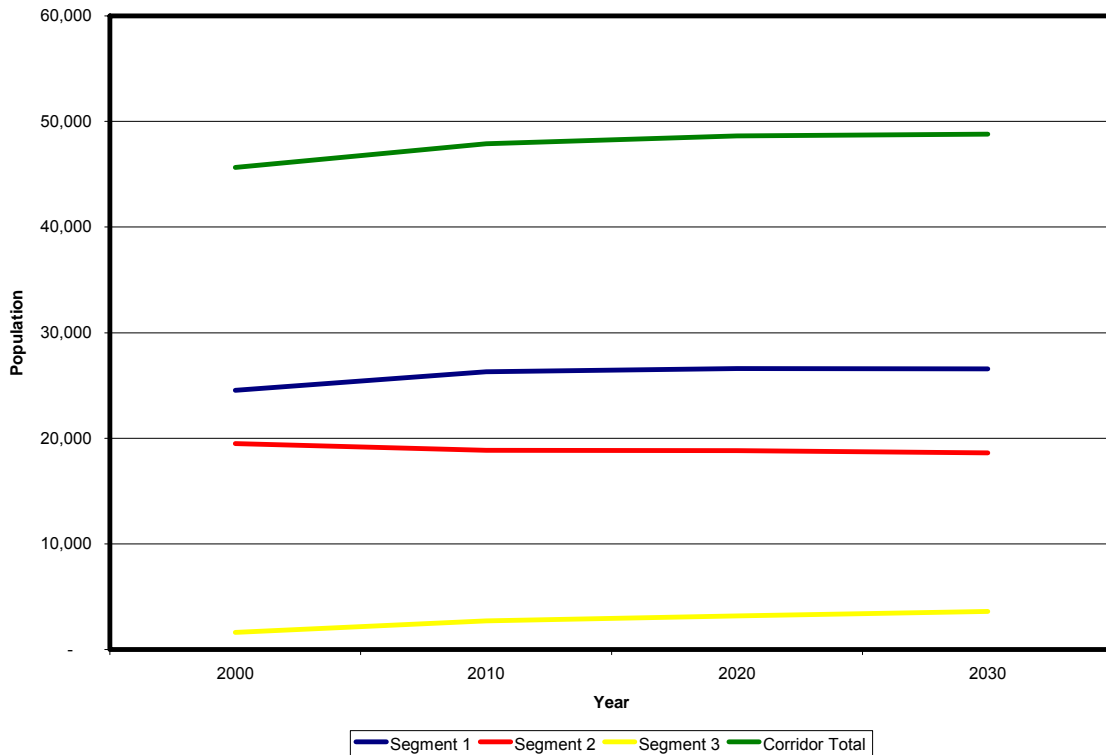
Population Forecasts

TABLE 8 – POPULATION FORECAST

Corridor Section	Population			
	Year			
	2000	2010	2020	2030
1	24,536	26,297	26,611	26,573
2	19,496	18,863	18,829	18,616
3	1,622	2,720	3,189	3,612
Corridor Total	45,654	47,880	48,629	48,801
Wyandotte County	157,882	163,660	164,826	165,146
Kansas City MSA	1,776,062	1,905,522	2,083,776	2,248,933

Source: US Census, 2000 and MARC

FIGURE 1 – POPULATION FORECAST



Source: US Census, 2000 and MARC

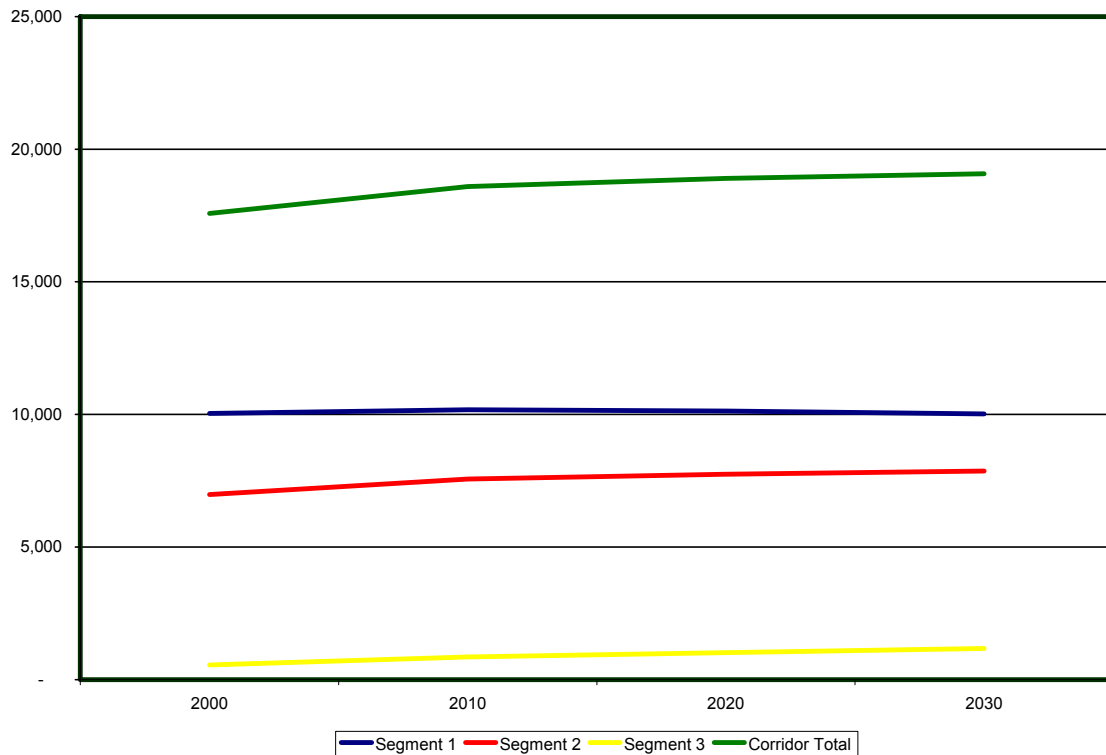
Household Forecasts

TABLE 9 – HOUSEHOLD FORECAST

Corridor Section	Households			
	Year			
	2000	2010	2020	2030
1	10,040	10,172	10,130	10,019
2	6,981	7,564	7,748	7,870
3	558	858	1,019	1,180
Corridor Total	17,579	18,594	18,897	19,069
Wyandotte County	59,698	62,580	64,381	66,082
Kansas City MSA	664,378	764,481	857,355	948,954

Source: US Census, 2000 and MARC

FIGURE 2 – HOUSEHOLD FORECAST



Source: US Census, 2000 and MARC

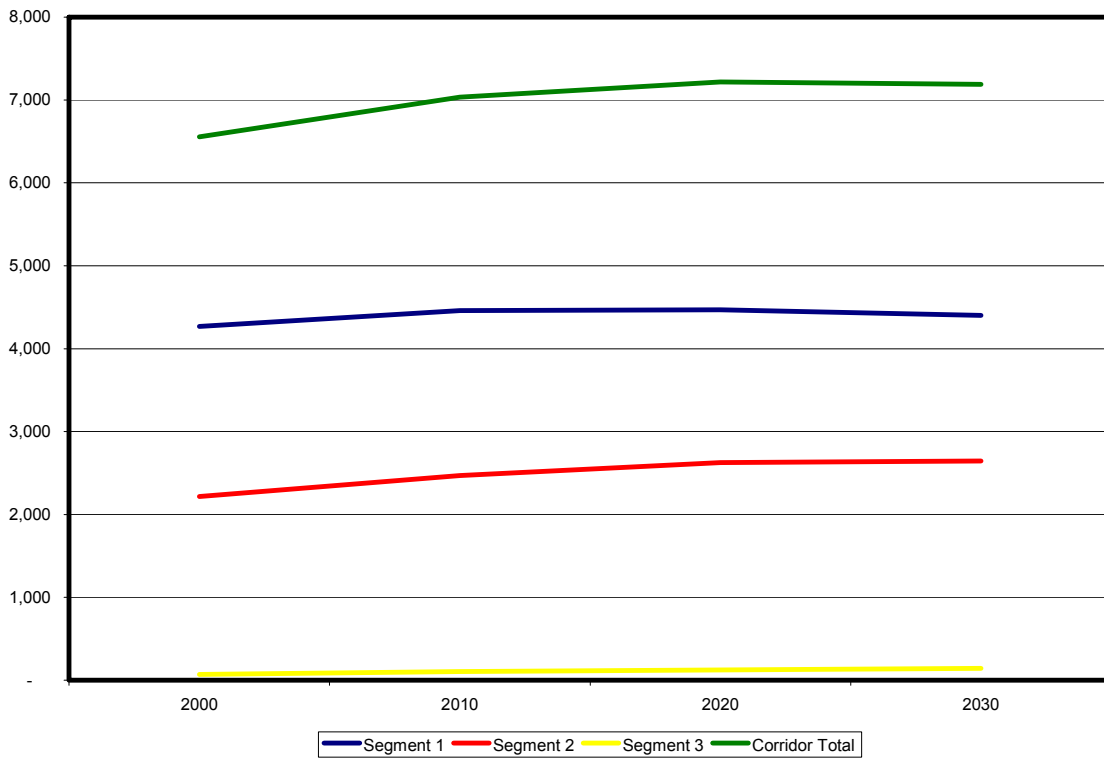
Low Income Household Forecasts

TABLE 10 – LOW INCOME HOUSEHOLD FORECAST

Corridor Section	Low Income Households			
	Year			
	2000	2010	2020	2030
1	4,270	4,459	4,469	4,400
2	2,215	2,470	2,626	2,645
3	70	105	124	143
Corridor Total	6,555	7,034	7,219	7,188
Wyandotte County	21,725	22,499	22,930	22,899
Kansas City MSA	158,861	183,848	212,511	226,870

Source: US Census, 2000 and MARC

FIGURE 3 – LOW INCOME HOUSEHOLD FORECAST



Source: US Census, 2000 and MARC

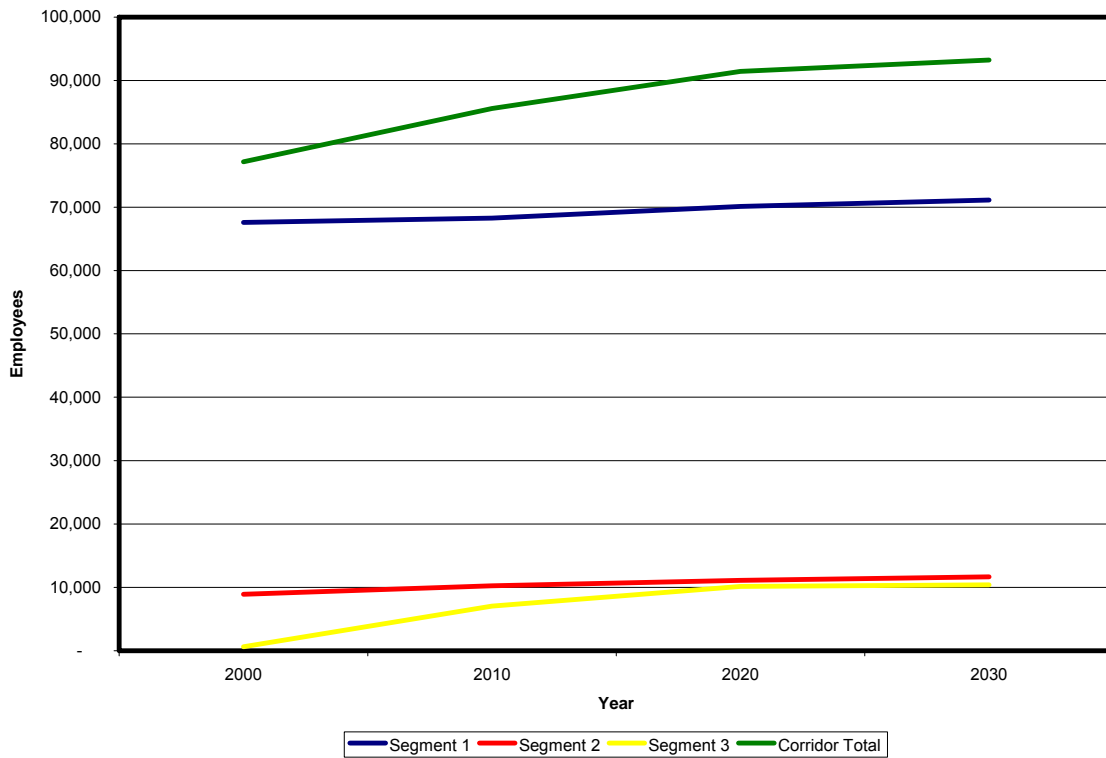
Employment Forecasts

TABLE 11 – EMPLOYMENT FORECAST

Corridor Section	Employment			
	Year			
	2000	2010	2020	2030
1	67,605	68,259	70,134	71,149
2	8,934	10,262	11,127	11,645
3	627	7,050	10,159	10,426
Corridor Total	77,166	85,571	91,420	93,221
Wyandotte County	94,594	104,745	114,368	118,454
Kansas City MSA	1,166,709	1,426,048	1,659,343	1,773,819

Source: US Census, 2000 and MARC

FIGURE 4 – EMPLOYMENT FORECAST



Source: US Census, 2000 and MARC

Current Transit Service

The State Avenue corridor study area is currently served by the following five bus routes;

Route #101 – Minnesota

Description

The Minnesota route operates in the State Avenue corridor study area between Downtown Kansas City, Missouri and the Indian Springs Transit Center, located at the former Indian Springs Shopping Center. The Minnesota route is shown in Figure 5. The route circulates through Downtown Kansas City, Missouri on 10th and 11th Streets between Broadway and Main terminating at the KCATA’s 10th & Main Transit Center. From Downtown KCMO the route travels west along 12th Street through the West Bottoms Industrial District and across the State line using James Street. The route then circulates through Downtown Kansas City, Kansas and continues westward along Minnesota Avenue to 38th Street. At 38th Street the route continues north to State Avenue and then terminates at the Indian Springs Transit Center.

FIGURE 5 - #101 MINNESOTA ROUTE



Service Span and Service Frequency

The Minnesota route operates Monday through Friday with a 30-minute service frequency between 5:30 a.m. and 6:30 p.m. and 60-minute frequency from 6:30 p.m. to 10:30 p.m. On Saturday, the frequency is 60-minutes between 6:30 a.m. and 6:30 p.m. There is no service on Saturdays after 6:30 p.m. and no service at all on Sundays.

Route length, Operating Speed and Travel Time

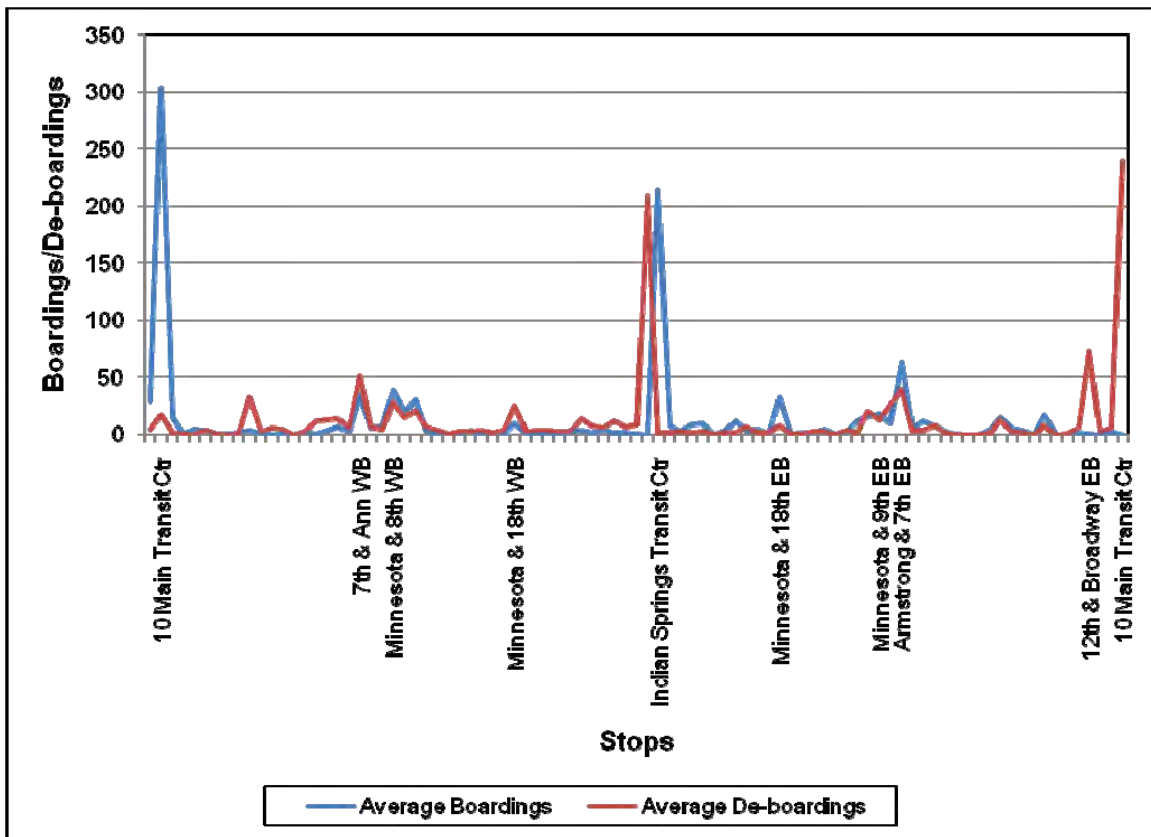
The total length of the route is approximately 8 miles. Weekday travel time between the two route termini varies by direction of travel and time of day. During the a.m. peak period the travel time is 34 minutes in the westbound direction and 35 minutes in the eastbound direction. In the p.m. peak period the travel time is 34 minutes in both directions. Midday travel time is 26 minutes in both directions and evening travel time is

27 minutes in both directions. Saturday travel time between the two termini is 34 minutes in the westbound direction and 32 minutes in the eastbound direction.

Ridership

Average weekday ridership on the Minnesota route is approximately 1,000. Average Saturday ridership is approximately 500. The highest number of boardings and de-boardings are at the transit centers on either end of the route and in Downtown Kansas City, Kansas where transfers with connecting routes occur. Figure 6 shows the average weekday boardings and de-boardings at each of the stops, with labels at the busiest stops. The ridership data comes from the KCATA automated passenger counting (APC) system.

FIGURE 6 – ROUTE 101 BOARDINGS/DE-BOARDINGS

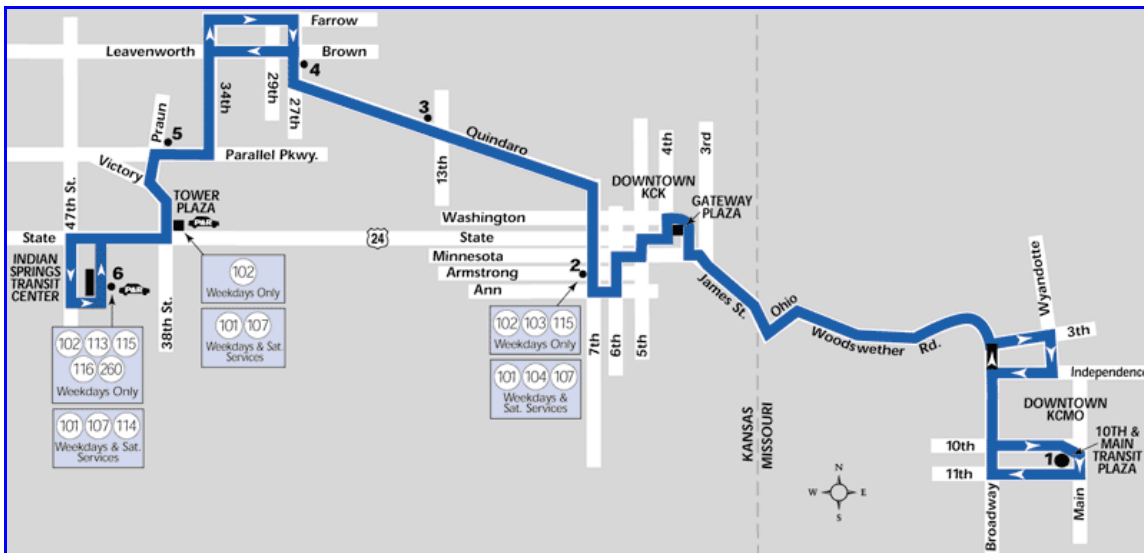


Route #106 - Quindaro

Description

The Quindaro route operates in the State Avenue corridor study area between Downtown Kansas City, Missouri and the Indian Springs Transit Center, located at the former Indian Springs Shopping Center. The Quindaro route is shown in Figure 7. The route circulates through Downtown Kansas City, Missouri on 10th and 11th Streets between Broadway and Main terminating at the KCATA's 10th & Main Transit Center. From Downtown KCMO the route travels west north Broadway circulating through the River Market area before continuing west on Woodswether Road into the West Bottoms Industrial District and across the State line using James Street. The route then circulates through Downtown Kansas City, Kansas and continues northward along 7th Street to Quindaro. At Quindaro the route continues west to 27th Street, north on 27th Street to Brown, west on Brown to Praun, south on Praun to State Avenue and then west on State Avenue to the route terminus at the Indian Springs Transit Center.

FIGURE 7 - #106 QUINDARO ROUTE



Service Span and Service Frequency

The Quindaro route operates Monday through Friday with a 30-minute service frequency between 4:30 a.m. and 7:00 p.m. and 60-minute frequency from 7:00 p.m. to midnight. On Saturday, the frequency is 60-minutes between 6:00 a.m. and 8:00 p.m. There is no service on Saturdays after 8:00 p.m. and no service at all on Sundays.

Route length, Operating Speed and Travel Time

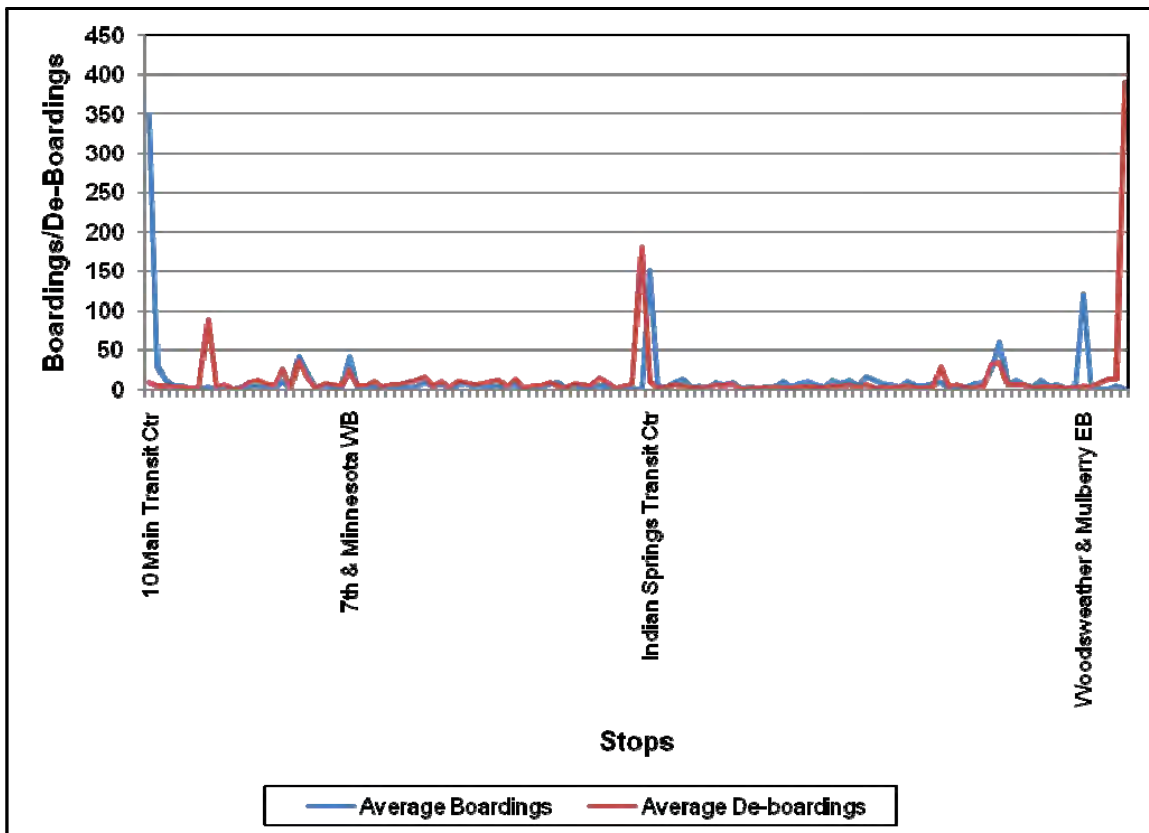
The total length of the route is approximately 11.5 miles. Weekday travel time between the two route termini varies by direction of travel and time of day. During the a.m. peak period the travel time is 49 minutes in both directions. In the p.m. peak period the travel

time is 50 minutes in the westbound direction and 48 minutes in the eastbound direction. Midday travel time is 43 minutes in the westbound direction and 42 minutes in the eastbound direction. Evening travel time is 40 minutes in both directions. Saturday travel time between the two termini is 45 minutes in the westbound direction and 44 minutes in the eastbound direction.

Ridership

Average weekday ridership on the Quindaro route is approximately 1,050. Average Saturday ridership is approximately 460. The highest number of boardings and de-boardings are at the transit centers on either end of the route and in Downtown Kansas City, Kansas where transfers with connecting routes occur. Figure 8 shows the average weekday boardings and de-boardings at each of the stops, with labels at the busiest stops. The ridership data comes from the KCATA automated passenger counting (APC) system.

FIGURE 8 – ROUTE 106 BOARDINGS/DE-BOARDINGS

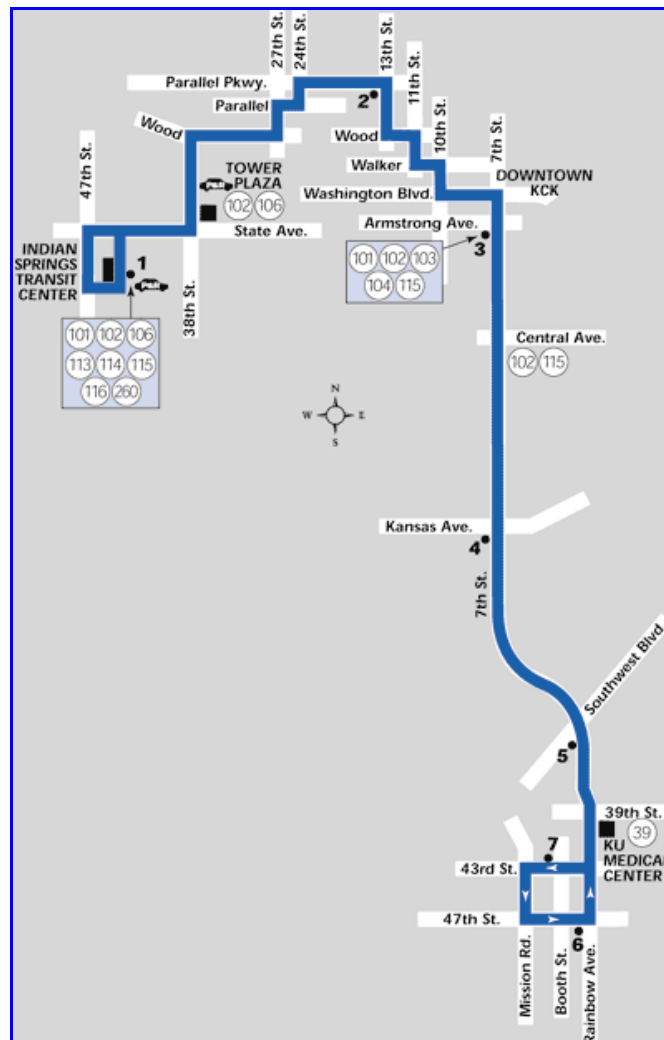


Route #107 – Seventh Street/Parallel

Description

The Seventh Street/Parallel route operates between the Kansas University Medical Center and the Indian Springs Transit center, located at the former Indian Springs Shopping Center. It operates in the State Avenue corridor study area between Downtown Kansas City, Kansas and the Indian Springs Transit Center. The Seventh Street/Parallel route is shown in Figure 9. The route circulates around the KUMC campus and then continues north on 7th Street to Downtown Kansas City Kansas. From Downtown KCK it continues westward along Washington Boulevard to 10th Street, north on 10th Street to Walker, west on Walker to 11th Street, north on 11th Street to Wood, west on Wood to 13th Street, north on 13th Street to Parallel Parkway, west on Parallel Parkway to 24th Street south on 24th Street to Parallel, west on Parallel to 27th Street, south on 27th Street to Wood, west on Wood to 38th Street, south on 38th Street to State Avenue and then west on State Avenue to the Indian Springs Transit Center

FIGURE 9 - #107 SEVENTH STREET/PARALLEL ROUTE



Service Span and Service Frequency

The Seventh Street/Parallel route operates Monday through Friday with a 30-minute peak service frequency and a 60-minute midday service frequency. Beginning at approximately 6:30 p.m. the route operates only between the KUMC campus and Downtown KCK with a 60-minute frequency from 6:30 p.m. to 11:00 p.m. On Saturday, the route operates only between the KUMC campus and Downtown KCK with a 60-minute frequency from 6:00 p.m. to 6:30 p.m. There is no service on Saturdays after 6:30 p.m. and no service at all on Sundays.

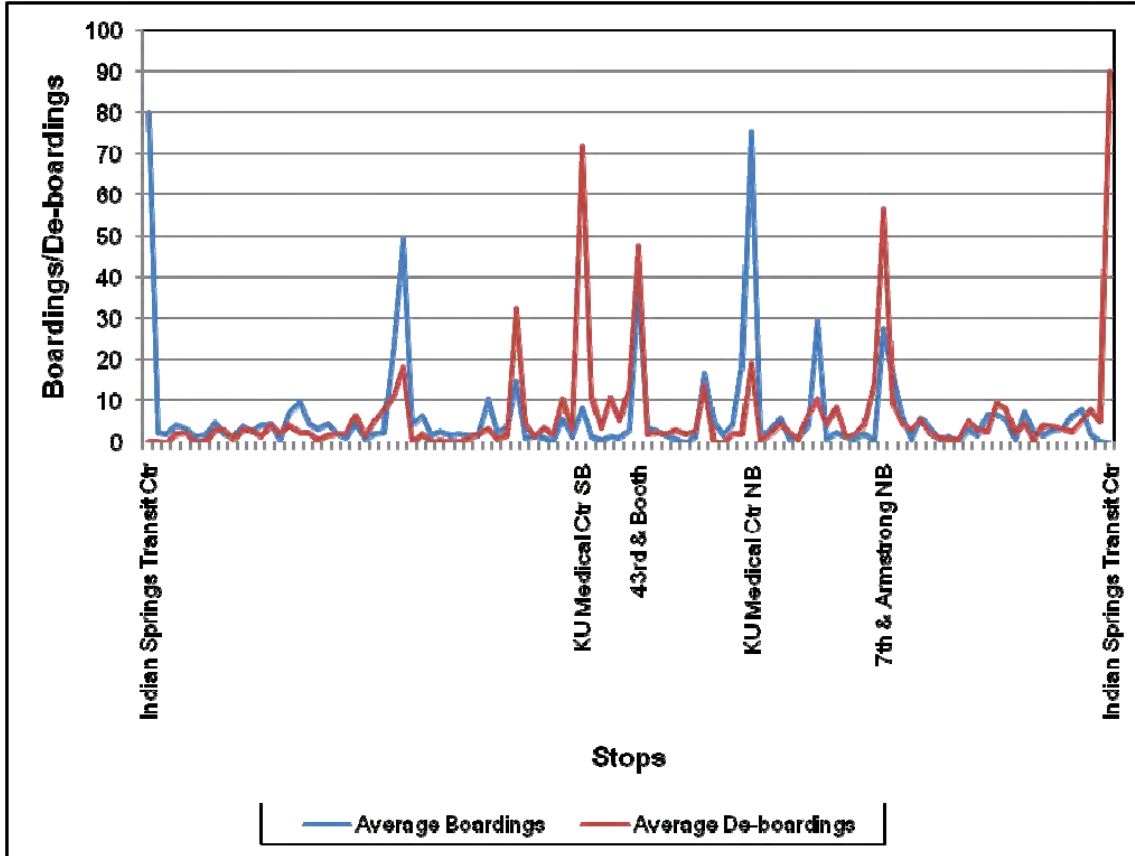
Route length, Operating Speed and Travel Time

The total length of the route is approximately 11.5 miles between the KUMC campus and the Indian Springs Transit Center, and 6 miles between the KUMC campus and Downtown KCK. Weekday travel time between the two route termini varies by direction of travel and time of day. During the a.m. peak period the travel time is 40 minutes in the northbound/westbound direction and 68 minutes in the eastbound/southbound direction. In the p.m. peak period the travel time is 41 minutes in the northbound/westbound direction and 61 minutes in the eastbound/southbound direction. Midday travel time is 40 minutes in the northbound/westbound direction and 61 minutes in the eastbound/southbound direction. Evening travel time is 20 minutes in the northbound/westbound direction and 38 minutes in the eastbound/southbound direction. Saturday travel time between the two termini is 21 minutes in the northbound/westbound direction and 37 minutes in the eastbound/southbound direction.

Ridership

Average weekday ridership on the Seventh Street/Parallel route is approximately 500. Average Saturday ridership is approximately 130. The highest number of boardings and de-boardings are at the Indian Springs transit center, the KU Medical Center and in Downtown Kansas City, Kansas where transfers with connecting routes occur. Figure 10 shows the average weekday boardings and de-boardings at each of the stops, with labels at the busiest stops. The ridership data comes from the KCATA automated passenger counting (APC) system.

FIGURE 10 – ROUTE 107 BOARDINGS/DE-BOARDINGS



Route #114 – State Avenue

Description

The State Avenue route operates in the State Avenue corridor study area between the Indian Springs Transit Center, located at the former Indian Springs Shopping Center, and the Village West retail/entertainment district. The State Avenue route is shown in Figure 11. From the Indian Springs Transit Center the route travels west along State Avenue to the Kansas City, Kansas Community College campus. After circulating through the campus, the route continues west on State Avenue to 82nd Street, north on 82nd Street to Parallel, west on Parallel to the Providence Medical Center, south on 90th Street to State Avenue and west on State Avenue to Village West, where it circulates through the district.

FIGURE 11 - #114 STATE AVENUE ROUTE



Service Span and Service Frequency

The State Avenue route operates Monday through Friday with a 30-minute service frequency between 5:30 a.m. and 6:30 p.m. and 40-minute frequency from 6:30 p.m. to 10:30 p.m. On Saturday, the frequency is 40-minutes between 6:00 a.m. and 7:15 p.m. There is no service on Saturdays after 7:15 p.m. and no service at all on Sundays.

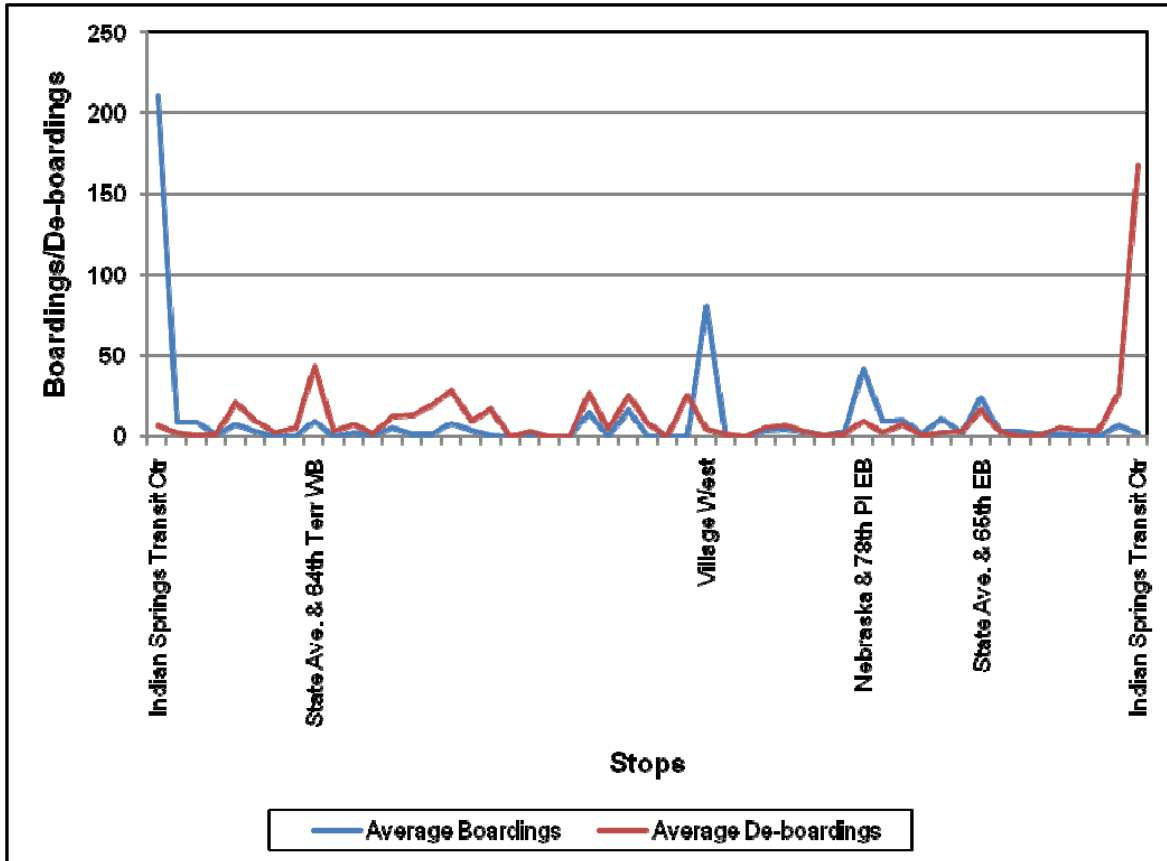
Route length, Operating Speed and Travel Time

The total length of the route is approximately 9 miles. Weekday travel time between the two route termini varies by direction of travel and time of day. During the a.m. peak period the travel time is 49 minutes in both directions. Travel time during the weekday is 30 minutes in the eastbound direction and 25 minutes in the westbound direction. Evening travel time is 30 minutes in the eastbound direction and 35 minutes in the westbound direction. Saturday travel time between the two termini is 30 minutes in the eastbound direction and 35 minutes in the westbound direction.

Ridership

Average weekday ridership on the Seventh State Avenue route is approximately 500. Average Saturday ridership is approximately 225. The highest number of boardings and de-boardings are at the Indian Springs transit center, Village West and at a shopping center at 65th & State Avenue. Figure 12 shows the average weekday boardings and de-boardings at each of the stops, with labels at the busiest stops. The ridership data comes from the KCATA automated passenger counting (APC) system.

FIGURE 12 – ROUTE 114 BOARDINGS/DE-BOARDINGS

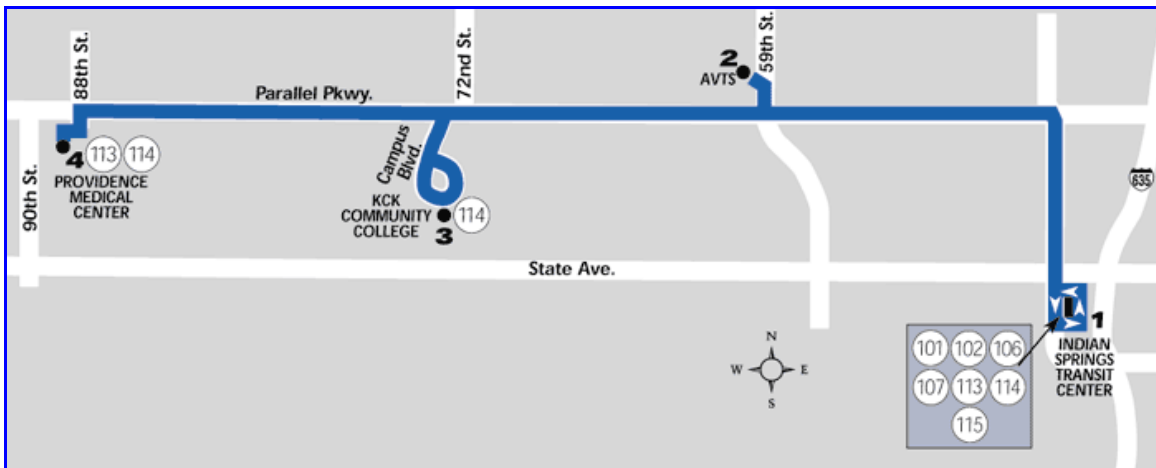


Route #116 – West Parallel

Description

The West Parallel route operates in the State Avenue corridor study area between the Indian Springs Transit Center, located at the former Indian Springs Shopping Center, and the Providence Medical Center. The West Parallel route is shown in Figure 13. From the Indian Springs Transit Center the route travels north along 47th Street to Parallel Parkway and then west on Parallel Parkway to the Kansas City, Kansas Community College campus. After circulating through the campus, the route continues west on Parallel Parkway to 88th Street and then south on 88th Street to Providence Medical Center.

FIGURE 13 - #116 WEST PARALLEL ROUTE



Service Span and Service Frequency

The West Parallel route operates Monday through Friday from 6:00 a.m. to 7:00 p.m. with a 60-minute service frequency. There is no weekday evening, Saturday or Sunday service.

Route length, Operating Speed and Travel Time

The total length of the route is approximately 7 miles. Travel time during the weekday is 26 minutes in the westbound direction and 28 minutes in the eastbound direction.

Ridership

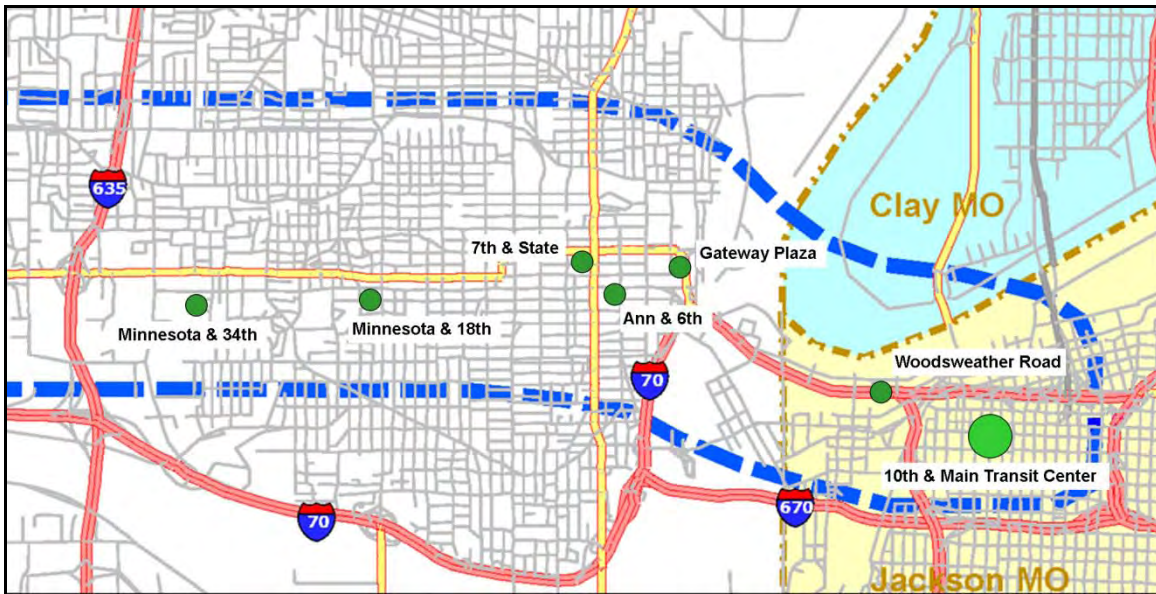
Average weekday ridership on the West Parallel route is approximately 125. Stop level boarding/de-boarding data was unavailable for this route.

Existing Transit Facilities & Infrastructure

Existing transit facilities and infrastructure supporting transit services in the corridor study area include transit centers, sheltered stops and non-sheltered stops. There are no fixed-guideway elements (i.e. bus only lanes) and there is no technology infrastructure (i.e. traffic signal priority). Maps 10A, 10B and 10C show the location of the facilities in the corridor.

Segment 1 transit facilities and infrastructure

MAP 10A – SEGMENT 1 TRANSIT FACILITIES & INFRASTRUCTURE



Transit Centers

10th & Main Transit Center

The 10th & Main Transit Center is owned and operated by the Kansas city, Area Transportation Authority. It is located in the heart of the Kansas City, Missouri central business district (see figure 14). The 10th and Main Transit Center is the primary hub of the regional transit system and serves as an eastern terminus for both the #101-Minnesota and the #106 Quindaro routes (described above). Linkages between the State Avenue corridor and other parts of the region occur at this location.

The facility encompasses an area of approximately 22,500 square feet. It provides sheltered waiting areas for transit patrons in an attractively landscaped environment. The facility can accommodate up to five transit coaches at off-street boarding sites and five at boarding sites on its perimeter. Amenities provided include informational kiosks, lighting, trash receptacles, public art displays, restroom facilities for transit employees and inter-city bus connections.

FIGURE 14 – 10TH & MAIN TRANSIT CENTER



Sheltered Stops

There are six sheltered bus stops located in segment 1 of the corridor (see figures 15 – 20). Following is a description of each.

Woodsweather Road

This stop is located on the south side of Woodsweather Road in the “West Bottoms” industrial district. It includes a shelter structure and bench situated on a concrete pad and a trash receptacle. There is an absence of sidewalks in the area, which makes pedestrian access somewhat difficult.

FIGURE 15 – WOODSWEATHER RD. SHELTERED STOP



Gateway Plaza

This stop is located on the southwest corner of the Gateway Plaza office building. It includes a shelter structure and bench situated on a concrete pad.

FIGURE 16 – GATEWAY PLAZA SHELTERED STOP



Ann and 6th Street

This stop is located on Ann Street at the northeast corner of the intersection of Ann and 6th Street. It includes a shelter structure and bench situated on a concrete pad and a trash receptacle.

FIGURE 17 – ANN & 6TH SHELTERED STOP



7th Street & State

This stop is located on west side of 7th Street roughly mid-block between Minnesota Avenue and State Avenue. It includes a shelter structure and bench situated on a concrete pad and a trash receptacle.

FIGURE 18 – 7TH & STATE SHELTERED STOP



Minnesota & 18th Street

This stop is located on Minnesota Avenue at the southwest corner of the intersection of Minnesota and 18th Street. It includes a shelter structure and bench situated on a concrete pad.

FIGURE 19 – MINNESOTA & 18TH SHELTERED STOP



Minnesota & 34th Street

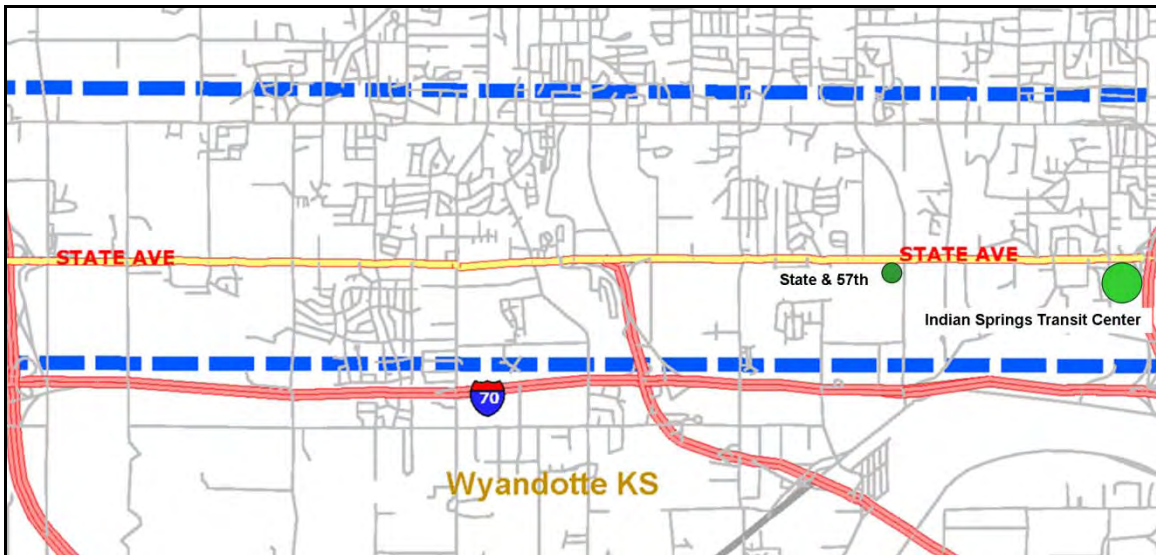
This stop is located on Minnesota Avenue at the southwest corner of the intersection of Minnesota and 34th Street. It includes a shelter structure and bench situated on a concrete pad.

FIGURE 20 – MINNESOTA & 34TH SHELTERED STOP



Segment 2 transit facilities and infrastructure

MAP 10B – SEGMENT 2 TRANSIT FACILITIES & INFRASTRUCTURE



Transit Centers

Indian Springs Transit Center

The Indian Springs Transit Center is located adjacent to the former Indian Springs Shopping Center. Accommodations for up to seven transit coaches exist by taking advantage of existing infrastructure associated with the former Mall. Amenities are limited and include only a single bus shelter, trash receptacle and limited route informational signage. There is an absence of lighting and very limited landscaping (see figure 21).

FIGURE 21 – INDIAN SPRINGS TRANSIT CENTER



Sheltered Stops

There is one sheltered bus stop located in segment 2 of the corridor (see figure 22). Following is a description of this stop.

State & 57th Street

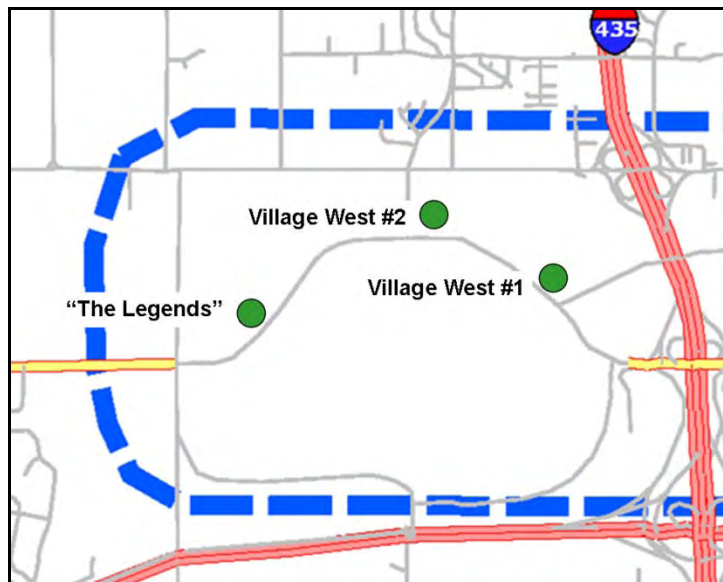
This stop is located on State Avenue at the southwest corner of the intersection of State and 57th Street. It includes a shelter structure and bench situated on a concrete pad.

FIGURE 22 – STATE & 57TH SHELTERED STOP



Segment 3 transit facilities and infrastructure

MAP 10C – SEGMENT 3 TRANSIT FACILITIES & INFRASTRUCTURE



Transit Centers

None

Sheltered Stops

There are three sheltered bus stops located in segment 3 of the corridor (see figures 23 – 25). Following is a description of each.

Village West #1

This stop is located on the northeast side of Village West Parkway between Cabela Drive and France Family Drive. It includes a shelter structure and bench situated on a concrete pad that mimics the architectural theme of the surrounding development. The stop also includes a trash receptacle and an informational kiosk.

FIGURE 23 – VILLAGE WEST SHELTERED STOP #1



Village West #2

This stop is located on the northeast side of Village West Parkway between France Family Drive and Prairie Crossing. It includes a shelter structure and bench situated on a concrete pad that mimics the architectural theme of the surrounding development. The stop also includes a trash receptacle and an informational kiosk.

FIGURE 24 – VILLAGE WEST SHELTERED STOP #2



The Legends

This stop is located on the northeast side of Village West Parkway between Sunflower Lane and Stadium Parkway. It includes a shelter structure and bench situated on a concrete pad that mimics the architectural theme of the surrounding development. The stop also includes a trash receptacle and an informational kiosk.

FIGURE 25 – “THE LEGENDS” SHELTERED STOP



Recent and Projected Future Development

Corridor Segment 1 (Downtown KCMO to I-635)

Significant development activities include:

- Sprint Arena
- Power & Light Entertainment District
- Bartle Hall Convention Center Ball Room
- H & R Block Headquarters

Corridor Segment 2 (I-635 to I-435)

Significant development activities include:

- Indian Springs Redevelopment (Planned)
- Lowe's
- Salvation Army

Corridor Segment 3 ((I-435 to 110th Street)

Significant development activities include:

- Cabela's
- Great Wolf Lodge
- Nebraska Furniture Mart
- The Legends
- Community America Ballpark
- Target
- JC Penney's
- Schlitterbahn Waterpark
- Casino/Convention Center (Planned)

Public Input on Transit Needs

The public involvement process provided an opportunity for stakeholders representing the transit providers, transit users, public officials and the business community to have full and equal access to the planning process. Public input on transit needs was obtained in a number of ways to ensure full opportunity for input into the planning process. Input was obtained through the following activities:

Study Team

The Study Team is comprised of officials from the Unified Government of Wyandotte County, the Kansas City Area Transportation Authority, the Mid-America Regional Council, and the Kansas Department of Transportation. The Study Team provided coordination and guidance in the development of the study.

Advisory Committee

A series of Advisory Committee Meetings were held to discuss the purpose and opportunities provided by the study and to provide input on transportation needs. A list of the members of the Advisory Committee and meeting summaries are provided in the Appendix.

Public Meetings

A public meeting was held on October 9th, 2007 to discuss transit needs in the corridor. The meeting was attended by approximately 90 persons.

Transit needs identified included:

- Greater span of service (night service, weekend service)
- More frequent service
- Better regional connectivity of service
- Faster travel time
- More direct access to activity centers
- Better stop and station amenities

A list of input provided at the public meeting is included in the Appendix.

Project Purpose and Need

Working with project stakeholders, project goals and objectives were defined. A purpose and need statement was prepared to establish the need for the study and identify problems to be addressed by transportation improvements considered as part of the study process. The purpose and need statement reflects project goals and objectives. The purpose and need statement will provide the initial background information for developing evaluation measures.

Purpose of the Project

To provide safe and effective transportation alternatives for residents, workers and visitors traveling within the corridor in a way that improves access, supports the environment and promotes economic investment in the community.

Summary of Transportation Needs

Existing and future baseline conditions and development trends for the State Avenue Corridor were described in previous sections of this report. The analysis included a summary of the character of the corridor in terms of land use density, income and vehicle ownership and major travel destinations. Also described were existing transit service levels. Following is a summary of findings.

Population – shows slow but steady population growth

Employment – strong employment growth, in retail and office sectors. Office growth primarily downtown, retail growth primarily in west part of corridor. Village West has emerged as a regional tourism and retail destination. Two strong anchors on each end of the corridor, with the Kansas City, Missouri and Kansas City, Kansas CBDs located at the eastern end of the corridor and Village West and adjacent development located at the west end of the corridor.

Density – density is highest in eastern portion of the corridor and becomes less dense moving to the west.

Low income – high concentrations of low income households located in the corridor. Highest concentrations are in the eastern portion of the corridor.

Auto ownership – correlates with income. There are concentrations of high transit dependent populations in the corridor, with the highest concentrations in the eastern portion.

Major destinations – In addition to the activities located in Village West and Downtown, other major activity centers which need transit access include the Kansas City, Kansas Community College, Providence Medical Center, as well as other destinations described in the previous sections.

Current transit service and accessibility is provided but at a base level. Transit travel times for the length of the corridor are over 60 minutes while auto travel times are less than 30 minutes. Connectivity between activity centers in the corridor often requires a transfer at the Indian Springs Transfer Center.

Connectivity to regional system – Connections to the regional transit system are made in Downtown Kansas City, Missouri. The travel times for transit trips are typically well over an hour long and a number of destinations outside the State Avenue Corridor, such as

destination in Johnson County, Platte County, Clay County or suburban Jackson County take well over an hour or cannot be reached at all.

Transit stops and transfer centers lack amenities, are uncomfortable and in some cases lack the supportive pedestrian features such as sidewalks that would allow improved access to transit.

Goals and Objectives

Transit efficiency and competitiveness

Reinforce the significance of the corridor as the major spine of the Wyandotte County transit system by providing efficient connections from neighborhoods and to activity centers in the corridor

Objectives

- Significantly improved transit travel times for major trip movements.
- Improve the area provided transit service
- Increase the frequency of service
- Increase the service span of service to include evenings and weekends
- Improve route information (provide real time information)

Transit service quality

Provide transit facilities in the corridor that that will attract additional transit users and reinforce the significance of the corridor as the major spine of the Wyandotte County transit system.

Objectives

- Provide convenient stops
- Accommodate bicycle users
- Maximize the potential for bus transfer access
- Provide vehicles which are reliable, comfortable and safe

Land Use

Support transit service in the corridor with land use policies.

Objectives

- Provide opportunities for transit oriented development.
- Maximize the potential for walk access
- Provide service consistent with the community's master plan

Connectivity

Improve connections from the corridor to other regional transit systems.

Objectives

- Provide a system that is well-integrated with other transit systems serving the Kansas City region
- Provide opportunities for access to the system for persons located outside the corridor by providing park and ride lots or other strategies.
- Develop transit center facilities that provide safe and convenient locations for connections between various transit and other transportation modes.

Access

Provide transit service in the corridor that enables all persons regardless of vehicle availability to be able to access services and to participate in the regional economy.

Objectives

- Provide reliable, attractive alternatives to the automobile, including off-peak periods
- Accommodate persons with disabilities
- Provide sidewalks for walk access transit users
- Connect neighborhoods with employment centers, medical facilities and to other services.

Growth

Provide transit infrastructure in the corridor to support long-term sustainable growth in Wyandotte County.

Objectives

- Promote business and job creation by providing transportation options to major job and activity centers
- Locate transit service in a way as to enhance the vitality of business districts and activity centers
- Enhance Wyandotte County's place in the regional economy by connecting major activity centers.

Cost

Demonstrate responsible stewardship of public funding for transit in the corridor.

Objectives

- Identify a system that includes transit elements that have the potential to be funded with a mix of local, federal and state funding.
- Develop a system for which the capital and operating costs are reasonable, based on the benefits provided.

Environment

Support a healthy environment within the corridor.

Objectives

- Develop a transit alternative that will improve or maintain air quality and noise standards
- Minimize the impacts from construction and operations.

Transit Alternatives Definitions

Enhanced Bus

Enhanced bus service would include additional buses during peak periods in order to offer increased service frequency. Enhanced bus service would provide additional frequency of service to existing routes. This alternative creates a new route along state avenue route that essentially combines the two existing routes 101 and route 114 such that a rider would not require a transfer traveling from the CBD to a terminus at Village West. Thus, providing a “one-seat ride” from downtown CBD’s to the western terminus.

The Alignment would remain primarily along State Avenue from Indian Springs Transfer center west. From Indian Springs Transit Center East, the alignment could run on either State Avenue or Minnesota depending on congestion conditions that may compromise schedule reliability. A variation of this could be a couplet concept where State Avenue is westbound bus transit and Minnesota would provide for eastbound directional transit. This assumes that the walk access is less than 300-400 foot to directional stations. This alignment would also remove certain extensive out of direction routing such as the community college.

Modal Technology: The mode or vehicle type would remain the current fleet buses of 30 -40 foot length with some modest upgrades to cleanliness and fleet size. As vehicles are retired, replacement vehicles could be purchased that could include low floor, hybrid propulsion, etc....

Service Plan - would link the existing stops that are currently serviced by both routes
The service of this alternative would include more frequent headways and a longer service span. As such, these operational expansions would likely replace in whole the two routes currently running. Headways of 15 minutes at peak and 20-25 minutes during off-peak periods would be initially assessed. The peak headways would reflect forecasted demand while the off-peak headways would likely be established as a determinate policy.

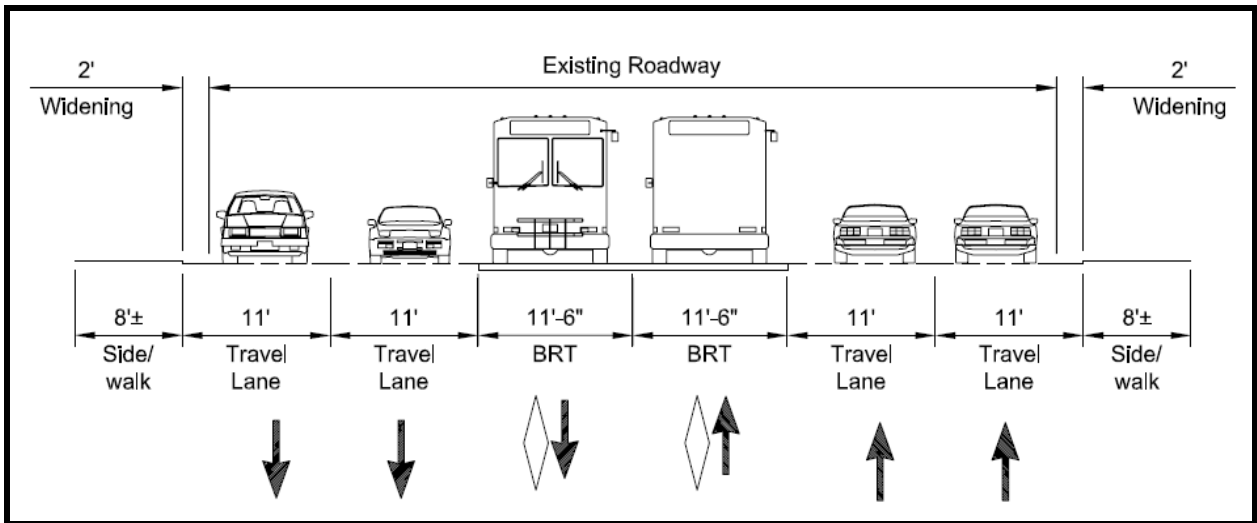
Bus Rapid Transit (BRT) - Exclusive lane

This BRT Alternative includes exclusive guideways; intelligent transportation system (ITS) treatments; simplified fare payment methods; special branded vehicles; and passenger stations with increased amenities. This alternative – through the use of Transit Signal Priority (TSP) strategies would include modifying existing signals with extended green time and queue jumps to optimize and to reduce transit travel time, improve transit system reliability, and increase services to transit markets.

Stations would be consist of 60 foot long platforms as either a single island station in the median or split stations located at either side of signalized intersections.

The BRT exclusive lane alternative would operate in a 13.6 mile exclusive center running guideway between the proposed park and ride /transit center at West Village shopping center and a proposed transit center at 7th street of KCK CBD. The proposed alignment would continue eastward for another 2.4 miles on the I-70 viaduct to make a connection to the rapid transit system on main Street downtown KCMO as the eastern terminus.

FIGURE 26 – BRT EXCLUSIVE LANE TYPICAL STREET PROFILE



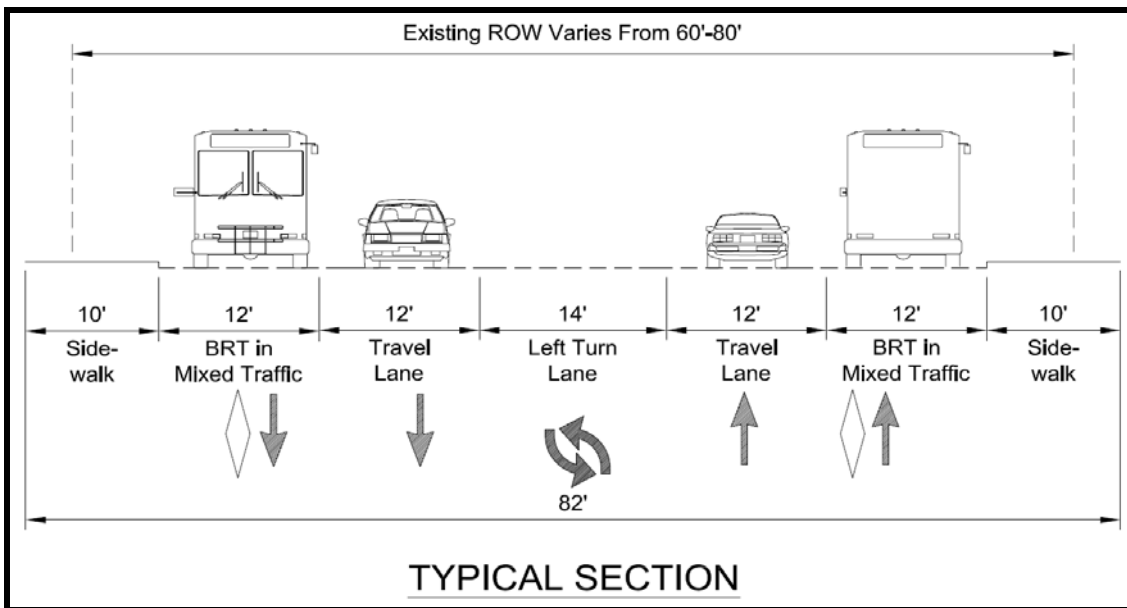
Bus Rapid Transit (BRT) – Mixed Traffic

This alternative consists of a BRT branded vehicle that used the curb side lane and mixes with general purpose traffic. In general, this Alternative of BRT would not include dedicated bus lanes. However, in areas of localized right of way constraints or bottlenecks of general vehicle congestion, short lengths of a dedicated bypass lane may be constructed in order to reduce maintain schedule reliability. Also, this alternative would employ the Transit Signal priority (TSP) strategies. Transit Signal Priority (TSP) strategies would be installed where needed and would include modifying existing signals with extended green time and queue jumps to optimize and to reduce transit travel time, improve transit system reliability, and increase services to transit markets.

Stops or stations would be spaced at a distance of 1/4 mile or more. Prototypical stations would be larger, would have a distinctive look or feel and have more customer amenities than current stations.

Modal Technology: A 40 foot or 60 foot articulated vehicle would be procured with a new branding program that identifies this route/service as “distinct” and “different” from existing fixed route service in the region. This branding would likely be of similar identity and level of investment of the south town BRT currently in service in KCMO.

FIGURE 27 – BRT MIXED TRAFFIC TYPICAL STREET PROFILE



Light Rail Transit (LRT)

This alternative would invest in a fixed guideway used exclusively by a Light Rail Vehicle (LRV) and operates in the median of State Avenue. Stations would consist of 200 foot long platforms as either a single Island Station in the median or split stations located at either side of a signalized intersection. Out of direction alignments The rail alignment would not diverge out of the median to into Transit centers at Indian Springs, community college and – but instead would remain in the median of State Avenue requiring bus, walk and park and ride transfers to and from LRT stations.

Alignment: The LRT alternative would have a western terminus ideally centered in the Village West shopping center, with a transfer facility for Buses. Substantial park and ride stalls would be available. The LRT would traverse the I-70 viaduct to make a connection to the rapid transit system downtown KCMO as the eastern terminus. Length of

alignment: 13.6 miles from Village West to Downtown, KCK and approximately 2.4 miles from Downtown KCK to Downtown KCMO. Total alignment length: 16.0 miles.

Technology: Electrical powered LRT vehicles – new generation low floor type either a single (90 foot) LRV or two car consists (186 ft length) - would transport riders through the corridor depending on peak hour ridership. Vehicles propulsion could be either of two types: overhead catenary contact wire providing current to the electric motors or LRV with self-propelled diesel-generator propulsion systems.

Service span, and frequency would reflect that of the BRT exclusive lane alternative.

FIGURE 28 – LIGHT RAIL TYPICAL STREET PROFILE A

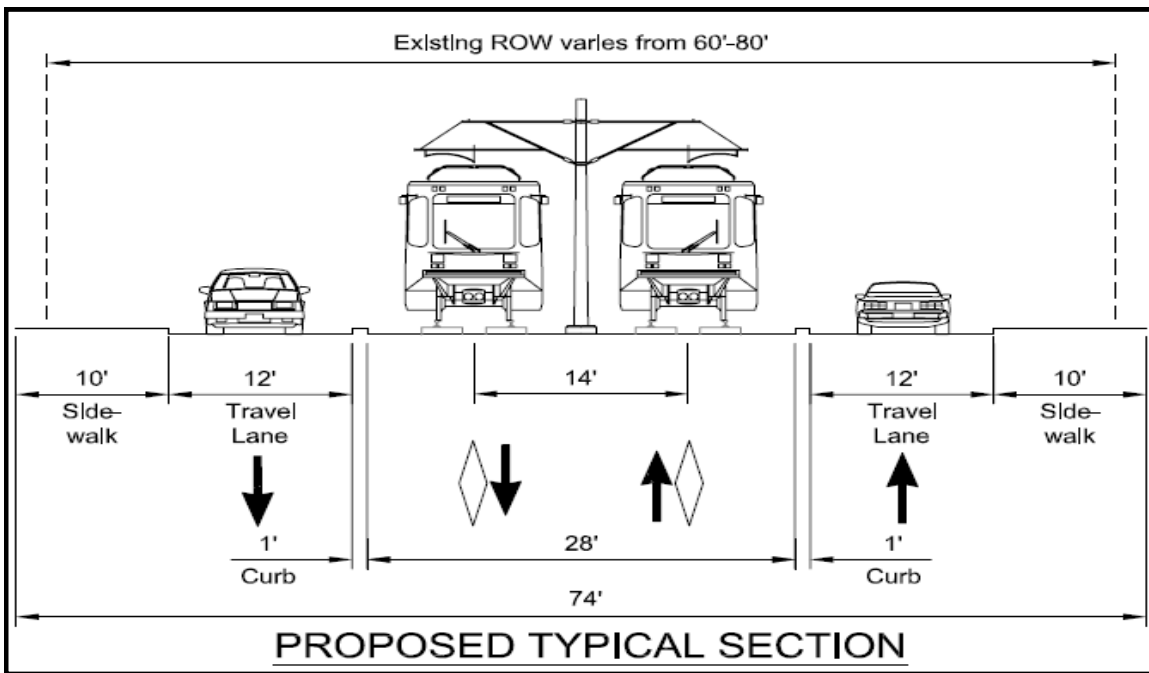
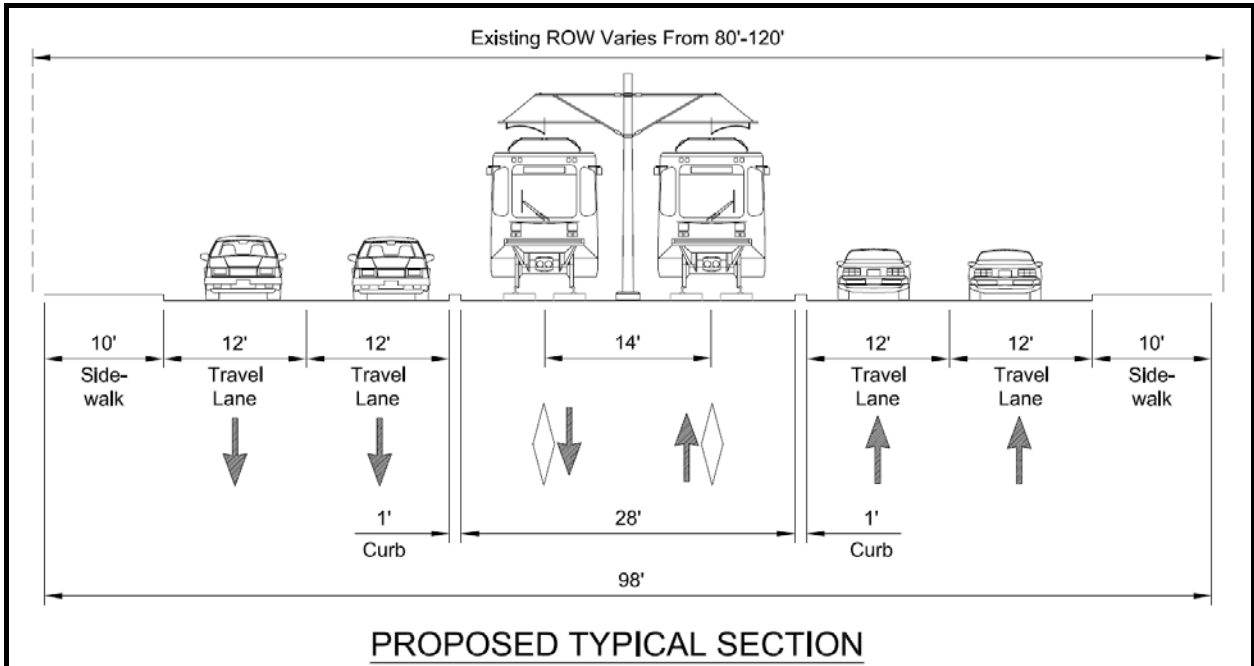


FIGURE 29 – LIGHT RAIL TYPICAL STREET PROFILE B



Express Bus – I-70

This alternative provides an express bus on general purpose (GP) lanes or localized managed lanes on the I-70 freeway. This operation of this alternative would perform as a high speed corridor with substantially fewer stops or stations than the other alternatives in this study.

The western terminus is located at Village West shopping center with stops at KCK CBD (approx 5th street), and terminate at a transfer at KCMO CBD (approx main street).

The alignment, assuming eastbound, would originate in the Village West, at a transit center, access I-70 in mixed general purpose traffic on-ramp and remain on I-70 eastbound to I-635 north, exit at State Avenue and go to transit station at Indian Springs Mall site, then return to Eastbound I-70 via southbound I-635. The bus would exit from I-70 on 5th Street to serve a proposed transit center within the KCK CBD and return back onto I-70 on the intercity viaduct to exit to terminate at Main Street KCMO CBD. In locations of historical peak hour congestion along I-70, the express bus would move to the shoulder lane and proceed as a “bus on shoulder” (BOS) operational protocol that allows this when general purpose traffic is moving at less than 35 mph.

Initial Screening of Transit Alternatives

Evaluation of Range of Potential Transit Alternatives – Initial Screening

The State Avenue Transit Corridor Study is a comprehensive study effort that will evaluate and recommend a high capacity transit system to serve the travel needs of State Avenue corridor residents. The final system plan will be based on a detailed assessment of HCT modes in the most promising HCT corridors in the county.

In this initial evaluation process, transit alternatives which are comprised of mode, alignment and service or operations are screened. The evaluation screens a broad list of conceptual alternatives to determine their transportation system benefits and financial feasibility for the region. The purpose of this initial screening is to narrow the range of potential transit alternatives to those that have the most promise to meet the initial and long-range travel needs of western Kansas City, Kansas residents.

Screening Criteria

The differences between alternatives/modes/service are sometimes minor, and reflect continuums of options rather than discrete, uniformly grouped characteristics. In general, this initial screening will be based on fatal flaws or other characteristics that would limit the ability of the alternative to address the study's purpose and goals/objectives statements.

For this initial screening, the following evaluation criteria are applied:

- *Satisfies Study Purpose and Goals* – Consideration of the effectiveness of the mode in meeting the study purpose and the goals as identified previously.
- *Transit Efficiency* – Assessment of whether the alternative would potentially provide reduction of travel times, increase service frequency and provide schedule reliability. A qualitative assessment taken from other similar transit systems successfully implemented and operational anywhere in the U.S.
- *Economic Development* – A qualitative assessment of the potential for economic development along the corridor and potential for TOD.
- *Capital Costs* – Range of capital costs for constructed comparable systems. [Source: National Transit Database, PB, and other Agencies]. Based on range of capital costs for constructed systems, costs have been grouped in general low-medium-high categories.
- *Connectivity* - A qualitative assessment of how the alternative supports connections to or has the potential to connect employment, medical, and activity centers.
- *Land Use Compatibility* – A qualitative assessment of integration of land use with transportation as measured by existing densities that can support the mode.

Summary of Findings

A total of five (5) alternatives were evaluated in the initial screening process:

- (1) Enhanced Bus, (2) Bus Rapid Transit (exclusive lanes), (3) Bus Rapid Transit (mixed traffic), (4) Light Rail, and (5) Express Bus on freeway.

The following summarizes the significant issues (fatal flaws) for each alternative. A mode that fails in a significant way to meet the goals and purposes of the study (as identified elsewhere) is said to have a fatal flaw. An understanding of the fatal flaws will lead to the narrowing down of alternatives that are most viable for the study.

- Light rail – high capital costs severely limits financial feasibility of this mode. (capital cost in the \$40Mil - \$65Mil range). Does not satisfy project goals with respect to costs thereby making this issue a fatal flaw in the mode analysis. This mode also performs poorly in terms of land use compatibility because the low densities along the State Avenue are not conducive to light rail.
- Express Bus Transit – this mode does not address the issue of connectivity as identified in the study purpose and goals statement thereby making this issue a fatal flaw in the mode analysis. Limited stations and no possibility of direct connections to the hospital, community college or other work destinations along the corridor. This mode also performs poorly against economic development (no potential for TOD) and land use compatibility (no land use integration); low potential for FTA funding.

The remaining modes do not possess any fatal flaws but have other obvious strengths/weaknesses that are discussed below:

- Enhanced Bus – this alternative performs well against most screening criteria. This mode gets a medium ranking in the purpose and goals criteria since it partially address the issue of congestion as it has to operate completely in mixed traffic. Enhanced bus gets a high rating in the land use compatibility criterion because the low densities in the corridor are moderately supportive of this mode. However it gets a low rating for TOD development due much to the remaining stigma of how developers view bus transit in general. It maybe mentioned that enhanced bus has the potential for incremental improvement to a BRT system.
- Bus Rapid Transit (exclusive lane) – this mode performs well against most screening criteria. BRT gets a medium rating in terms of cost because there are many instances where additional right of way will be required in order to maintain the current two lanes each direction of general purpose lanes. This cost can be reduced if this alternative develops to one such that the corridor can function with only one lane of general purpose traffic each way. It has good potential for economic development due to the preservation of and investment in a dedicated guideway when compared to BRT in mixed traffic and enhanced bus.
- Bus Rapid Transit (mixed traffic) – this mode performs well against most screening criteria. The weakness is in the economic development criterion which gets a low rating because this mode operates mostly in mixed traffic and there is limited scope

for TOD around regular bus stops. It maybe mentioned that BRT – mixed traffic has the potential for incremental improvement to BRT – exclusive lanes.

Rating Methodology

For each of the evaluation criteria, levels of “ratings” were developed as follows:

- Most adverse impacts or least appropriate
- Moderate impacts or appropriateness
- Minimal adverse impacts or most appropriate

The ratings defined for each criterion are listed below.

Satisfies Purpose and Goals Statement

- Fails in a significant way to meet one or more study purpose/goals
- Partially addresses one or more study purpose/goals
- Meets study purpose/goals in a broad sense

Transit Efficiency

- Very limited or small incremental potential improvement due to existing congestion.
- Moderate level of improvement with similar implementation within in the U.S.
- High potential for similar results when compared to similar implementation within in the U.S.

Economic Development

- Low potential for economic development, TOD
- Moderate potential for economic development, TOD
- High potential for economic development, TOD

Typical Capital Costs (2007 \$)

- Greater than \$25 million/mile
- \$5 - \$25 million/mile
- Less than \$5 million/mile

Connectivity

- Alternative not able to make direct connections with corridor destinations or has substantial out of direction routing.
- Alternative moderately able to make direct connections with corridor destinations
- Alternative able to make direct connections with corridor destinations

Land Use Compatibility

- Alternative not compatible with existing densities and surrounding land uses
- Alternative moderately compatible with existing densities and surrounding land uses
- Alternative compatible with existing densities and surrounding land uses

Comparison of Alternatives

Table 12 summarizes the results of the rating methodology as applied to the five Transit alternatives.

TABLE 12 – COMPARISON OF ALTERNATIVES SUMMARY

Evaluation Category:	Satisfies Purpose and Goals	Transit Efficiency	Economic Development	Cost	Connectivity	Land Use Compatibility
Criteria:	Addresses the purpose and need and major goals of the study	Improve transit travel times, service frequency & schedule reliability	Spur business growth and job creation along corridor	Capital Cost	Connect neighborhoods, other transit & employment centers	Integration of Land Use and Transportation
Measure:	Fails in a significant way to meet one or more study purpose/goals	Potential for time savings and headway improvement from similar transit systems	Increase potential for economic development	Average Cost per Mile	Reduction of transfers, connections to regional transit	Typical Land Uses that Support Mode Compared to Existing Densities in Wyandotte Co.
Enhanced Bus	◐	◐	○	●	◐	●
BRT – Mixed Traffic	●	◐	◐	●	◐	●
BRT - Exclusive lanes	●	●	●	◐	◐	◐
Light Rail	◐	◐	●	○	◐	◐
Express Bus	○	●	○	●	○	◐

Conclusion

As illustrated in Table 12 above, BRT – Exclusive Lanes and BRT – Mixed Traffic are the two alternatives that come closest to meeting all of the evaluation criteria. Perhaps the most significant difference between these two alternatives lies with the capital cost associated with the development of each.

The BRT – Exclusive Lane alternative involves fairly extensive roadway improvements and likely would require some right-of-way acquisition. In addition, stations, ITS elements and system related enhancements would be at the highest level of all of the non-rail alternatives discussed. As a result, the capital cost of developing such a system could range from \$8 million/mile to as much as \$16 million/mile. Stated in terms of a total potential cost, this alternative would easily exceed \$100 million to construct in the State Avenue corridor.

The BRT – Mixed Traffic alternative would require more moderate roadway improvements and would require little, if any right-of-way acquisition. As with the BRT - Exclusive Lane alternative, this alternative would include Stations, ITS elements and other system enhancements, but at a somewhat lower level than the exclusive lane alternative. This alternative would closely resemble the Kansas City Area Transportation Authority’s Main Street MAX BRT route, which operates currently in Kansas City, Missouri and the Troost Avenue MAX route in Kansas City, Missouri, which is in the project design phase. The capital cost of developing this type of system would be in the range of \$2 million to \$3 million/mile. The total capital cost for such a system in the State Avenue corridor would likely be around \$30 million.

While the Enhanced Bus alternative falls short in meeting the evaluation criteria in comparison to the two BRT options, it should not be entirely discounted as a possible short-term corridor enhancement. Its primary shortcoming is in the economic development evaluation category. Since this alternative does not require any investment in fixed facilities along its alignment, it’s unlikely to serve as a stimulant for economic investment from the private sector. Conversely, the fact that there is no requirement for enhanced and upgraded fixed facilities to support this service the capital cost would only be in the range of \$0 to \$200,000/mile. This alternative can also be made operational in as little as a few months as opposed to BRT – Mixed Traffic, which will require approximately two years, and BRT – Exclusive Lane, which could easily require five to seven years to make operational. This alternative could serve as an interim improvement to address growing transportation needs as one of the BRT alternatives is developed.

It is also important to consider the annual operating cost associated with each of these alternatives as well. While the annual operating cost difference between each is not overly significant, it must be remembered that this is an ongoing expense and over time the differences can certainly be significant.

The approximate annual operating costs for each alternative are presented below:

BRT – Exclusive Lane	-	\$3,500,000
BRT – Mixed Traffic	-	\$3,000,000
Enhanced Bus	-	\$2,000,000

Recommended Alternative

Based on how each of the transit alternatives that were reviewed measured against the rating criteria that were established for this analysis, and taking into account other factors, including the length of time required for implementation, the following recommendation has been developed:

The BRT – Mixed Traffic alternative comes closest to meeting all of the relevant criteria applied to this evaluation. Therefore, it is recommended that this alternative be advanced to a project planning phase during which initial service operations plans will be developed, and all requirements can be met for submission of the project to the Federal Transit Administration for Federal funding consideration through the FTA New Starts – Very Small Starts Program.

It is also recommended that a service plan for the Enhanced Bus alternative be developed and that this alternative be implemented as soon as practical to serve as an interim transit service enhancement in the corridor.

Finally, although not specifically addressed in this study, it is apparent that a transit facility to support connections to this corridor from other transit services operating in Wyandotte and Johnson Counties is needed. The obvious location for such a facility seems to be at the point where Interstate 635 intersects the corridor. The former Indian Springs Shopping Center site seems well suited for this and is, in fact, the location where connections between numerous transit services occur today. It is recommended that an assessment be conducted to evaluate this location and to develop conceptual facility design and approximate construction cost so that Federal funding support for such a facility can be pursued.