



CLARKSVILLE STRATEGIC TRANSIT PLAN

Clarksville, Tennessee

Prepared for:



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1. INTRODUCTION

The Clarksville Transit System (CTS) periodically updates its Strategic Plan so it can formulate investments in facilities, vehicles, services or other aspects of the system to better serve the transit riders in the Clarksville, Tennessee area. The Strategic Plan is also used as a planning and programming tool for the City of Clarksville and the Clarksville Urbanized Metropolitan Planning Organization (CUAMPO) for input into its Transportation Improvement Program (TIP) and Metropolitan Transportation Plan (MTP) as well as for local budgeting and planning.

2. PLAN FRAMEWORK

Goals and Objectives

The goal of the Clarksville Transit System (CTS) Strategic Plan Update is to develop operational and policy recommendations that can be implemented in the next one to five years that will allow CTS to make measureable gains in terms of safety, quality and efficiency of transit service delivery in Clarksville.

This is consistent with CTS' mission statement which is "...to plan, implement, maintain and manage a public transportation system that allows for maximum mobility for the community with emphasis on safety, quality and efficiency."

Objectives for the Strategic Plan Update include developing recommendations that individually and collectively address:

- Service Delivery and Operations
- Maintenance and State of Good Repair (SGR)
- Service Quality and Customer Service
- Efficiency and Effectiveness

Previous Strategic Plan Recommendations

The previous Strategic Plan developed in 2010 made several recommendations in the one to three year time frame, including:

- Coordinate Routes 1 Ft. Campbell and 2 Tiny Town Road
- Implement 30-minute service on Route 4 Peachers Mill Road
- Split Route 3 Cunningham Loop into two routes
- Implement a Trenton Road Call-n-Ride
- Implement a Ft. Campbell Circulator

None of these recommendations were implemented. While Route 1 and Route 2 do share similar segments, making a new route and interlining as proposed was not done. In reality a more concise route would be more confusing for passengers and not worth the benefit of implementation. The overlap of some routes is more a function of physical necessity than a routing choice, as there are only a limited number of bridge crossings. It is simply easier to highlight the overlapping portions of the two routes and illustrate the combined headways. The other recommendations have also been problematic to implement as they require more capital (buses) and operating expenses. In the case of the proposed Ft. Campbell Circulator, it has been challenging to address the concerns of circulating a bus on the grounds of a secure military installation.

In the three to five year time frame, the following was recommended:

- New Wilma Rudolph/St. Bethlehem Circulator
- Restructure Routes 5 and 6
- New Rossville Corridor Call-n-Ride
- Commuter service to Nashville

With the exception of the new commuter service to Nashville, none of these recommendations were fulfilled. Restructuring and adding new routes are typically not done within the framework of a strategic plan. Usually they are done within the context of a Comprehensive Operations Analysis (COA) and the cost implications for this added service are likely beyond CTS' current fleet and operating budget.

Service Parameters

The FTA requires that all fixed-route service providers develop standards for the transit operations indicators, sometime known as key performance indicators (KPIs). These standards are set by individual public transportation providers and are reported internally for the agencies' use in tracking performance. These standards typically are for:

- Vehicle Load
- Vehicle Headways
- On-time Performance
- Service Availability

Vehicle Load

Vehicle load is monitored to ensure customer comfort and to assess whether additional service is required. CTS calculates Vehicle Load Factor by dividing the average hourly passenger load by the average number of seats available per bus for that hour. Vehicle Load per Route is listed below.

Table 1: CTS Service Standards for Peak Load Factors

ROUTE	PEAK LOAD FACTOR		OFF-PEAK LOAD FACTOR	
	CURRENT	MAXIMUM	CURRENT	MAXIMUM
1	0.53	1.2	0.37	1.0
2	0.46	1.2	0.32	1.0
3	0.47	1.2	0.36	1.0
4	0.41	1.2	0.32	1.0
5	0.42	1.2	0.28	1.0
6	0.66	1.2	0.47	1.0
7	0.54	1.2	0.35	1.0
8	0.29	1.2	0.17	1.0
900	0.17	1.2	0.12	1.0

Given the existing operations, the standards for maximum peak and maximum off peak load factors are adequate and there is no need to modify them in the near future.

Vehicle Headway

The Vehicle Headways for each CTS route are evaluated and adjusted based on ridership, vehicle load and existing and expected funding levels. Current standards for Vehicle Headways for CTS routes are listed below:

Table 2: CTS Service Standards for Headways

ROUTE	PEAK HEADWAY	OFF-PEAK HEADWAY
1	60 MINUTES	60 MINUTES
2	60 MINUTES	60 MINUTES
3	30 MINUTES	30 MINUTES
4	60 MINUTES	60 MINUTES
5	60 MINUTES	60 MINUTES
6	30 MINUTES	30 MINUTES
7	30 MINUTES	30 MINUTES
8	60 MINUTES	60 MINUTES
900	15 to 20 MINUTES	15 to 20 MINUTES

Given the ridership and expected funding levels, no adjustments to vehicle headways are recommended at this time. Moving forward, CTS should consider reducing the headway for Route 1 for consistency with its other high-volume routes.

On Time Performance

On time performance is currently defined by CTS as being within six minutes of scheduled arrival time, but not more than two minutes early (-2 to +6). CTS should consider revising this standard for greater consistency with the practices of other similar transit agencies of its size including Cleveland, TN, Evansville, IN, Greenville, SC and Huntington, WV. All of these transit agencies are very similar to CTS in regards to operating a strong pulse system, have a small to medium size college within their service area, and operate along long corridors of retail and commercial establishments that prove to be a challenge at times.

One of the key tenets in transit is not to be early, and based on industry practice buses should not arrive more than five minutes late. It is therefore recommended that CTS modify this parameter to define performance as on time (0 minutes) to no more than five minutes late (0 to +5).

CTS' goal is to maintain an 85-90% on-time performance rate for each route. On-time performance rates are monitored daily and reported weekly to the Operations Supervisors and Director. On-time performance rate standards for each route are listed in Table 3.

Table 3: CTS Service Standards for On-Time Performance

ROUTE	PEAK ON-TIME	OFF-PEAK ON-TIME
1	85%	90%
2	85%	90%
3	85%	90%
4	85%	90%
5	85%	90%
6	85%	90%
7	85%	90%
8	85%	90%

Based on analysis of the 2014 data and discussions with CTS' staff, no adjustments to the standards shown in Table 3 are recommended at this time.

Service Availability

CTS determines service availability by mapping all bus routes within the system and determining its ability to provide service within $\frac{1}{4}$ mile of the largest population possible as determined by 2010 census blocks. Being within a short distance does not necessarily mean transit is accessible, however. The City of Clarksville's street network lacks sidewalk and pedestrian connectivity outside the central business district, which limits service to certain areas, particularly residential areas.

As part of the update process for the Strategic Plan, a geographic analysis was performed to examine the location of low income, minority populations and zero car households in relation to transit services. Based on these parameters and relationships, no further adjustments to the service availability policy are recommended at this time. In calendar year 2016 the agency will also undertake a Comprehensive Operations Analysis (COA) to examine service relative to populations in a more comprehensive fashion.

Other Region / Area Plans

Other region and area plans were also examined and considered so that they may inform and frame the discussion about goals, objectives, outcomes and actions of the CTS Strategic Plan. Those included:

- Clarksville-Montgomery County Growth Plan – Amended 2012
- CUAMPO 2040 Metropolitan Transportation Plan (MTP)
- Clarksville Smart Growth 2030

The Clarksville-Montgomery County Growth Plan was initiated in response to a mandated process that requires local cities and counties in Tennessee to address the needs of growing residential areas and maintenance of character of rural areas. The requirements also include the determination of appropriate boundaries for municipal expansion. The plan focuses on guidance for residential densities and has a 20 year time horizon. The Growth Plan identifies four areas for growth and expansion. Given that they are currently out of the service area (the City of Clarksville) for the existing CTS routes, serving these new areas with transit can only be accomplished with added vehicles and increased funding for operations and an operating agreement with other area / regionwide operators. It is incumbent on the City and other funding partners to help CTS find capital and on-going operating funding if future service to these areas is desired.

The CUAMPO 2040 MTP was adopted in February 2014. It describes transit services provided by CTS and other regional providers, including connections between the CTS local routes and regional commuter services to/from Nashville. It also details areas of population growth which may indicate where new transit services are need. Areas of population change from 2010 to 2040 are highlighted in Figure 1. The MTP also developed near-term transit projects that are recommended in the plan, which reflect some of the needs and action items detailed in the 2010 Strategic Plan, including a potential northwest mini-hub. The MTP also reiterates important transit-supportive policies, namely a need to continue and accelerate vehicle replacement, to maintain financial support for extended service hours (most notably during evenings/nights), to encourage new development to locate near transit routes, and to focus pedestrian

improvements on developing missing sidewalks along the major arterials where CTS operates routes. Table 4 details transit capital investments recommended in the MTP.

The Clarksville Smart Growth 2030 Plan highlights transportation system related improvements programmed for the future. These are largely highway based, including Intelligent Transportation System (ITS) improvements, and are not heavily focused on transit. Since CTS' buses do utilize existing streets and highways, any improvements to those that benefit traffic in general are likely to have positive effects on CTS' operations. Smart Growth 2030 also recommends selected bicycle/pedestrian improvements, which could help improve accessibility to certain bus stops. The Plan highlights and acknowledges transit in general including the possibility of commuter rail, but makes no specific recommendations.

Figure 1: Population Change 2010 – 2040 (from MTP)

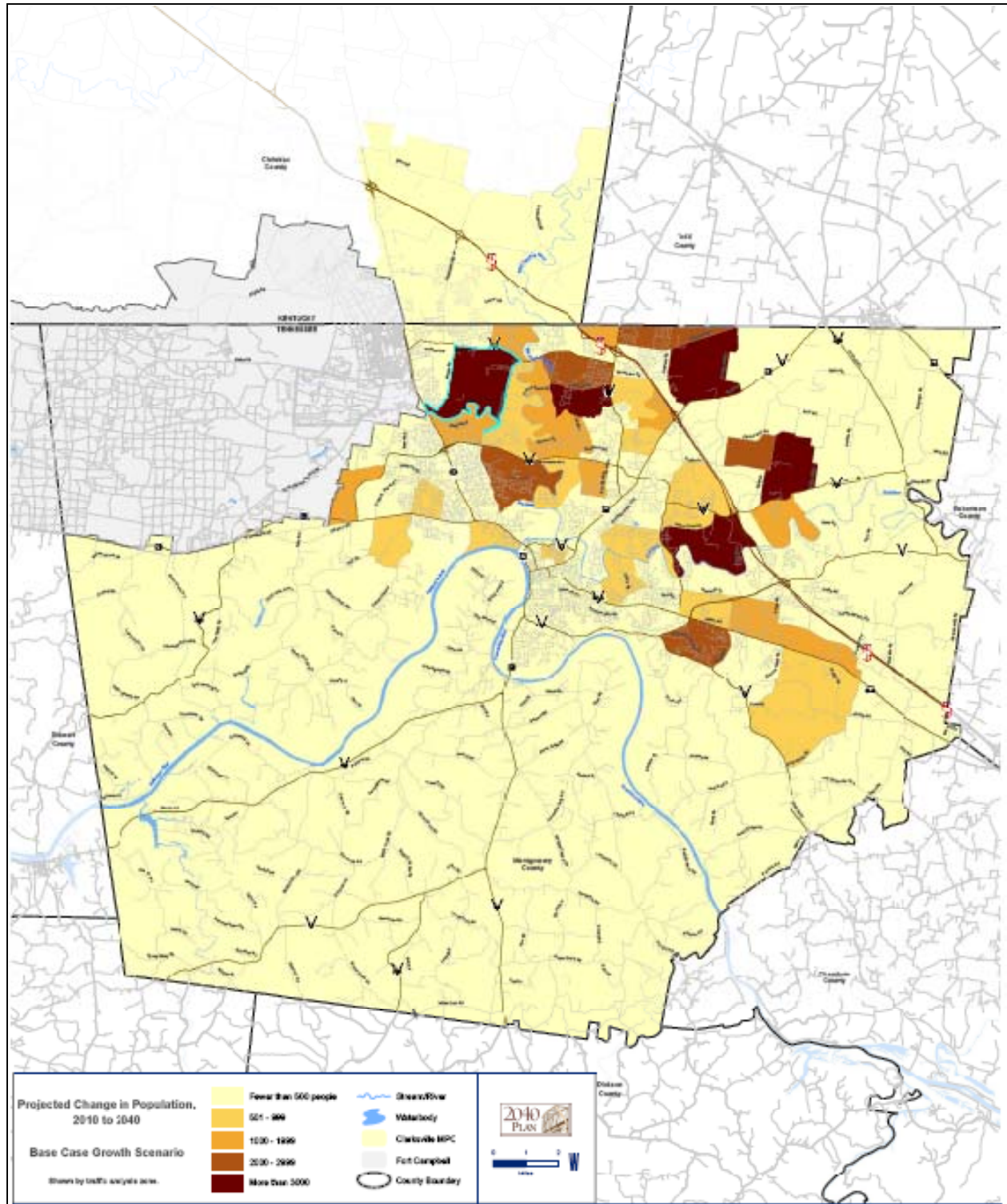


Table 4: Recommended Transit Projects from CUAMPO 2040 Metropolitan Transportation Plan

Horizon	Project Description	Estimated Cost*
2014-2016	Vehicle Replacement – Demand Response (vans)	\$254,600
	Vehicle Replacement – Fixed Route (buses)	\$1,455,000
	Develop mini-hub (St. Bethlehem area)	\$750,000
	Support Equipment, Misc. Capital Expenditures and Transit Enhancements**	\$637,220
	Administrative & Maintenance Facilities	\$2,500,000
2017-2026	Vehicle Replacement – Demand Response – 10 vehicles, twice	\$1,000,000
	Vehicle Replacement – Fixed Route – 17 buses	\$6,100,000
	New Vehicles – Demand Response – 2 vehicles, replaced twice	\$100,000
	New Vehicles – Fixed-Route – 1 bus	\$300,000
	Support Equipment, Misc. Capital Expenditures and Transit Enhancements	\$6,000,000
2027-2035	Vehicle Replacement – Demand Response – 14 vehicles, twice	\$4,200,000
	Vehicle Replacement – Fixed Route – 18 buses	\$5,400,000
	New Vehicles – Fixed Route – 1 bus	\$300,000
	Develop mini-hub (northwest)	\$750,000
	Support Equipment, Misc. Capital Expenditures and Transit Enhancements	\$5,400,000
2036-2040	Vehicle Replacement – Demand Response – 14 vehicles	\$2,700,000
	Vehicle Replacement – Fixed Route – 14 buses	\$3,100,000
	Support Equipment, Misc. Capital Expenditures and Transit Enhancements	\$2,000,000

* Costs shown are in 2012 dollars.

** Includes projects such as bus shelters, signage, pedestrian access and walkways, bicycle storage facilities, etc.

(With regard to the mini hubs (St. Bethlehem area and northwest), it would be our recommendation to develop them simultaneously as per Section 5 Recommendations, under Fixed Route Operations.)

3. EXISTING CONDITIONS – SERVICE AREA

Service Area Demographics

Demographic analysis is an important component of the existing conditions assessment as it highlights the characteristics of the service area in which CTS is operating. Population and employment density indicate where a majority of transit users begin and end their trips, and projections of these indicators show where transit use is likely to expand or decline in the future. Other demographic patterns show the locations or concentrations of people in the study area whose characteristics make them more likely than the general population to use transit. These include seniors, minorities, low income and zero car households. Together, these development and demographic patterns serve as important market indicators for CTS service.

Population Density

Population density is a key indicator of potential transit use because higher density areas, by definition, will have more people living within walking distance of a transit stop than lower density areas, increasing the potential for transit ridership. Higher density areas and neighborhoods are often characterized by multi-family housing or single family housing on small lots. Higher density areas often have commercial uses along main thoroughfares and sidewalks, all of which contribute to transit ridership.

As shown in Figure 2, there are many pockets of medium to high population density throughout the greater Clarksville area, primarily located between the Cumberland River and I-24. The most densely populated areas (over 5,000 persons per acre) are located in and around Downtown Clarksville. For the purposes of this analysis, Downtown Clarksville is defined as the area bounded by College Street to the north, 8th Street to the east, Madison Street to the south, and the Cumberland River to the west but also includes the Austin Peay University campus. The areas around Downtown Clarksville that report the highest levels of population density include the Austin Peay University campus and the surrounding area, along Franklin Street between 6th and 10th Streets, and the area south of Commerce Street between 2nd Street and Riverside Drive. Medium to high densely populated areas (501 to 5,000 persons per acre) are located throughout this region but are generally located around major corridors that include Fort Campbell Boulevard, Wilma Rudolph Boulevard, Tiny Town Road, and Madison Street.

Taking a closer look at Downtown Clarksville and the existing CTS route network (Figure 3), all of the medium to highly densely populated areas are well covered by CTS. The areas with the highest levels of population density are all located in and around downtown which are served by numerous CTS routes due to the transit center being located in Downtown Clarksville. Only a small number of medium to high densely populated areas in the county are not served by existing CTS service; this includes areas to the east in and around I-24 and areas between the major corridors of Tiny Town Road and Wilma Rudolph Boulevard. As mentioned above, many of these areas are currently outside the CTS service boundary and service to them would need to be coordinated with other agencies such as Mid Cumberland Human Resources, which is the rural transit provider in the region.

Projected population changes in the years leading up to 2020 show continued residential growth to the east of I-24, in the Sango community, and in northern Clarksville between Tiny Town Road and the 101st Airborne Division Parkway, as shown in Figure 4. Some areas that are currently served by CTS routes are also projected to experience declining population. As population shifts occur, transit services and resources need to be adjusted to continue meeting local needs.

Figure 2: Study Area Population Density

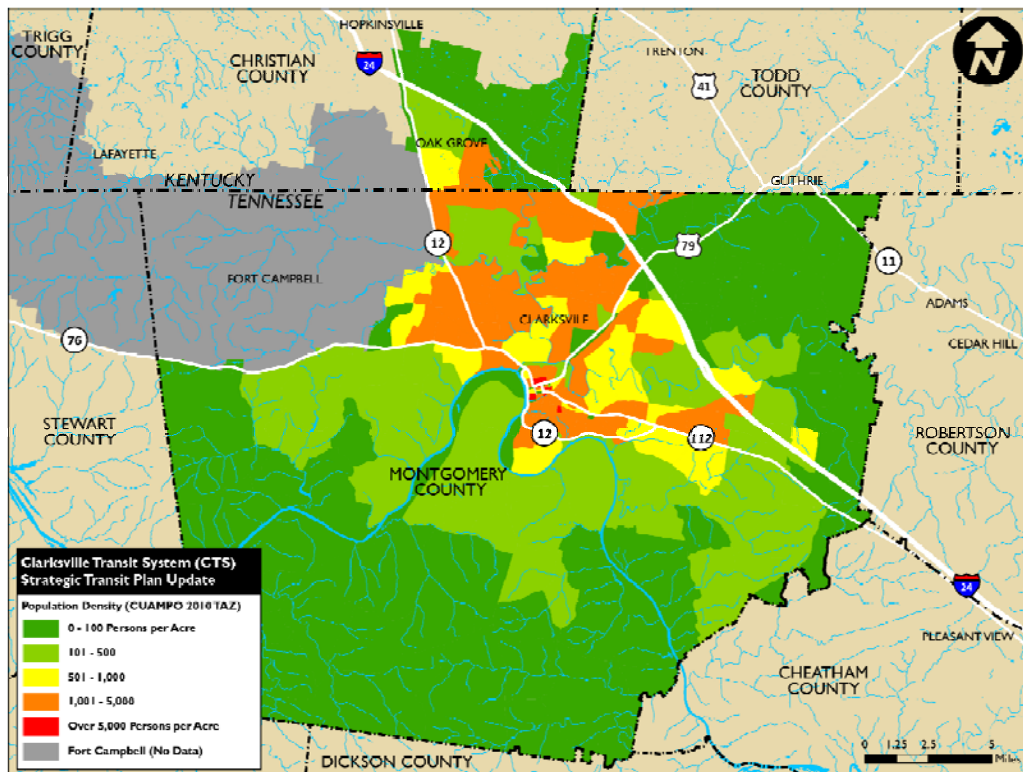


Figure 3: CTS Service Area Population Density

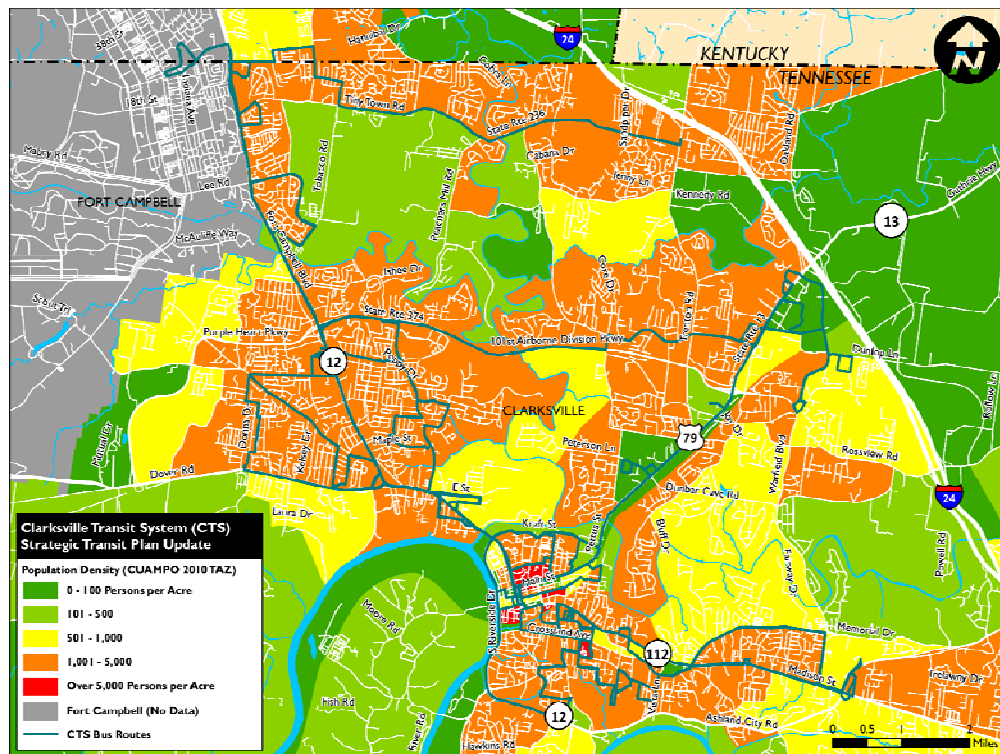
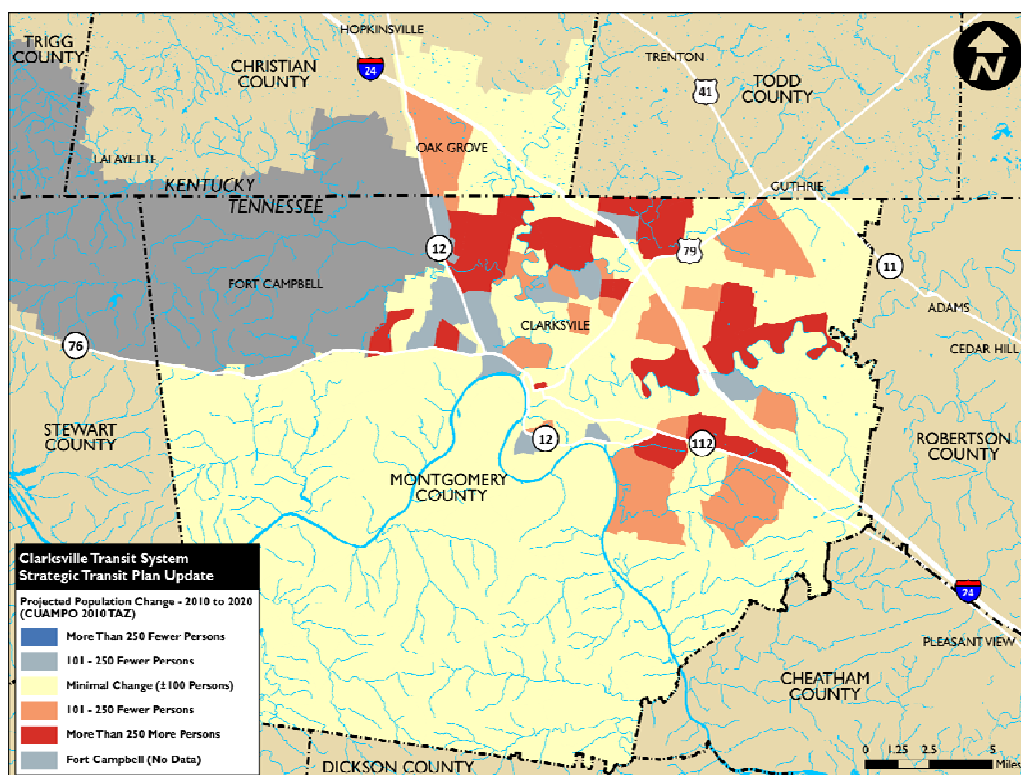


Figure 4: Study Area Population Change



Employment Density

Employment density is another key indicator of potential transit use because a high number of transit trips are made by people traveling to and from work, and areas with concentrated employment can be easily served by fixed route bus service. Areas with high employment density are also more likely to exhibit other characteristics such as higher levels of traffic congestion and constrained parking conditions that make transit favorable.

As shown in Figure 5, the highest levels of employment density are located in and around the downtown area or central business district, where many of the city's agencies, social services, and Austin Peay State University are located. Medium levels of employment density occur along the major corridors such as Fort Campbell Boulevard, Wilma Rudolph Boulevard, and Madison Street where commercial and retail establishments are concentrated.

Taking a closer look at the CTS service area (Figure 6), all of the medium to highly densely populated areas are well covered by CTS fixed route service. The areas with the highest levels of employment density are all located in and around downtown and conveniently near the downtown transit center, served by multiple CTS routes. The primary employment clusters not currently served are to the east of I-24, where businesses are beginning to locate due to the amount of available undeveloped land and affordable prices and incentives. These areas are outside the service limits and providing service to them needs to be coordinated with Mid Cumberland Human Resources, if that is desired.

Projected employment changes in the years leading up to 2020 show continued job growth east of I-24 along Guthrie Highway and around the Exit 1 interchange, as shown in Figure 7. Strong job growth is also expected near the new Gateway Medical Center, which is a challenging area for CTS to serve effectively because of the traffic congestion experienced along the Wilma Rudolph Boulevard corridor.

Figure 5: Study Area Employment Density

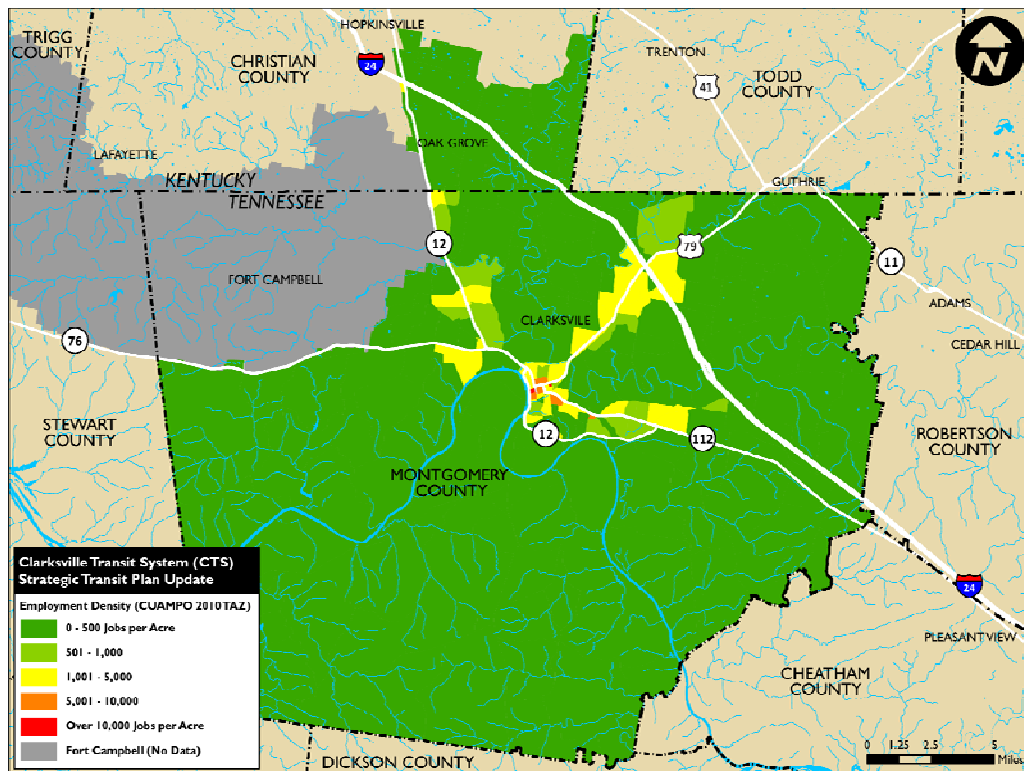


Figure 6: CTS Service Area Employment Density

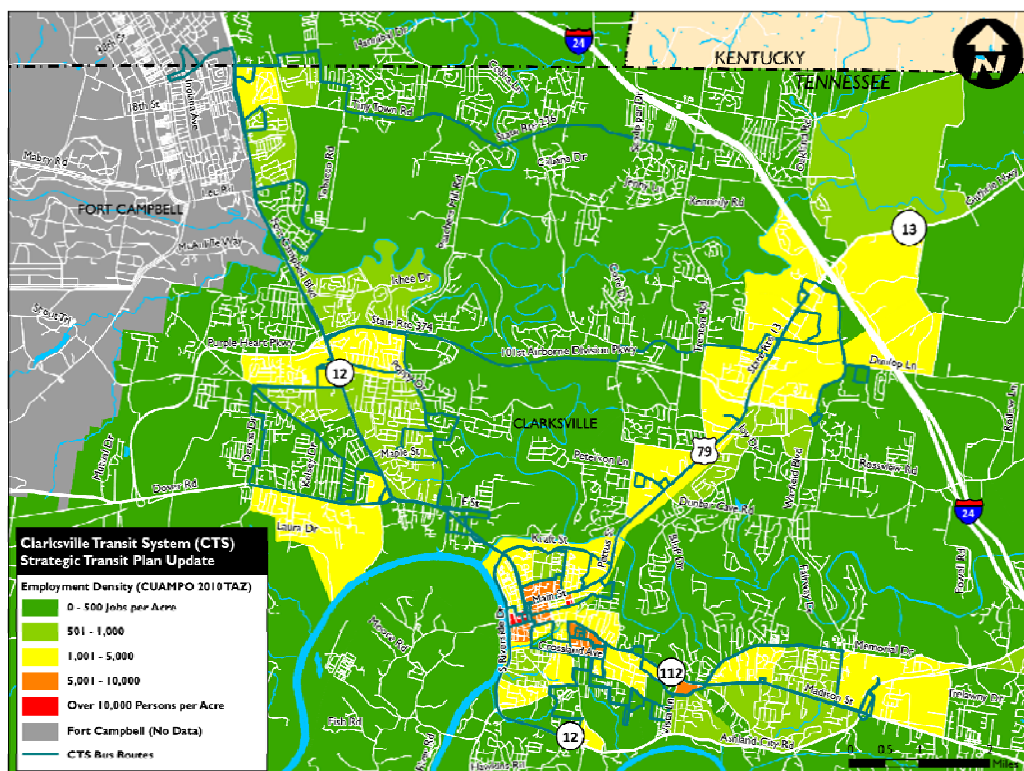
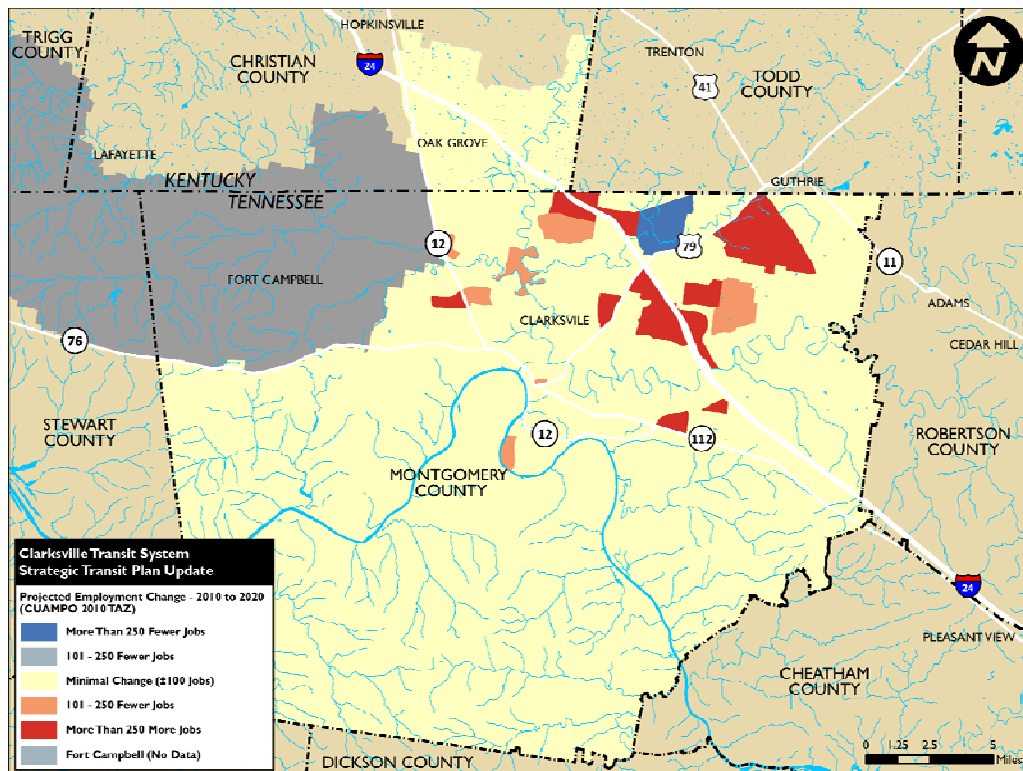


Figure 7: Study Area Employment Change



Senior Population

The senior population (65 years and over) is a group that tends to ride public transportation in greater numbers than the general population. Many seniors live on fixed incomes that can reduce their ability or desire to own and operate a private vehicle. Additionally, aging can impact eyesight and slow reactions, which can make some seniors reluctant to drive even if they have the financial means to do so. Age also correlates with higher levels of physical disability that may limit driving.

Only two major pockets exist in the study area with a high concentration of seniors as compared to the general population, as shown in Figure 8. These are the Madison Street area just east of Downtown Clarksville, where seniors comprise at least 20 percent of the population, and one area just north of Madison Street exceeding 30 percent of the population where a number of retirement communities and assisted living residences are located.

When looking at the CTS service area (Figure 9), both areas are served by existing bus service via Routes 5 and 6. South of Madison Street, CTS service is limited to the areas that are immediately located on the corridor and any senior residents located off of Madison Street must make their way to the road for fixed-route bus service. A closer look may need to be taken in both of these pockets to ensure that places with the highest concentration of seniors (i.e. senior communities, retirement centers, etc.) are served adequately through the stops on Madison and Memorial. If not, realigning routes to more directly serve the senior communities off Memorial and Madison that are walkable but not directly on a fixed route should be

considered, particularly if improved fixed-route access can help reduce the use of more expensive paratransit services. CTS' new pilot program to provide free rides for seniors is an opportunity to gain feedback from this population on the factors that would encourage their continued use of public transit. CTS has also applied for grant funds to establish a Dial-A-Ride service. If the grant application is successful, this service may also help reach the areas described above.

Youth Population

The youth population (17 years and under) is another group that may tend to ride public transportation in greater numbers than the general population. Many minors may opt to use public transportation if they do not yet have their driver's licenses or a parent or guardian is unavailable to drive them around. While this segment of the population may not ride transit as much as other segments of the population (i.e. seniors) the availability of a student discounted fare and service to many of the city's public schools may make this an important market for CTS fixed route services.

Notably, both Montgomery and Christian counties report a high number of areas where youths are a large part of the general population. As shown in Figure 10, youths comprise more than 40% of the population in areas close to Fort Campbell, where many troops and their families reside, and in many other areas of the city the percentage is between 30 and 40 percent.

As shown in Figure 11, existing CTS service only tends to skirt the border of these areas, and does not have any diversions into the area where a very high percentage of youths reside. While being a minor doesn't necessarily suggest a high level of propensity to use transit, reviewing this demographic in conjunction with other characteristics (i.e. zero or one car households, low income, etc.) could reveal an important market for CTS service.

Figure 8: Study Area Senior Population

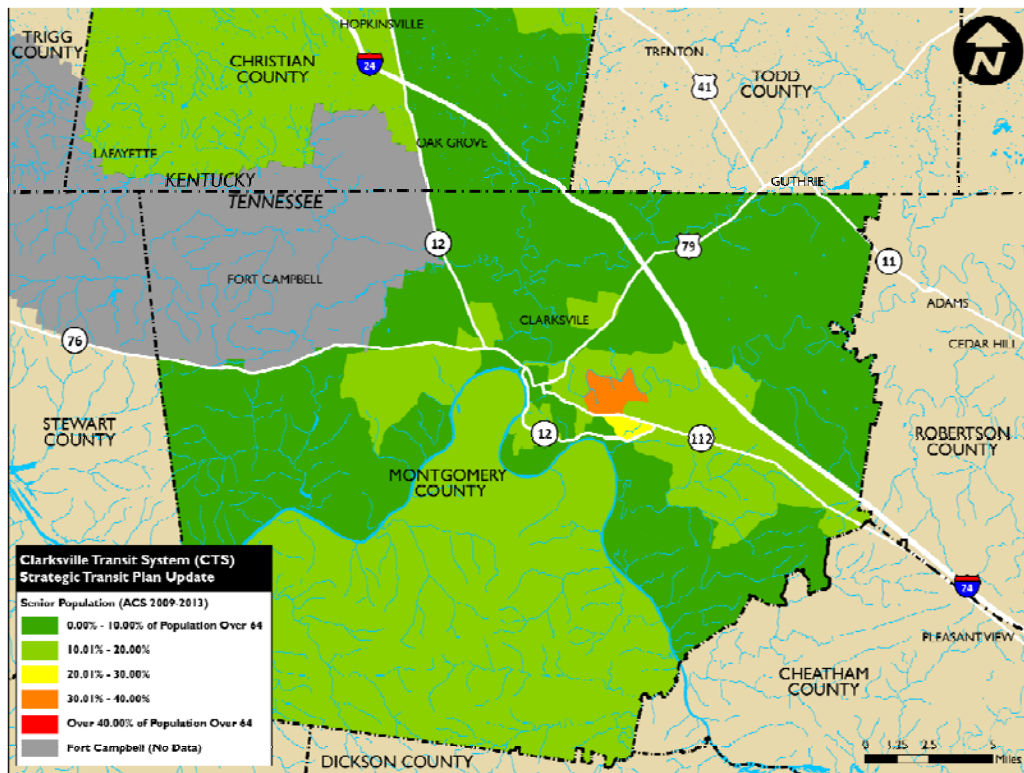


Figure 9: CTS Service Area Senior Population

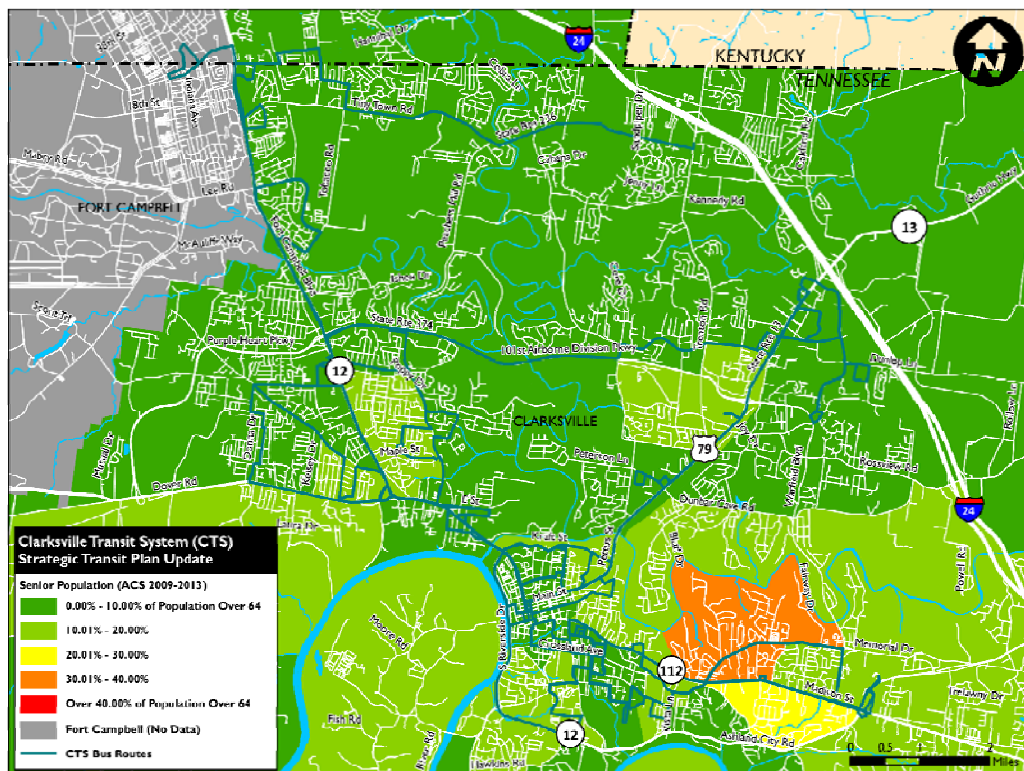


Figure 10: CTS Study Area Youth Population

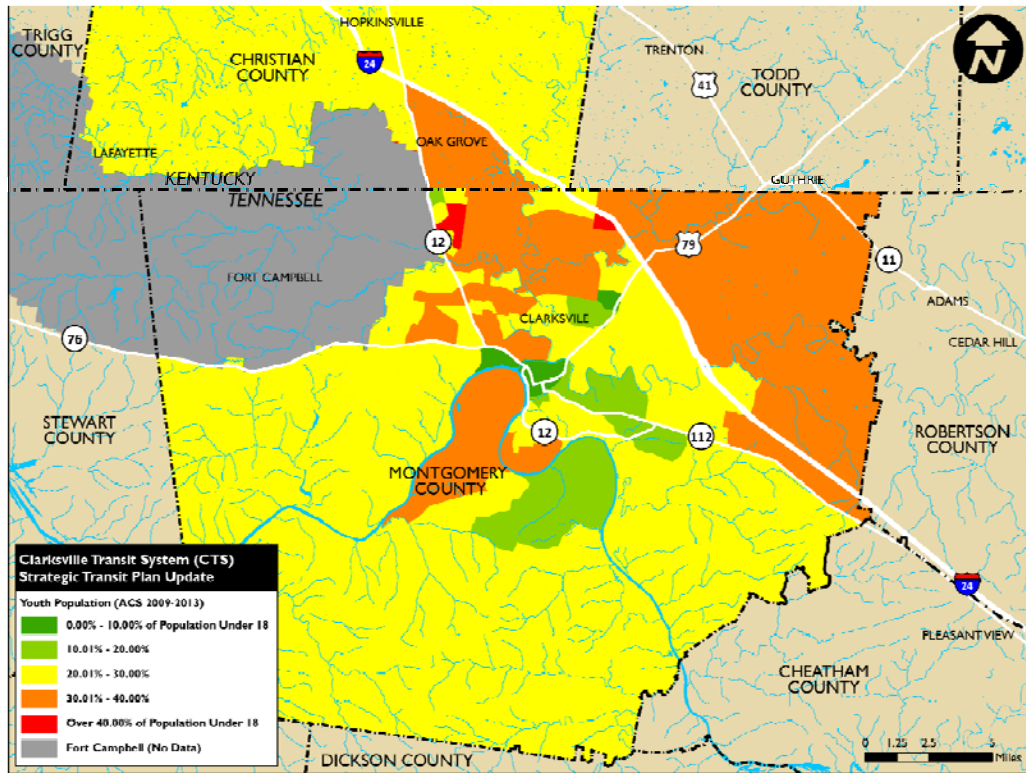
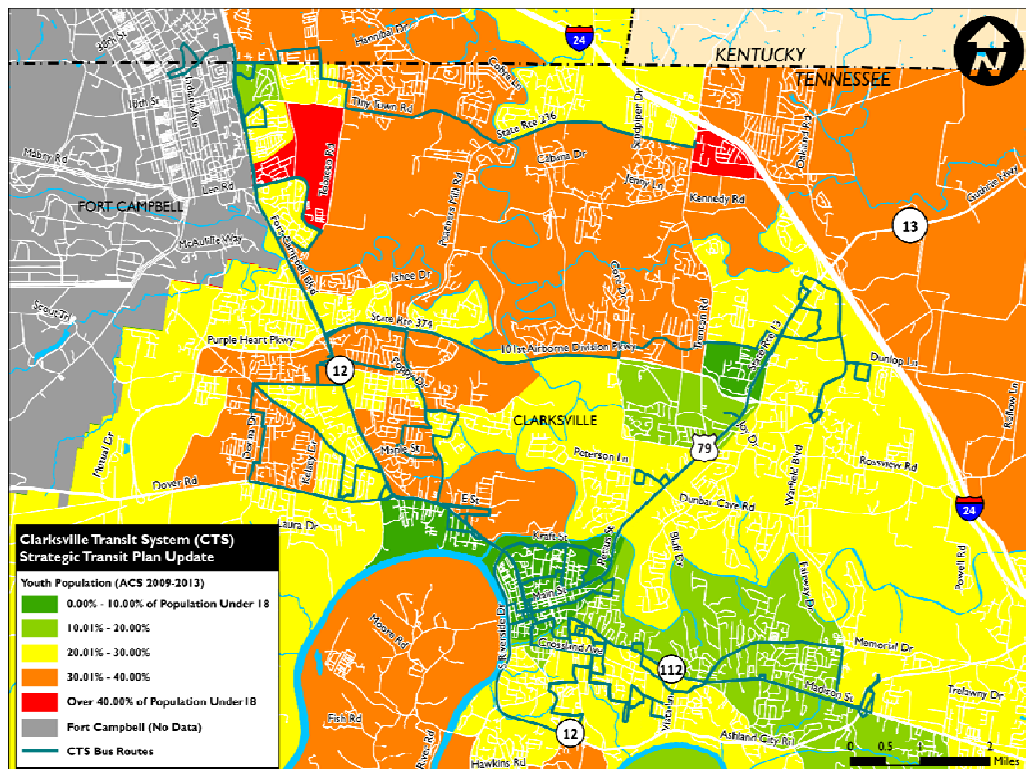


Figure 11: CTS Service Area Youth Population



Minority Population

Minorities tend to ride public transportation in numbers that are disproportionately larger than their population share, even when controlling for socio-economic status, age, disability status, and other factors that correlate with high transit usage. For the purpose of this existing conditions demographic analysis, the minority population is the non-white population including Hispanics as defined by the US Census. In 2014, the two highest minority groups for Montgomery County were African Americans (19.7%) and Hispanics (9.6%) and the same for Christian County, Kentucky at 21.1% and 7.6%, respectively.

As shown in Figures 12 and 13, numerous areas in both Montgomery and Christian counties report a minority population that exceeds 40% of the population. These include the majority of the CTS service area, particularly the Fort Campbell Boulevard and Tiny Town Road corridors. Areas with relatively low minority populations (0 to 10% of the population) include the more rural portions of the county.

Figure 12: Study Area Minority Population

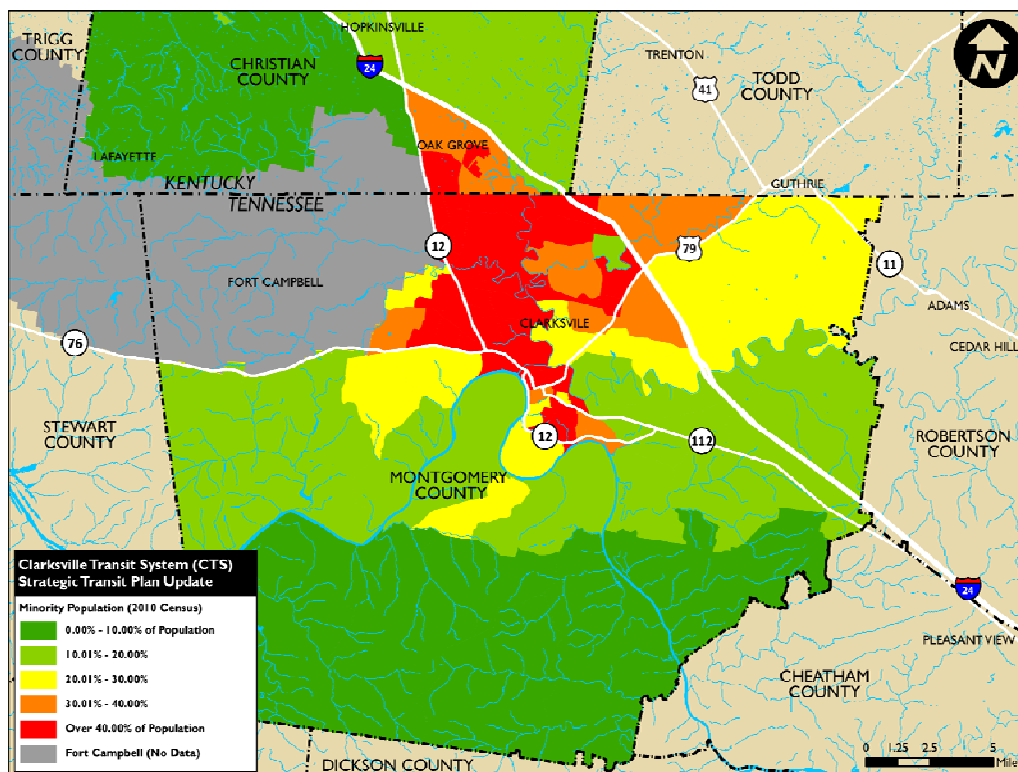
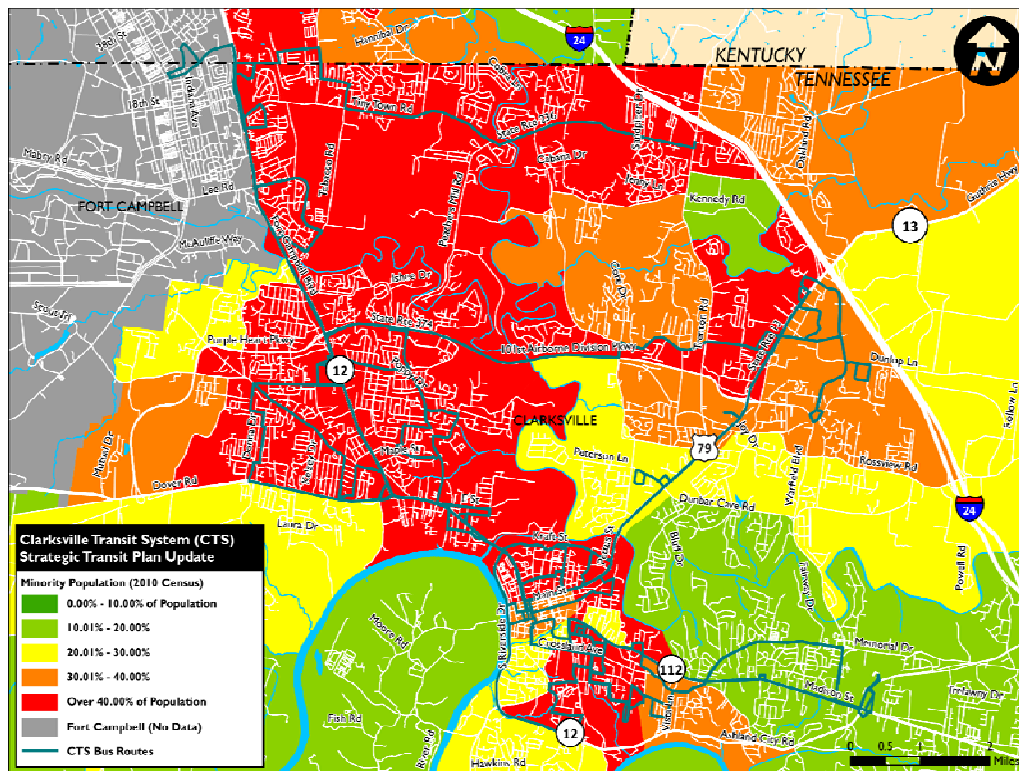


Figure 13: CTS Service Area Minority Population



Median Household Income and Zero Vehicle Households

Median household income and zero vehicle households are each considered indicators for high transit usage because areas with low median household incomes and low vehicle ownership often reflect a lack of transportation options. Areas with a lower median household income (less than \$40,000) are reported in and around Downtown Clarksville, south of Madison Street, the southern end of the Fort Campbell Boulevard corridor, and in the vicinity of Oak Grove, as shown in Figure 14. Very few areas of the county report having no access to an automobile. The majority of zero-car householders are in and around Downtown Clarksville, as shown in Figure 15, where 20 to 30% of homes have no access to a private automobile. The fact that many areas have a low median household income, yet very few of them are zero-car households, suggests that a car is one of the first major purchases made when it is possible. Taking a closer look at the CTS service area, many of the areas reporting a lower median household income are well served by existing CTS routes, as shown in Figure 15. The only exceptions are the areas south and west of the Cumberland River, which like the service needs for other populations is outside the current service area. However, these areas report very low population densities, so it is likely that the data in these areas reflects a relatively small number of households. As shown in Figures 16 and 17, areas with a moderate number of households lacking access to an automobile are also well-served by existing transit service. A closer look to the area around Downtown Clarksville includes Austin Peay University which is served by numerous routes due to its proximity to the transit center.

Figure 14: Study Area Median Household Income

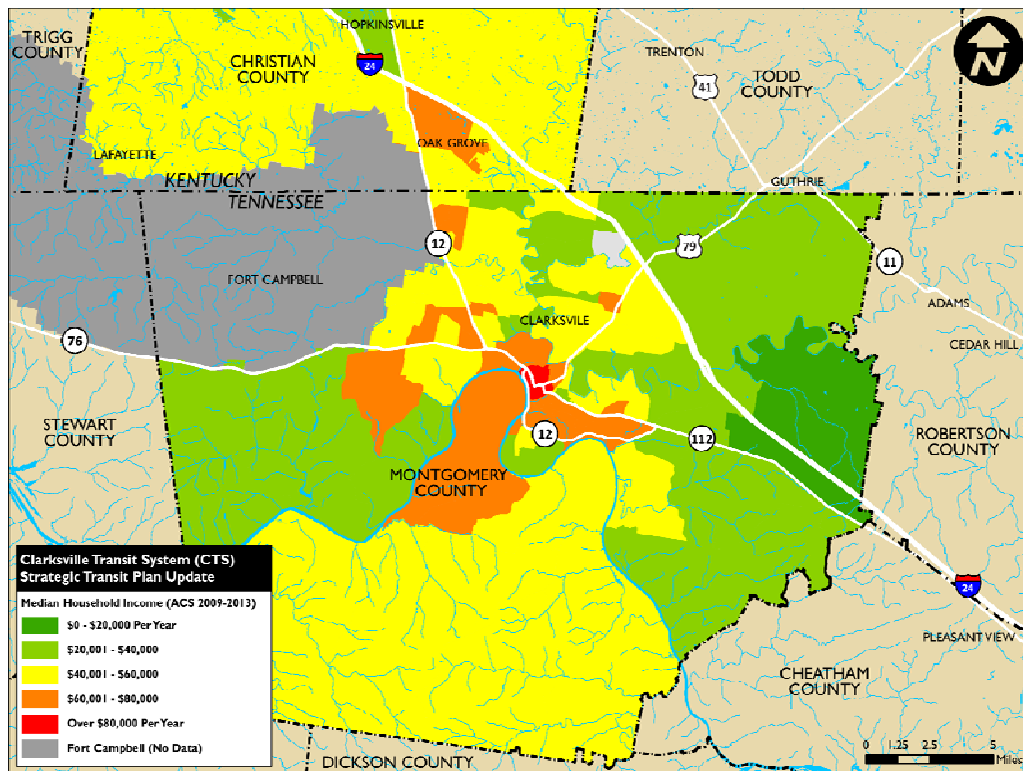


Figure 15: CTS Service Area Median Household Income

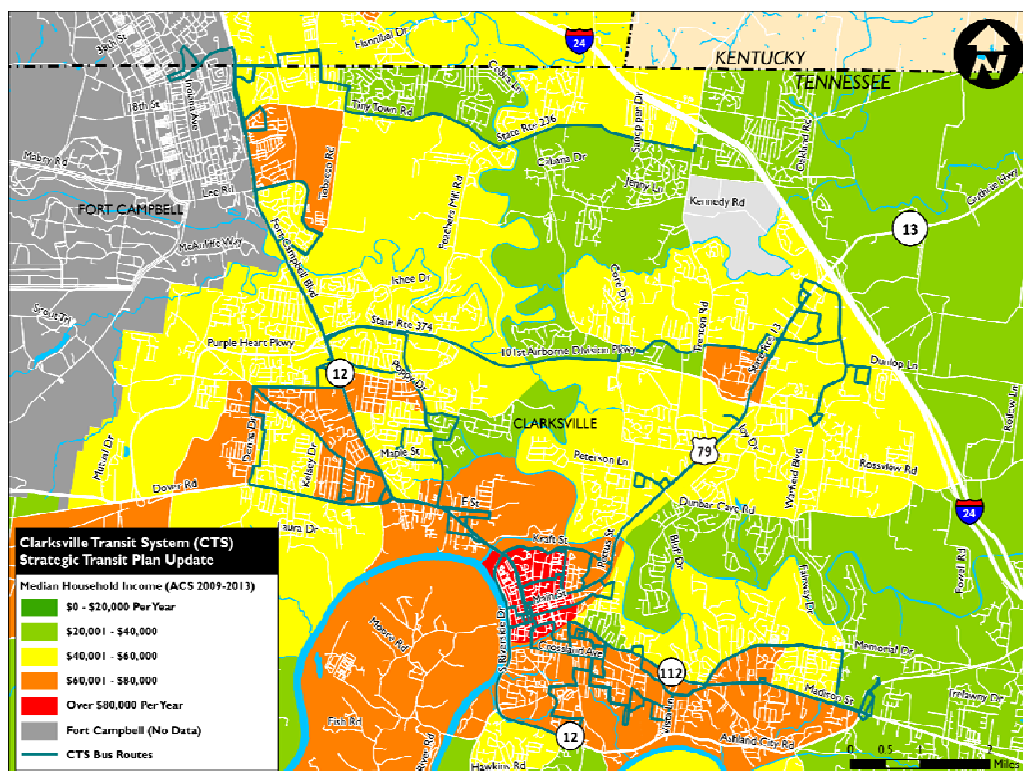


Figure 16: Study Area Zero Car Households

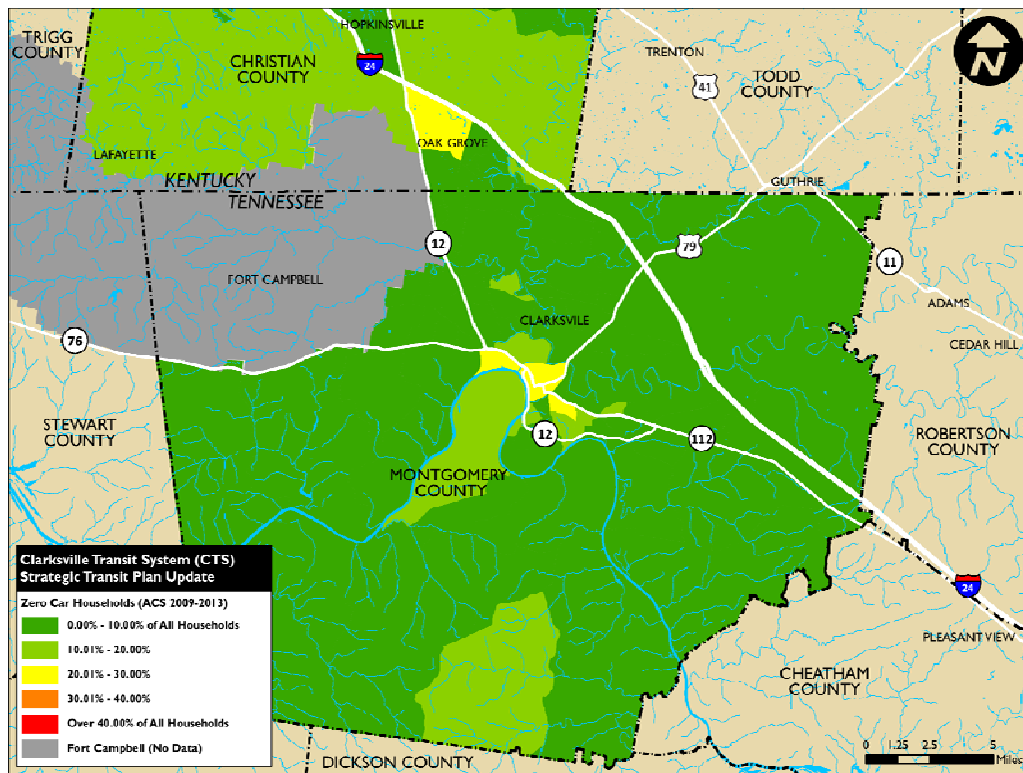
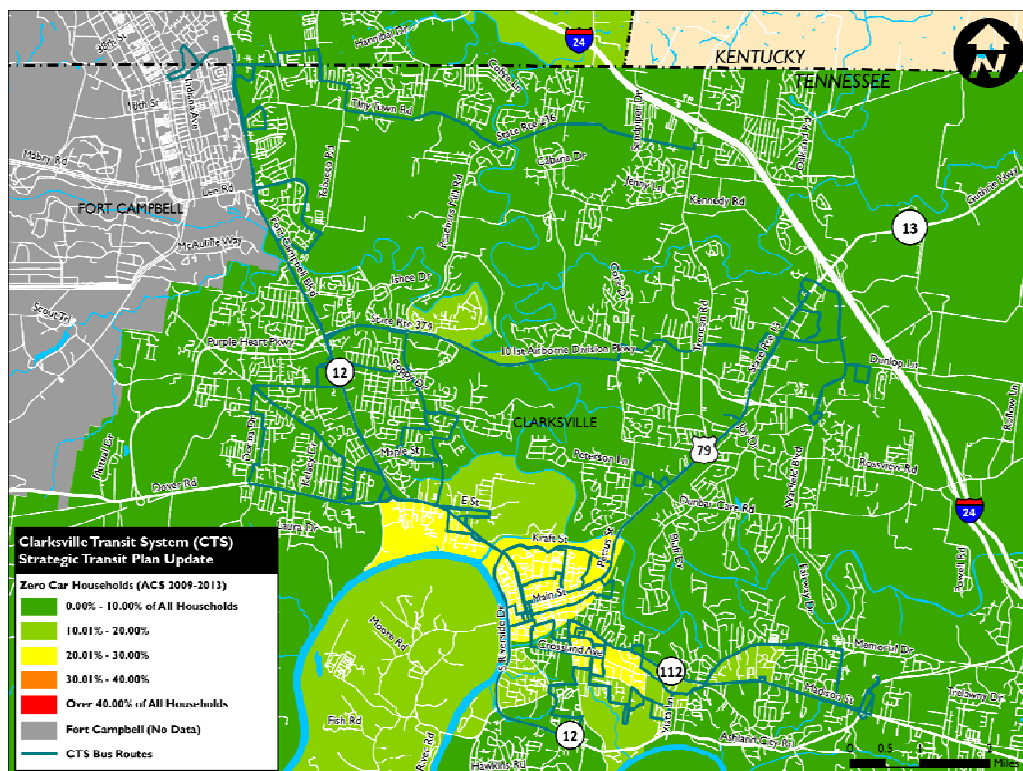


Figure 17: CTS Service Area Zero Car Households



Sidewalks and Other Transit Amenities

The analysis of the existing sidewalk network is important to consider because transit is not a door-to-door service. Sidewalks not only create a safe environment for the boarding/alighting of riders, they are essential for the first and last portion of a rider's journey. The main corridors along which transit runs (Fort Campbell Boulevard, Wilma Rudolph Boulevard, and Madison Street) are characterized by multiple lanes, high speeds, and sporadic crosswalks that generally make walking difficult. A good sidewalk network would greatly improve mobility and safety along these important corridors. Of these three major corridors, only Madison Street possesses a sidewalk network of any significant length and extends beyond (north and south) the corridor itself.

Passenger amenities like shelters and benches that improve access to transit are found throughout the CTS network (Figure 18) with many of them around Downtown Clarksville, especially near the transit center and Austin Peay University, as well as Fort Campbell and along Madison Street, Fort Campbell Boulevard, Wilma Rudolph Boulevard, Dover Road, and Lafayette Road. The presence of shelters also greatly improves the transit rider experience by improving the waiting environment. While the placement of shelters is generally dictated by the boarding and alighting counts, they can also be placed at locations where the waiting environment is unfavorable such as congested corridors or corridors with high speed limits. Additionally, other factors also play an important role in the placement of shelters, such as availability of public right-of-way and whether a land owner is agreeable to the shelter being placed on their property. Where possible, CTS tries to locate shelters at higher volume stops and has recently received grant funds to locate shelters along Fort Campbell Boulevard to improve the transit experience along that corridor.

Along urban and suburban arterials radiating out from the transit center, the presence of sidewalks is heavily dependent on when the roadway was built and by whom, and what types of land uses are adjacent to it. As shown in Figure 19, very few sidewalks are located on or around the CTS route network. Many residential areas lack sidewalks, although they are generally more likely to be provided in higher density housing areas.

The MPO has a plan to address sidewalk needs that includes incorporating pedestrian facilities as part of related road projects such as roadway reconstruction, roadway widening, etc. Recommendations for the improvement of the sidewalk network in the CUAMPO 2040 Metropolitan Transportation Plan include filling in and connecting the existing sidewalk network by providing sidewalks along Fort Campbell Boulevard and Wilma Rudolph Boulevard and continuing this network along other important arterial streets including Tiny Town Road, Trenton Road, Warfield Boulevard, and 101st Airborne Division Parkway. The provision of a more robust sidewalk network in the service area would greatly improve people's access to transit and open up other corridors (e.g. Trenton Road) that may support transit through improved pedestrian connectivity.

Figure 18: Existing Passenger Amenities

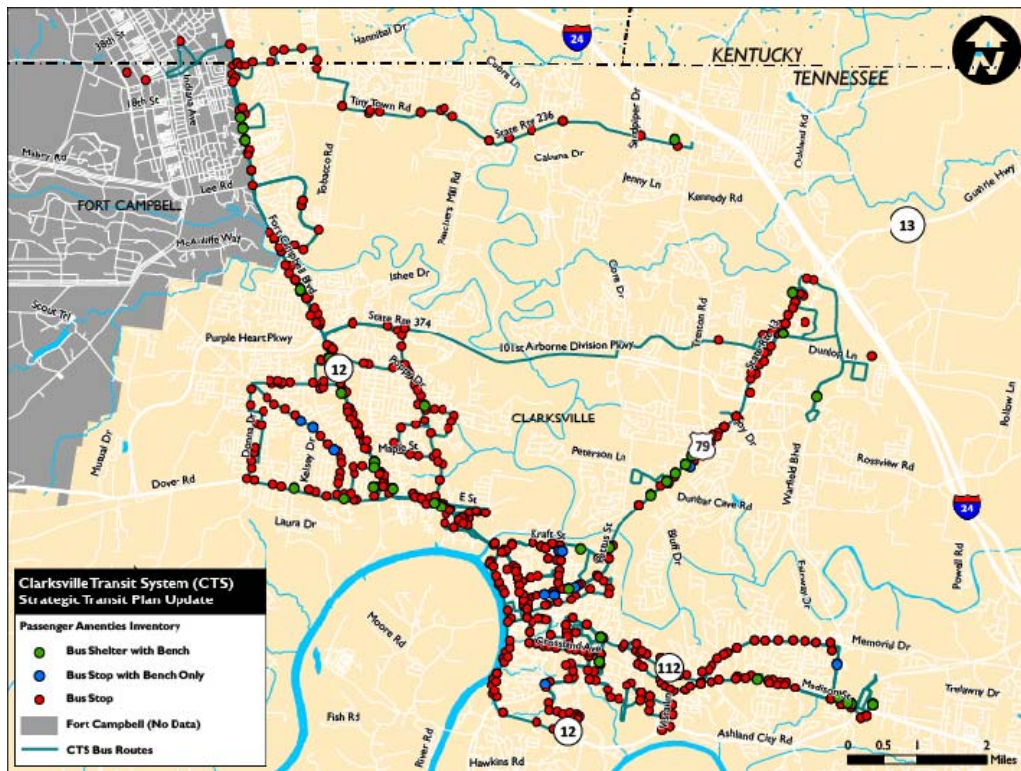
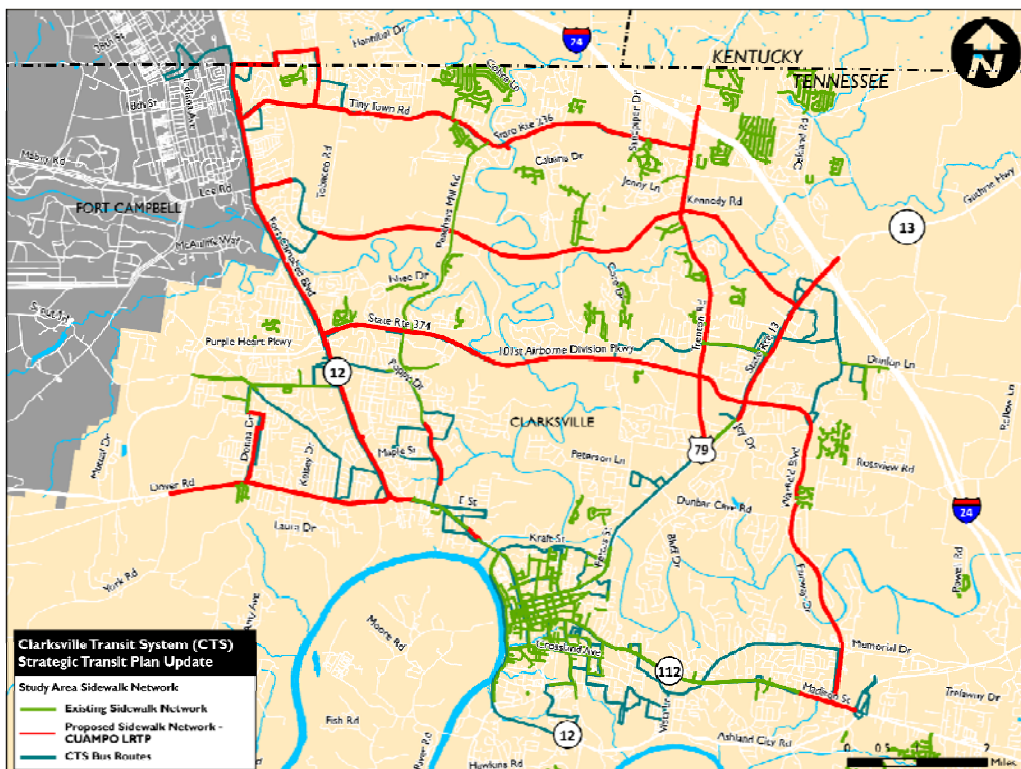


Figure 19: Existing and Proposed Sidewalk Network



Conclusion

CTS will be presented with a number of challenges in the future, many of which are the result of population and employment growth to the east of I-24, just outside the existing CTS service boundary. These growth areas and their relationships with other parts of the county and City of Clarksville may provide CTS with new opportunities to extend their service and tap into new transit markets. CTS' challenge will be to find the financial resources to take advantage of these new opportunities, should their service area boundary include these new growth areas, and to work out operating agreements with requisite parties to serve these areas if that is desired.

At first glance, CTS' fixed route service seems adequate for the existing demographics. It provides service to all the major groups and demographics that are deemed to have a propensity for transit use in the existing service area. However, a closer look at the demographics and existing route network reveal that many routes just skirt the identified areas using the major corridors to serve them and do not venture into or provide direct access into all of them. A closer look at the various areas and neighborhoods should be considered to ensure that the identified areas are adequately served under the existing network and, if not, route changes should be recommended where possible. Such an analysis can be performed through the Comprehensive Operations Analysis (COA) that CTS plans to conduct during the next year. CTS' fixed route network does a good job of connecting many of the important activity centers and popular destinations that are desired by the community including Wal-Mart, Kroger, other various shopping centers, and senior and medical centers. Regular reevaluation of the commercial and retail market is recommended to ensure that important destinations are connected when feasible.

In November 2015, CTS applied for a Section 5317 New Freedom grant under the Access to Transit Program for establishment of a Dial-A-Ride service. A Dial-A-Ride service is service that can be used to increase transit connectivity and coverage by giving riders outside transit corridors a means by which to access the public transportation network. Typically Dial-A-Ride services are offered to individuals who live within the transit service area but outside the transit coverage area. Passengers can schedule trips in advance or same day as available. Passengers benefit by gaining access to the transit network from areas that may have never been served before and being able to reach destinations not currently served by the network. The transportation system benefits by attracting new riders and gathering origin and destination data. Over time the transportation system is able to identify areas of significant usage and use that information to determine whether fixed route service is warranted. This is a valuable alternative to operating trial fixed routes that may or may not succeed. Should CTS be successful, this will greatly impact its ability to serve areas mentioned above where more direct service might be needed inside its service area, but where lack of sidewalks, narrow streets and other parameters and barriers prevent buses from going.

The greatest challenge that CTS is likely to face in the next five years will be determining how to best balance the allocation of its resources (i.e. buses, funding) to ensure that existing service is maintained while new and emerging markets are adequately served. With so much of the growth being projected

outside of the service area, it will be difficult for CTS to serve these burgeoning areas without an increase in revenue and/or funding.

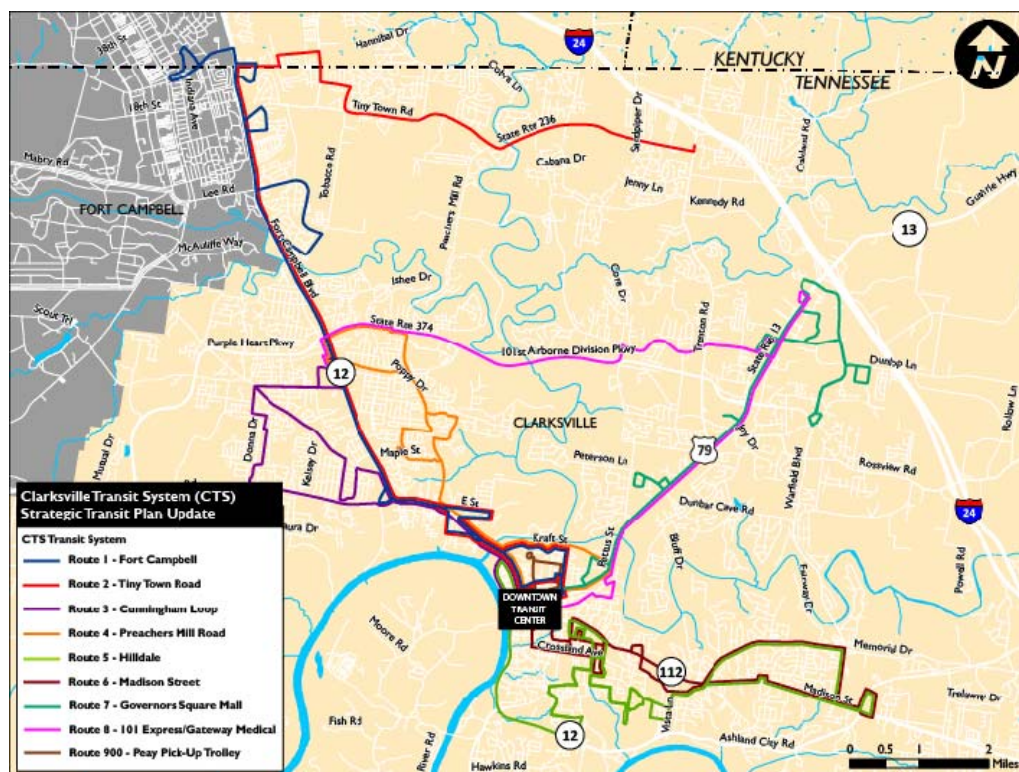
4. EXISTING SERVICE / ROUTE PROFILES

Fixed Route System

CTS operates eight local fixed bus routes throughout the Clarksville area, Montgomery County, and some service into neighboring Christian County, Kentucky. The alignments of the routes are shown in Figure 20. In addition to the eight routes, CTS also operates a trolley service on and around the Austin Peay University campus, named the Peay Pick-Up Trolley, which runs along the perimeter of the campus and is available to students, faculty, and staff and local residents.

The focus of the transit system is the downtown transit center located on Legion Street between North 2nd and 3rd Streets which functions well in the hub and spoke system. It is here where buses meet at the scheduled “pulse” points of the system to coordinate transfers for passengers to all of the routes in the CTS network. Transfers can also be made between select routes at the Wal-Mart located on Fort Campbell Boulevard in north Clarksville, the Wal-Mart on Madison Street in east Clarksville, and a few other informal locations (e.g. Wilma Rudolph Boulevard).

Figure 20: Clarksville Transit Network



The three highest ridership routes (Routes 6, 7, and 1) are all operated on different and important corridors in Clarksville: Madison Street, Wilma Rudolph Boulevard, and Fort Campbell Boulevard. These routes serve the denser, more developed parts of the City both in residential and commercial/retail uses. The remaining routes serve mainly lower density residential areas including the residential areas to the east and

west of Fort Campbell Boulevard, and the areas to the south of Madison Street. They provide some of the ridership that is experienced in the top three routes mentioned above with the seamless connections provided at the transit centers.

With the exception of the Downtown Transit Center, CTS manages very little large infrastructure associated with its local fixed route network. As discussed earlier, CTS' inventory of passenger infrastructure primarily consists of bus shelters with benches, benches without shelters, and numerous bus stop signs that dot the service area.

The eight routes that comprise the majority of the CTS local fixed route network (Peay Pick-Up Trolley not included), their characteristics, and performance metrics are highlighted below.

Route 1: Fort Campbell

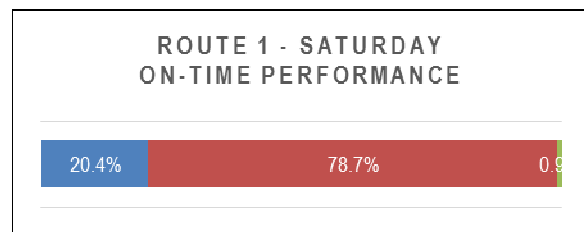
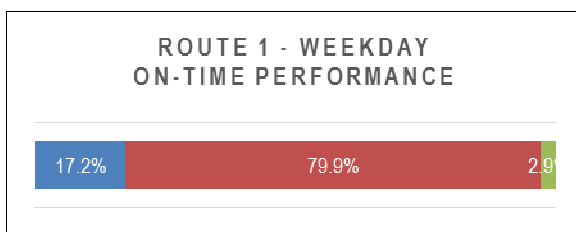
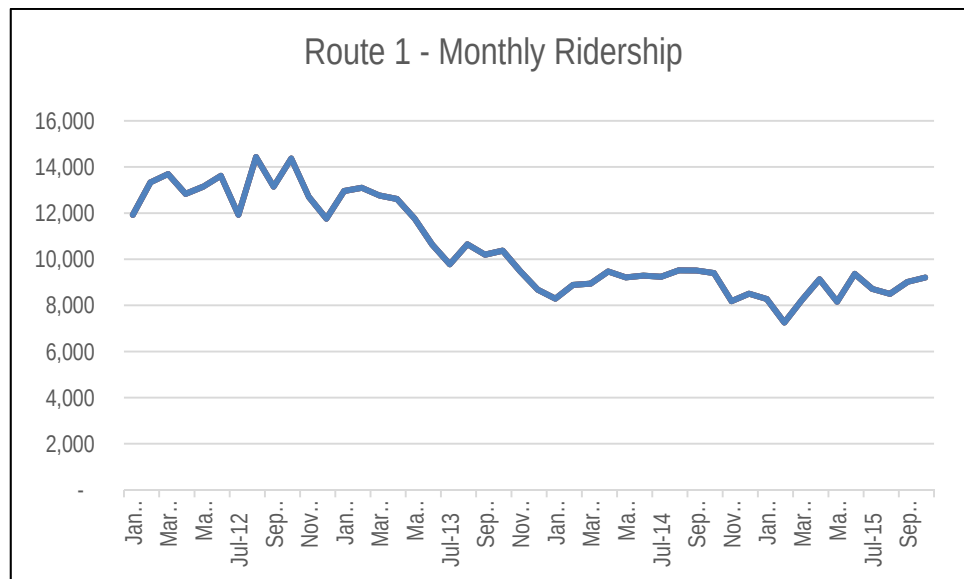
Route 1 operates between Downtown Clarksville and Fort Campbell operating mainly along Fort Campbell Boulevard. It is the only route that operates inside Fort Campbell serving a number of destinations within the military base. It is also one of two routes that provides service into Christian County, Kentucky to the north of Clarksville. Major destinations served by Route 1 include the Downtown Transit Center, Austin Peay University, Wal-Mart-Fort Campbell Boulevard, and Fort Campbell.

Route 1 operates from 4:30AM to 9:00PM on weekdays and from 6:30AM to 9:00PM on Saturdays at 60 minute headways at all times. Connections can be made to all of the routes in the CTS network at the Downtown Transit Center with the exception of Route 2. However, Routes 1 and 2 operate very similar routings along Fort Campbell Boulevard, but serve different markets / destinations, so transfer affinities between the two routes should be minimal. Additional transfers can be made at the Wal-Mart-Fort Campbell Boulevard with Routes 3 and 4.

In Fiscal Year (FY) 2015 (July 2014 – June 2015), Route 1 carried approximately 104,800 riders which was the second highest in the CTS system. This resulted in a productivity rate of 11.1 passengers per revenue hour and 0.7 passengers per revenue mile, which was the fourth highest in the system for both metrics. Ridership on Route 1 has declined over recent years with monthly ridership in 2015 averaging around 9,000 riders per month from a peak of approximately 13,000 riders per month in 2012. Overall, on-time performance on Route 1 is very good with almost 80% of trips being on-time and 3% of trips considered late for both weekdays and Saturdays and less than 3%. Trips considered "early" (more than two minutes early) hovered around 20% of all trips which is high and should be reviewed.

Annual Ridership (FY2015)	Passengers per Rev Hour	Passengers per Rev Mile
104,786	11.09	0.66

	Total Trips	Span	Peak Headway	Off-peak Headway
Weekday	17	4:40a – 8:50p	60 min	60 min
Saturday	15	6:40a – 8:50p	-	60 min



Route 2: Tiny Town Road

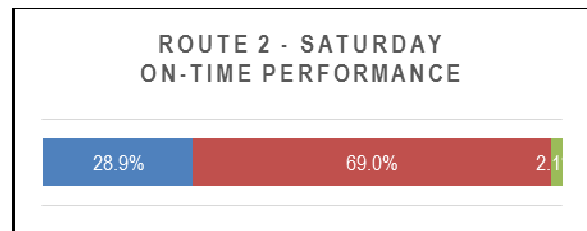
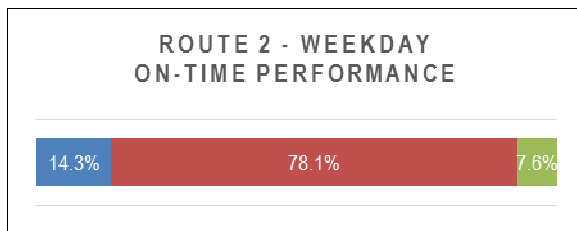
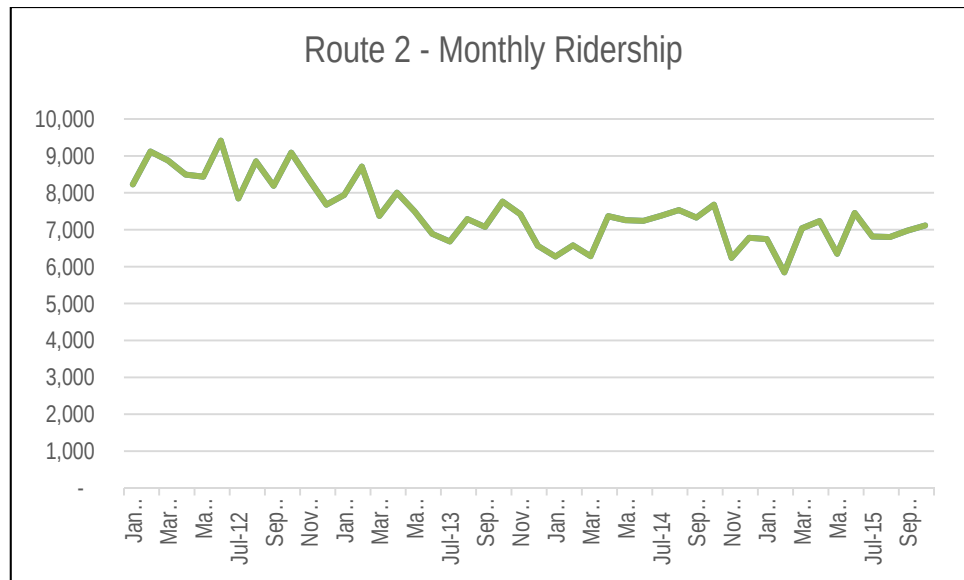
Route 2 operates between Downtown Clarksville and northeast Clarksville operating mainly along Fort Campbell Boulevard and Tiny Town Road. It is the second of two routes (Route 1) that operates into Christian County, Kentucky to the north of Clarksville. Major destinations served by Route 2 include the Downtown Transit Center, Austin Peay University, Wal-Mart-Fort Campbell Boulevard, and the commercial/retail area in northwest Clarksville along Tiny Town Road.

Route 2 operates from 6:30AM to 8:30PM on weekdays and from 7:30AM to 8:30PM on Saturdays at 60 minute headways at all times. Together with Route 1, service along Fort Campbell Boulevard between Downtown Clarksville and Stateline Road in north Clarksville is offered every 30 minutes. Connections can be made to Routes 3, 6, and 7 at the Downtown Transit Center with the exception of Route 1. However, Routes 1 and 2 operate very similar routings along Fort Campbell Boulevard so transfer affinities between the two routes should be minimal. Additional transfers can be made at the Wal-Mart-Fort Campbell Boulevard with Route 8.

In FY 2015, Route 2 carried approximately 83,600 riders which was the third lowest in the CTS system. This resulted in a productivity rate of 11.5 passengers per revenue hour and 0.3 passengers per revenue miles. Despite being on the lower half of routes in terms of ridership, Route 2's performance in the metric of passengers per revenue hour was the third highest in the system. Ridership on Route 2 has declined slightly over recent years with monthly ridership in 2015 averaging around 6,500 riders per month from a peak of approximately 8,500 riders per month in 2012. However, compared to other routes in the system, Route 2 has not experienced the same level of decline in ridership. Overall, on-time performance on Route 2 is very good with almost 80% of trips being on-time and 8% of trips considered late for weekdays. On-time performance on Saturdays is bit lower, with 70% of routes considered on-time but almost 30% of trips considered early, which can be a problem for riders.

Annual Ridership (FY 2015)	Passengers per Rev Hour	Passengers per Rev Mile
83,613	11.52	0.27

	Total Trips	Span	Peak Headway	Off-peak Headway
Weekday	13	6:30a – 8:20p	60 min	60 min
Saturday	12	7:30a – 8:20p	-	60 min



Route 3: Cunningham Loop

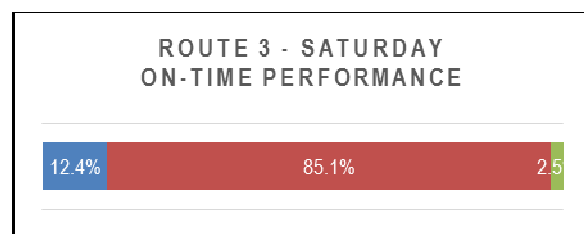
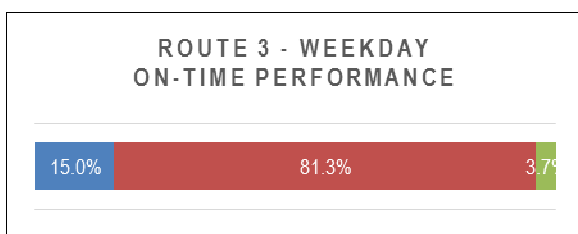
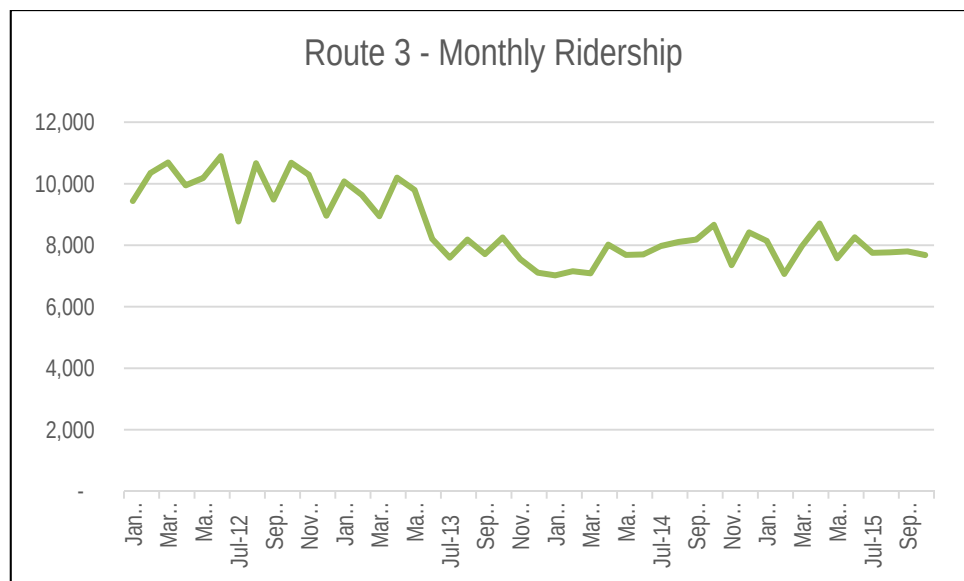
Route 3 operates between Downtown Clarksville and the Wal-Mart on Fort Campbell Boulevard. It primarily serves the residential neighborhoods just west of Fort Campbell Boulevard. Major destinations served by Route 3 include the Downtown Transit Center, Wal-Mart-Fort Campbell Boulevard, Kroger North, and the Dover Road Medical Center.

Route 3 operates from 6:00AM to 9:00PM on weekdays and from 7:00AM to 9:00PM on Saturdays at 30 minute headways on weekdays and 60 minute headways during evenings and on Saturdays. Connections can be made to all of the routes in the CTS network at the Downtown Transit Center due to its high frequency of service. Additional transfers can be made at the Wal-Mart-Fort Campbell Boulevard with Routes 1, 2, 4, and 8.

In FY 2015, Route 3 carried approximately 96,400 riders which was the fourth highest in the CTS system. This resulted in a productivity rate of 12.6 passengers per revenue hour and 0.7 passengers per revenue miles which was the second highest in the CTS system for both metrics. Ridership on Route 3 has also declined over recent years with monthly ridership in 2015 averaging around 8,000 riders per month from a peak of approximately 11,000 riders per month in 2012. Overall, on-time performance on Route 3 is very good with weekday and Saturday trips considered on-time exceeding 80%. The percentage of trips considered early is lower than previously discussed routes for weekday and Saturday trips at 15% and 12%, respectively.

Annual Ridership (FY 2015)	Passengers per Rev Hour	Passengers per Rev Mile
96,417	12.60	0.74

	Total Trips	Span	Peak Headway	Off-peak Headway
Weekday	27	6:00a – 8:50p	30 min	30-60 min
Saturday	14	7:00a – 8:50p	-	60 min



Route 4: Peachers Mill Road

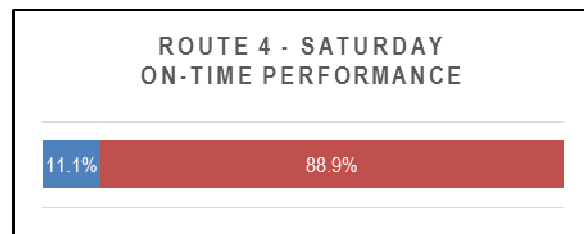
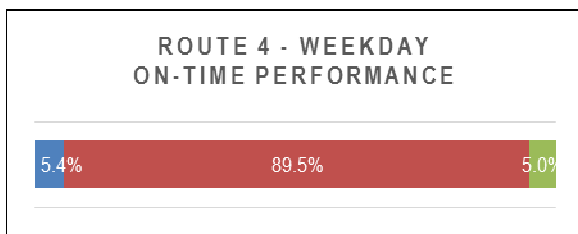
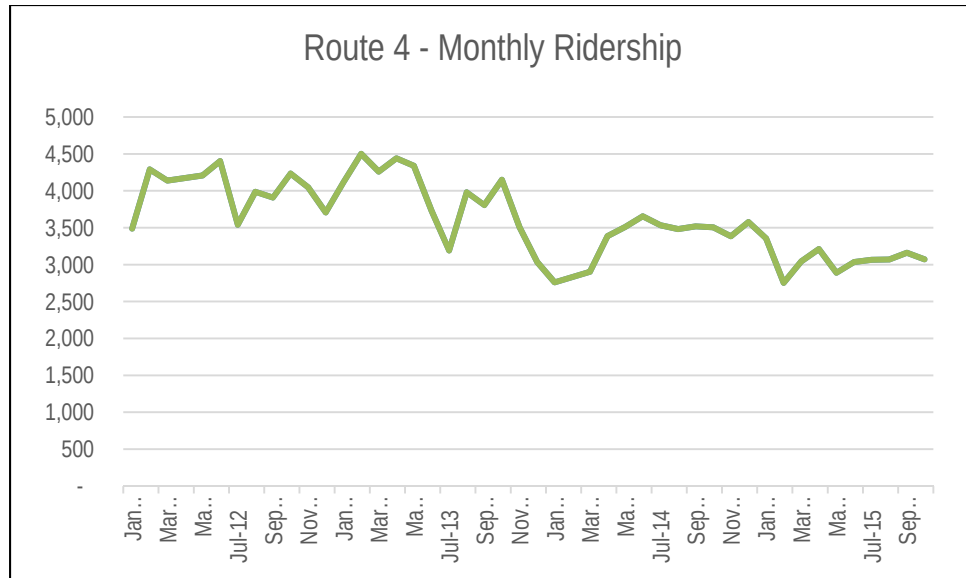
Route 4 operates between Downtown Clarksville and the Wal-Mart on Fort Campbell Boulevard. It primarily serves the residential neighborhoods to the east of Fort Campbell Boulevard along Peachers Mill Road. Major destinations served by Route 4 include the Downtown Transit Center and Wal-Mart-Fort Campbell Boulevard.

Route 4 operates from 6:00AM to 9:00PM on weekdays and from 7:00AM to 9:00PM on Saturdays at 60 minute headways at all times. Connections can be made to all of the routes in the CTS network at the Downtown Transit Center with the exception of Route 2. However, transfers can be made to Route 1 which runs along a similar alignment to Route 2. Additional transfers can be made at the Wal-Mart-Fort Campbell Boulevard with Routes 1 and 3.

In FY 2015, Route 4 carried approximately 39,300 riders which was the lowest in the CTS system. Additionally, the difference between Route 4 and Route 5, which had the third lowest ridership in FY 2015, was over 40,000 riders. In other words, Route 5 carried over double the amount of riders than Route 4 in FY 2015 despite only being two places apart in overall ridership. This resulted in a productivity rate of only 8.6 passengers per revenue hour and 0.5 passengers per revenue miles which was the lowest in the CTS system in terms of passengers per revenue hour and second lowest in terms of passengers per revenue mile. Ridership on Route 4 has declined over recent years with monthly ridership in 2015 averaging around 3,500 riders per month from a peak of approximately 4,500 riders per month in 2012 (a relatively minimal decline compared to other routes). On-time performance on Route 4 is the best in the system with nearly 90% of weekday and Saturday trips considered on-time and few trips considered early or late.

Annual Ridership (FY 2015)	Passengers per Rev Hour	Passengers per Rev Mile
39,294	8.60	0.51

	Total Trips	Span	Peak Headway	Off-peak Headway
Weekday	15	6:00a – 8:50p	60 min	60 min
Saturday	14	7:00a – 8:50p	-	60 min



Route 5: Hilldale

Route 5 operates between Downtown Clarksville and the Wal-Mart on Madison Street in eastern Clarksville. It serves the residential neighborhoods between Madison Street and Ashland City Road. Major destinations served by Route 5 include the Downtown Transit Center, the Clarksville Square Shopping Center, the Ajax Senior Center, the Tradewinds South Shopping Center, Veterans Plaza, and the Kmart, Food Lion, and Wal-Mart on Madison Street/New Ashland Road.

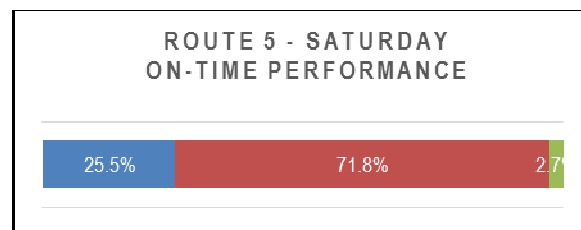
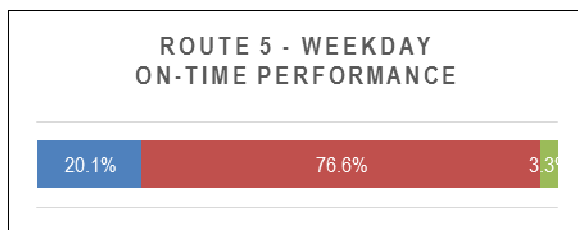
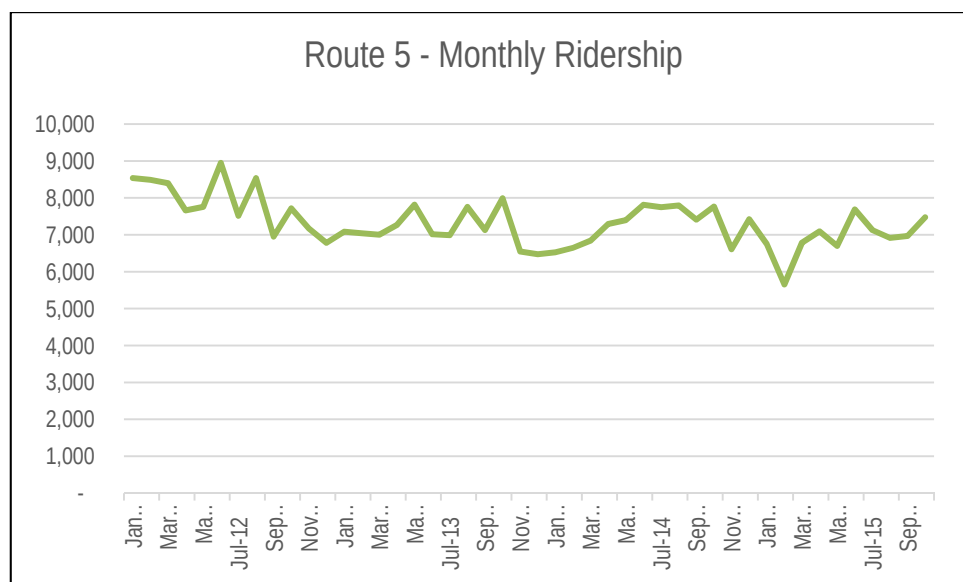
Route 5 operates from 6:00AM to 9:00PM on weekdays and from 7:00AM to 9:00PM on Saturdays at 60 minute headways at all times. Connections can be made to all of the routes in the CTS network at the Downtown Transit Center with the exception of Route 2. However, transfers can be made to Route 1 which runs along a similar alignment to Route 2. Additional transfers can be made at the Wal-Mart-Madison Street with Route 6.

In FY 2015, Route 5 carried approximately 85,400 riders which rounds out the top five of CTS routes in terms of ridership. This resulted in a productivity rate of only 9.8 passengers per revenue hour and 0.6 passengers per revenue miles which was in the bottom half of all routes for both metrics. Ridership on Route 5 has declined over recent years with monthly ridership in 2015 averaging around 7,000 riders per month from a peak of approximately 8,500 riders per month in 2012 (a relatively minor drop compared to

other routes). On-time performance on Route 5 is relatively poor with weekday and Saturday trips considered on-time only around 75% and a large fraction of trips considered early. Very few trips on Route 5 were considered late at around 3% for both weekdays and Saturdays.

Annual Ridership (FY 2015)	Passengers per Rev Hour	Passengers per Rev Mile
85,424	9.76	0.60

	Total Trips	Span	Peak Headway	Off-peak Headway
Weekday	15	6:00a – 8:50p	60 min	60 min
Saturday	14	7:00a – 8:50p	-	60 min



Route 6: Madison Street

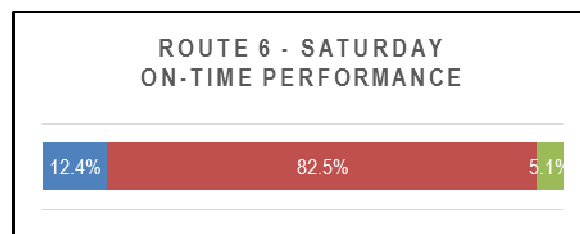
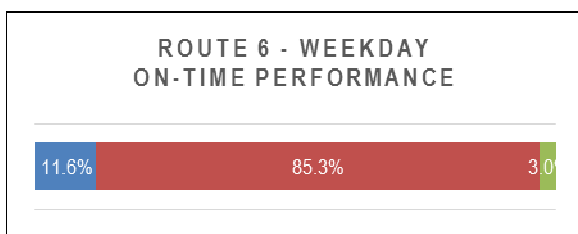
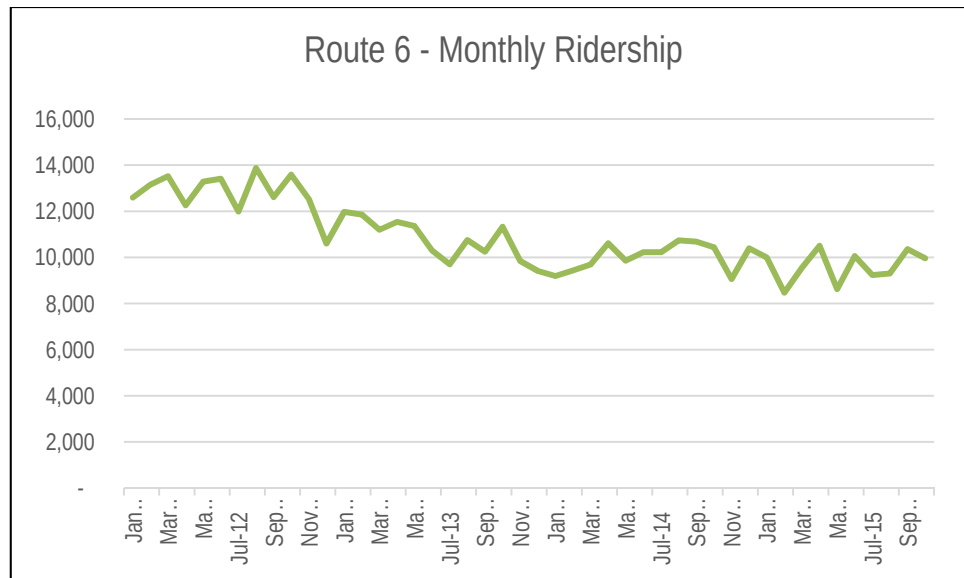
Route 6 operates between Downtown Clarksville and the Wal-Mart on Madison Street in eastern Clarksville. It serves the Madison Street corridor and the surrounding neighborhoods. Major destinations served by Route 6 include the Downtown Transit Center, the Ajax Senior Center, Veterans Plaza, the Tradewinds South Shopping Center, the Kroger on Madison Street and Liberty Parkway, and the Kmart, Food Lion, and Wal-Mart on Madison Street/New Ashland Road. All of these destinations are also served by Route 5. While this may seem redundant, Route 6 serves as a local circulator type service for the neighborhoods beyond the Madison Street corridor. Route 6 operates along Madison Street with few diversions into the adjacent neighborhoods and is likely a good route for people transferring from other routes in the CTS system bound for these destinations on Madison Street.

Route 6 operates from 6:00AM to 9:00PM on weekdays and from 7:00AM to 9:00PM on Saturdays at 30 minute headways on weekdays and 60 minute headways during evenings and on Saturdays. Connections can be made to all of the routes in the CTS network at the Downtown Transit Center due to its high frequency of service. Additional transfers can be made at the Wal-Mart-Madison Street with Route 5.

In FY 2015, Route 6 carried approximately 120,600 riders which was the highest in the CTS system. This resulted in a productivity rate of 15.5 passengers per revenue hour and 1.0 passengers per revenue miles which was highest for the CTS system for both metrics. Despite its high performance, ridership on Route 6 has also experienced declines over recent years with monthly ridership in 2015 averaging around 10,000 riders per month from a peak of approximately 13,000 riders per month in 2012. On-time performance on Route 6 is very good with weekday and Saturday trips considered on-time around 85% and very few trips considered early or late.

Annual Ridership (FY 2015)	Passengers per Rev Hour	Passengers per Rev Mile
118,765	15.52	1.01

	Total Trips	Span	Peak Headway	Off-peak Headway
Weekday	27	6:00a – 8:50p	30 min	30-60 min
Saturday	14	7:00a – 8:50p	-	60 min



Route 7: Governors Square Mall

Route 7 operates between Downtown Clarksville and Governors Square Mall in northeastern Clarksville. It primarily serves the commercial and retail areas of the Wilma Rudolph Boulevard corridor. Major destinations served by Route 7 include the Downtown Transit Center, the Clarksville Social Security Office, the Wal-Mart on Wilma Rudolph Boulevard/Westfield Court, the numerous commercial/retail/hotels establishments on Wilma Rudolph Boulevard, and the Governors Square Mall.

Route 7 operates from 6:00AM to 9:00PM on weekdays and from 7:00AM to 9:00PM on Saturdays at 30 minute headways on weekdays and Saturdays and 60 minute headways during evenings. Route 7 is the only route to operate at 30 minute headways on Saturdays due to the corridor's popularity for shopping trips and errands. Connections can be made to all of the routes in the CTS network at the Downtown Transit Center due to its high frequency of service. Additional transfers can be made at various points on the route with Route 8.

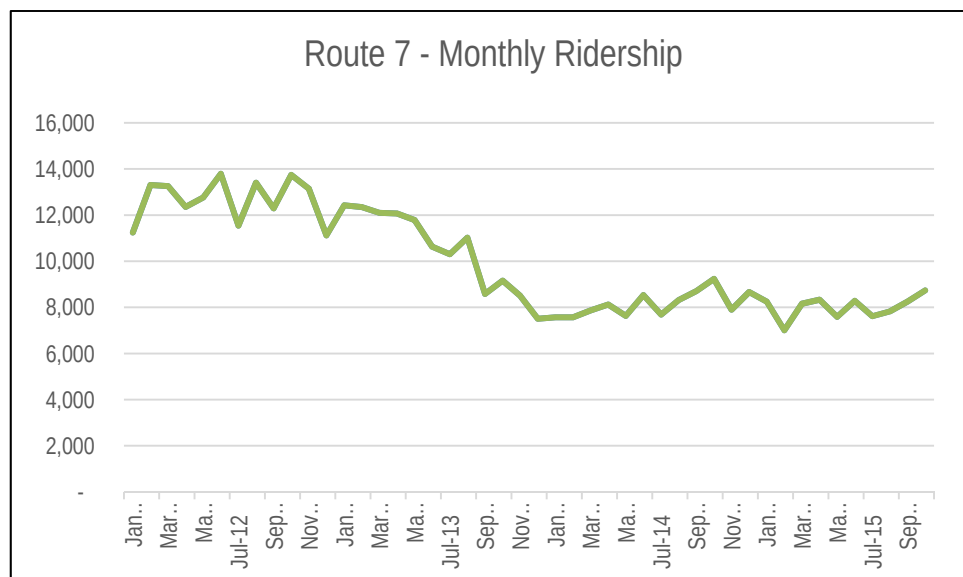
In FY 2015, Route 7 carried approximately 98,100 riders which was the third highest in the CTS system. This resulted in a productivity rate of 10.7 passengers per revenue hour and 0.7 passengers per revenue miles which was the fourth highest in the CTS system for both metrics. Despite its high performance, ridership on Route 7 has also experienced declines over recent years with monthly ridership in 2015

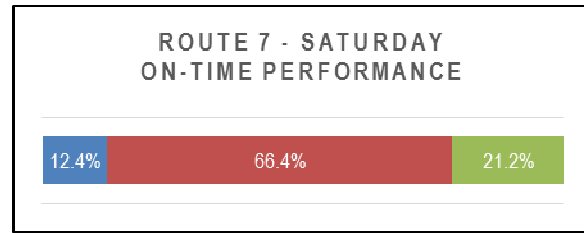
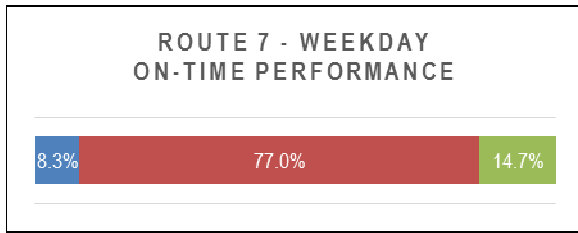
averaging around 10,000 riders per month from a peak of approximately 13,000 riders per month in 2012. It is important to note that some of this loss in ridership can be attributed to the transfer of some of the Route 7 trips to Route 8 for operational efficiencies which occurred in October of 2013.

On-time performance on Route 7 is average on weekdays, with 77% of all trips considered on-time, but poor on Saturdays where only 66% of trips are considered on-time. The percentage of trips considered late on Route 7 is almost 15% on weekdays and exceeds 20% on Saturdays. Operations on Route 7 are especially challenging due to the numerous traffic signals along the corridor and the heavy congestion experienced on Saturdays due to the number of shopping trips.

Annual Ridership (FY 2015)	Passengers per Rev Hour	Passengers per Rev Mile
98,136	10.74	0.71

	Total Trips	Span	Peak Headway	Off-peak Headway
Weekday	30	6:00a – 8:50p	30 min	30-60 min
Saturday	28	7:00a – 8:50p	-	30-60 min





Route 8: 101 Express/Gateway Medical Center

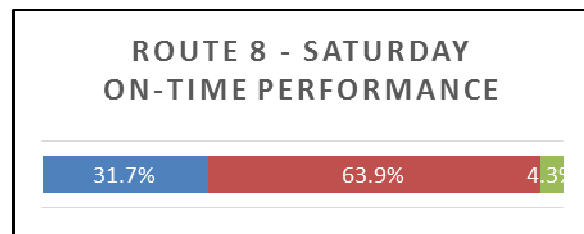
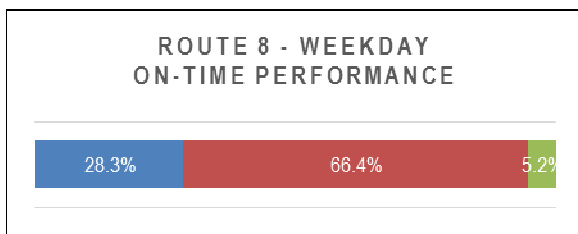
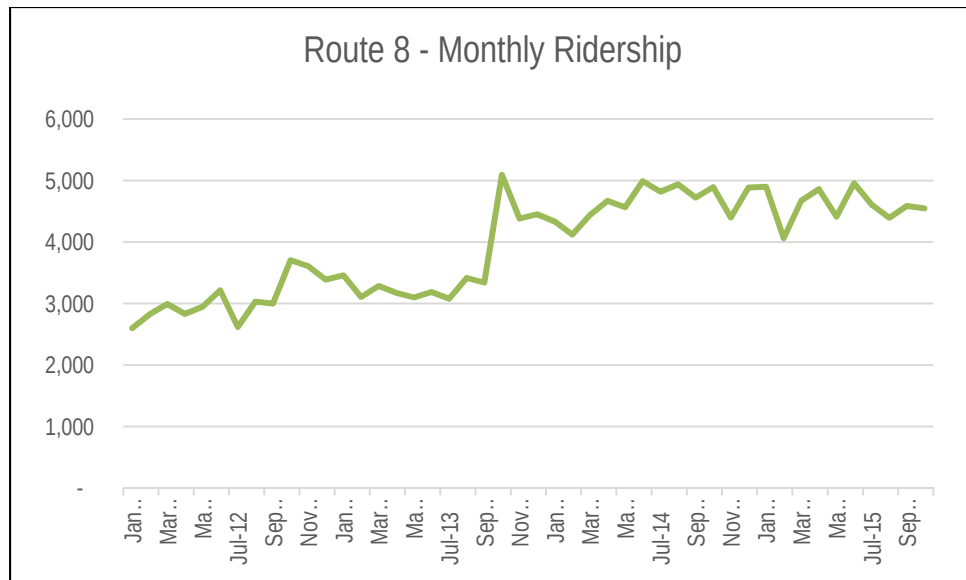
Route 8 operates between Downtown Clarksville and the Gateway Medical Center in northeastern Clarksville and continues west to the Wal-Mart on Fort Campbell Boulevard. It primarily serves the commercial and retail areas of the Wilma Rudolph Boulevard corridor and the residential areas to the north and south of Wilma Rudolph Boulevard. Major destinations served by Route 8 include the Downtown Transit Center, the Clarksville Division of Motor Vehicles, Miller Motte Technical College, the Gateway Medical Center, the numerous commercial/retail/hotel establishments on Wilma Rudolph Boulevard, the Kmart on Athletic Avenue, and the Wal-Mart-Fort Campbell Boulevard.

Route 8 operates from 5:00AM to 9:00PM on weekdays and from 6:00AM to 8:00PM on Saturdays at 60 minute headways at all times. Connections can be made to all of the routes in the CTS network at the Downtown Transit Center with the exception of Route 2. However, transfers to Route 2 can be made at the Wal-Mart on Fort Campbell Boulevard.

In 2014, Route 8 carried approximately 56,500 riders which was the second lowest in the CTS system. Route 8 has experienced relatively flat ridership before and after the Route 7 and 8 transfer despite all other routes experiencing declines. As mentioned above, it is important to note that some relative gains in ridership can be attributed to Route 8 inheriting some trips from Route 7 for operational efficiencies which occurred in October of 2013. Ridership on Route 8 averaged approximately 3,000 riders per month. On-time performance on Route 8 is poor on weekdays and Saturdays with approximately 65% of all trips considered on-time but approximately 30% of trips considered to be more than two minutes early, which is very high. Trips considered late were few with only 5% of trips considered late.

	Annual Ridership (2014)	Passengers per Rev Hour	Passengers per Rev Mile
	56,519	-	-

	Total Trips	Span	Peak Headway	Off-peak Headway
Weekday	16	5:00a – 8:50p	60 min	60 min
Saturday	13	6:00a – 8:50p	-	60 min



Service to Fort Campbell

Fort Campbell is a highly secure Army Post and part of a system that houses, trains and equips rapid deployment and other types of active duty special operations units. As mentioned above, only Route 1 serves specific locations on the post where most riders need to go, including the commissary, PX, Austin Peay University education facility, library, gym, etc. Currently, an armed military police officer boards the CTS vehicle as it enters the post and circulates around. Alighting passengers must display an appropriate military identification card indicating that they have permission to be on the post when they attempt to alight. Other passengers remain on board and the officer alights as well when the vehicle exits the post.

Anecdotal evidence suggests that most of the current riders are workers going to these facilities from outside the post. Most uniformed military personnel, whether they live on or off post, have access to a vehicle and therefore this demographic does not seem to have a high demand for transit services. The potential demand may be from spouses and children of military personnel. Another group who may need transit services are active duty personnel who have a need to travel during duty hours once they arrive at work, either for other work tasks, errands, to go to lunch, etc. However, getting an unsecured CTS transit vehicle to circulate to and within a secure military installation is highly problematic given today's and tomorrow's threat environment. If a circulator system is warranted, it would likely work more smoothly if operated by the Army. Therefore, given what we know about the ridership today and in the future who

desire access to Fort Campbell, the existing system and operations parameters are appropriate for the near future.

Existing Hub and Spoke Service

CTS' existing service model is a hub and spoke concept, whereby the downtown transit center serves as a hub and the radial transit routes along major corridors and other arterial roadways serve as the spokes. Bus service pulses out and in on 30 and 60 minute headways, which is a relatively easy system for riders to understand. Given the service area demographics and the distribution of transit origins and destinations and the number of vehicles CTS has at its disposal, the existing system is adequate. CTS should explore the use of established/formal mini-hubs to improve operations, particularly to reduce travel and transfer times. These mini-hubs would serve as scheduled points where transit riders can transfer between routes without having to travel downtown in order to make a transfer. CTS currently operates a more informal mini-hub at the Wal-Mart on Fort Campbell Boulevard and has a high degree of success. Formalized mini-hubs would involve agreement from landowners covering operations, terms, liability, etc. In the future, perhaps in a Comprehensive Operations Analysis (COA), CTS should explore how implementation of a multi-hub system would affect its schedules, vehicle requirements, and anticipated operations and maintenance (O&M) expenses.

Should CTS explore the relocation of the downtown hub, it and other stakeholders should be cognizant of the fact that potentially moving the hub too far away from the current location potentially creates an "imbalance"- a condition similar to when a wheel doesn't fit on the hub quite well enough. This could lead to a situation whereby the routes could have trouble making the desired headways, thus needing additional vehicles to keep the headways at 30 to 60 minutes, or could result in additional deadhead miles or both. This could also potentially add to increased operating costs, increased travel times and trouble making the pulse. Three scenarios are presented below to visualize this concept.

In the Existing Location scenario, the transit center remains at the same location and the distances required to travel to/from the respective route terminus points stays the same, as shown in Figure 21. Therefore, the change in revenue miles and revenue hours is zero.

In the Location 1 scenario, the transit center is relocated to a strategic location somewhere along an existing route and at a location where other routes would find it fairly easy to access the proposed site, as shown in Figure 22. Route A experiences a shorter route as the new transit center location is closer to its terminus point and along its original alignment. Route B experiences a longer route as the new transit center location is located farther from its terminus point but still somewhere easily accessible from its original alignment. In this scenario, it easily takes on the segment dropped by Route A. Assuming all else remains the same (i.e. frequency), the net change in revenue miles and revenue hours is expected to be zero or negligible.

In the Location 2 scenario, the transit center is located a good distance away from the existing transit center and not on any of the existing route alignments, as shown in Figure 23. Route A operates along its original alignment to serve its existing market and then accesses the transit center with a number of

deviations that could represent a non-grid street network or spreading out of routes for coverage purposes and is denoted by the distance “n”. Route B takes on a more direct routing to the new transit center but still travels farther compared to the original transit center location denoted by “m”. The additional operating distance (m and n) taken on by the routes could be large or small, however, when considering the number of trips based on the route’s frequency of service and the number of days of operation over the year, the number of additional revenue miles and hours accumulated due to the relocation of the transit center could be quite large.

Figure 21: Transit Center Scenario – Existing Location

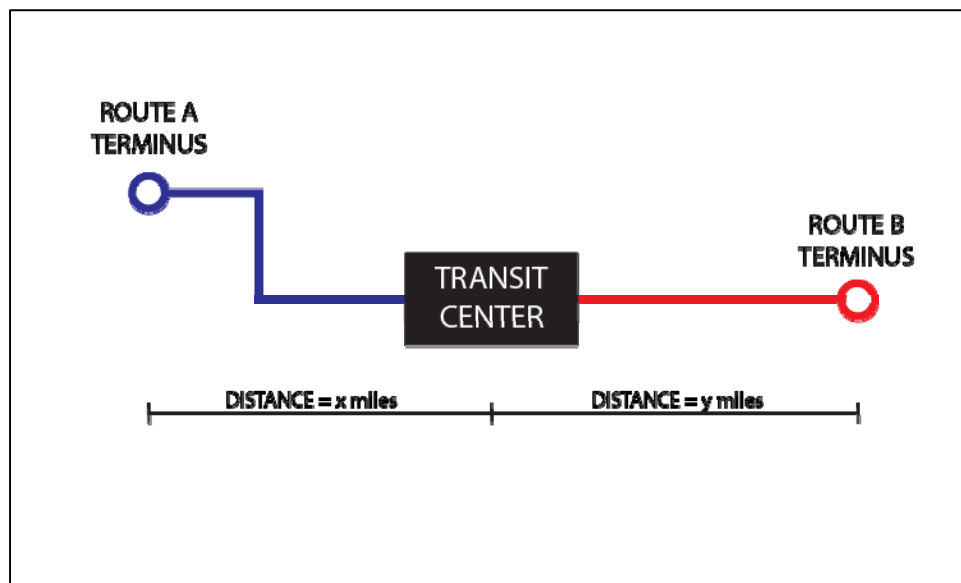


Figure 22: Transit Center Scenario – Location 1

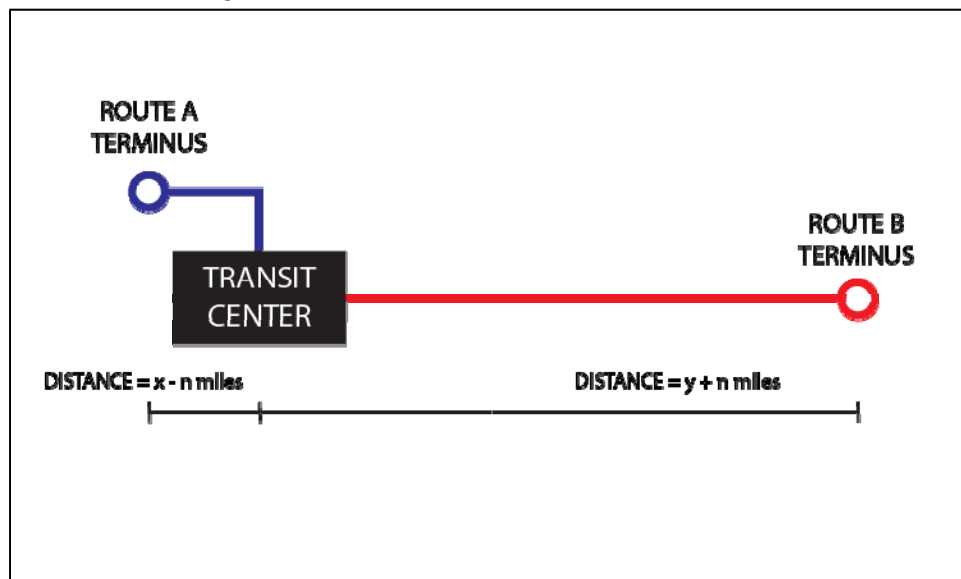
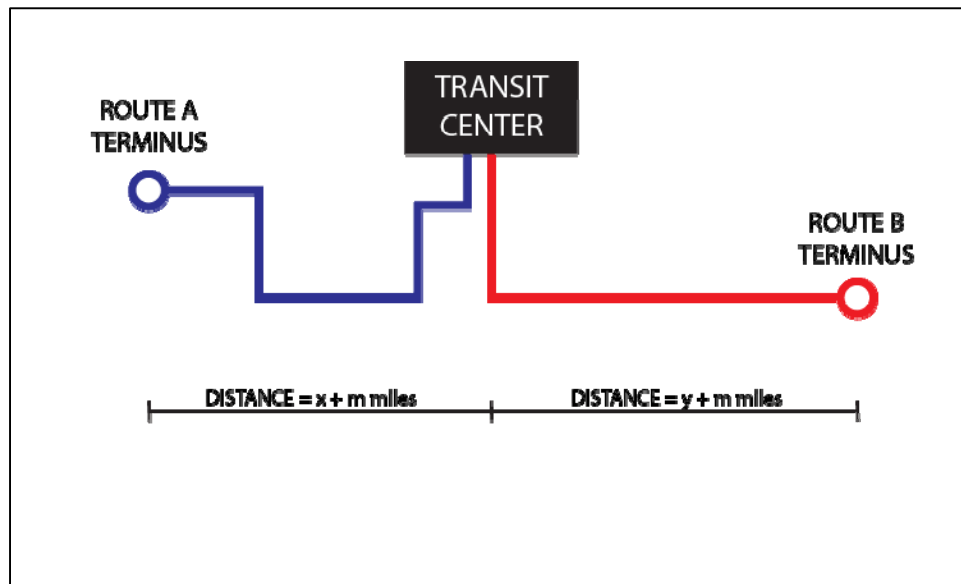


Figure 23: Transit Center Scenario – Location 2



Clarksville/Montgomery County Industrial Park

CTS has the potential to provide additional service to the Clarksville/Montgomery County Industrial Park. However, given that these jobs often involve shift work and workers have a variety of origins, it is challenging to serve the needs of a largely industrial and manufacturing workforce with traditional fixed-route transit. CTS should continue to monitor service requests in the area of the industrial park and work with employers once there is a large enough group of employees seeking to travel during normal service hours.

Service to Other Regional Transit Systems / Programs

CTS provides a shuttle from the downtown transit center to the Exit 8 park-and-ride lot so patrons can catch the RTA's 94X Express Bus. Currently, only a handful of riders utilize the service and the service is paid for with grant funds. Once the grant funds run out and the park-and-ride lot is relocated to Exit 11, it may be difficult for CTS to justify operating this service. CTS should continue to participate in partnerships with other service providers and MPOs (Clarksville and Nashville) to monitor the need for vanpools, carpools and ride matching and look for an alternative means to serve this small but important market.

CTS Fixed-Route Service Challenges

While CTS operates a lean and efficient service that appears to adequately serve the community, there exist some challenges to the operation that should be acknowledged and marked for improvement:

On-time performance Generally, all the routes operate with a reasonable level of on-time performance. However, too many trips operate early, which is sometimes considered worse than running late. Riders will often have to wait until the next trip (~30 to 60 minutes) when buses leave the stop early, rather than the five to ten minutes typical when buses are running late.

While the bulk of CTS' on-time performance issues are with trips running early, some routes also experience a number of trips that are considered late, particularly Route 7. This is highly attributable to the growing level of roadway congestion that is experienced during most of the day on Wilma Rudolph Boulevard, but is also observed at peak times on major corridors such as Fort Campbell Boulevard, Madison Street, Riverside Drive, and Ashland City Road. CTS has recently begun to add shuttle buses, using standby drivers, to pick up/drop off passengers when routes are running behind schedule to allow buses to catch up and minimize delays to the route and the network. While this is an innovative idea to aid in improving on-time performance, it's not a long-term solution as standby drivers may not always be available and it doesn't rectify what is making the route late in the first place.

Street network The street network that characterizes Clarksville also makes serving the area a challenge. With a limited number of river crossings and a formal grid network limited only to the downtown area, the transit network is sometimes circuitous and overlapping, causing numerous routes to operate on the same roadways and creating large loops in the route network. Additionally, many of the roads that would improve connectivity between routes outside of the downtown core are not deemed suitable for transit service as they are characterized by high speed limits, one lane in each direction causing congestion or difficulty in stopping a bus or adding a bus stop (e.g. Trenton Road), or topography issues such as steep grades.

Expansive service area Policies that emphasize service area *coverage*, rather than service *frequency*, may make it challenging for CTS to attract a higher number of riders. The CTS system map is vast and covers many destinations on the map. However, this broad service area has also created large loops in many routes (e.g. Dover Road/Donna Drive/Lafayette Road on Route 3) which increases travel time for riders since their origin/destination is only served either in the outbound or inbound direction but not both.

Development style Like so many other U.S. cities, many of the Clarksville area's major commercial/retail establishments are characterized by large parking lots and setbacks and are located on roads with high speed limits and a minimal sidewalk network. This can be seen at many of the shopping centers on Wilma Rudolph Boulevard, Fort Campbell Boulevard, and on the eastern edges of Madison Street. In order for transit to provide adequate service to such developments, the bus must actually turn into the parking lot to safely drop off passengers. This causes diversions and loops on routes, and reduces route efficiency by creating numerous opportunities for routes to run late.

Dial-A-Ride Service

CTS recently applied for a grant to provide Dial-A-Ride services. Such services could potentially mitigate some of the barriers discussed above. This new service could provide transit to new customers in areas that are typically difficult to provide service for. It can also provide trip origin and destination points and data for use in developing future routes. Should CTS prove to be successful in getting the 5317 funds to start the service, it will go a long way to providing expanded transit services in a cost-effective and efficient manner.

Agreements with Regional Providers

Some areas that need transit service are out of the CTS current service area and are served by Mid Cumberland Human Resource Agency through its rural transit service. While these areas tend to be closer to Clarksville and are logically connected to the CTS service and routes, CTS cannot just provide service to them unilaterally. It must work with Mid Cumberland to develop a Memorandum of Understanding and/or other agreement for permission to serve these areas.

Changes in Fares and Transfers

CTS increased fares in 2012 and did away with free transfers in 2013. These two events worked in tandem to significantly decrease ridership. While some ridership has come back, and the AARP free rides for seniors will boost ridership, these two events combined to negatively impact ridership, perhaps in a permanent way, by pricing some customers out of the fixed route system.

Paratransit System

CTS provides paratransit services for its service area that includes the City of Clarksville and the Oak Grove area of Christian County, Kentucky as well as Fort Campbell. The service is known as the Lift. Paratransit is designed for transit customers who have a physical and/or mental condition(s) which prevents them from using the regular fixed route system. CTS will provide door to door service for customers who qualify and return an application to the CTS' offices.

The paratransit service area required by the Federal Transit Administration is defined as a three-quarter mile buffer around the existing fixed routes, meaning that CTS must provide paratransit service if the origin or destination is within three-quarters of a mile of the existing fixed route alignment. However, CTS' current policy is to provide paratransit service throughout its entire service area.

CTS charges \$2.50 per paratransit trip. This is less than the maximum allowable fare set by the ADA which is double the regular fixed-route fare. Reservations for next day service and up to 14 days in advance can be made between the hours of 8:00 am-4:30 pm Monday through Sunday. If a customer is not ready to depart when the vehicle arrives for pick-up, or cannot be located at the scheduled pick-up location at the scheduled time, the trip is considered "no-show." No-shows caused by reasons beyond the customer's control (e.g., late pick-up, family emergency, medical condition) or operator error will not be counted against them. No-show penalties are calculated on a 12-month period and all no-show trips are logged in the customer's file. Beginning with the 11th no-show, customers will receive a warning letter. The 12th no-show results in a 60-day suspension from receiving paratransit service. There is an appeals process in which customers must notify CTS in writing.

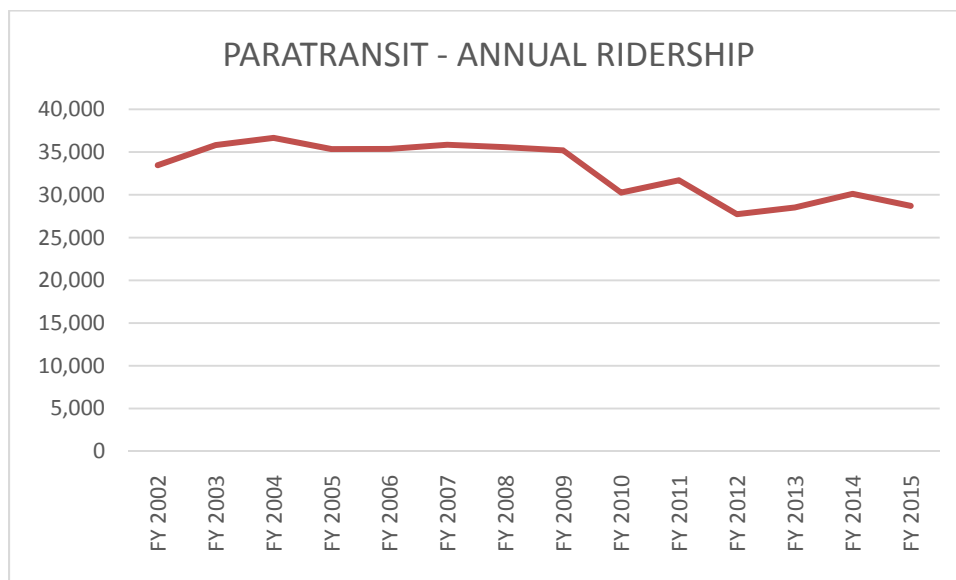
Days and hours of paratransit service are Monday through Friday, 7:00AM until 9:00PM, and Saturday from 7:00AM through 9:00PM. Service is provided in the Fort Campbell area only starting at 5:00AM.

Paratransit service is not available on Sunday. Once an appointment has been made the day before, CTS

does not change appointment times unless there has been a cancellation. During discussion with CTS staff, they indicate that they rarely deny trips on the Lift due to scheduling or vehicle availability.

The declining number of paratransit trips (Figure 24) is dramatically different from the trend seen in other local transit systems across the country, where the number of paratransit trips have greatly increased over the past decade. Clarksville is seemingly a younger community in general and a large number of its households have access to a vehicle. Also, the senior populations that may need the paratransit services seem to be concentrated. This may indicate that they live in a setting where some transportation services are provided (i.e. they are living in an assisted living facility that provides transportation or are participating in other programs), and thus there is not an across the board reliance on the ADA service. Also, CTS has a very successful program where they provide travel training for potential ADA customers, giving them skills and the confidence to use the fixed route system. Travel training is aimed at passengers with disabilities who wish to learn to navigate the fixed route bus system. Such passengers can call bus information or the paratransit office to schedule travel training. The travel trainer will meet the individuals at the downtown transit center. At that time the travel trainer will go over the bus schedule, fares, passes and routes. The trainer will also instruct the passenger on what is needed to obtain the proper ID for receiving a reduced fare. The trainer will then ride the bus with the passenger and teach them about using the fare box, listening for ADA announcements, how to signal for a stop, and using the lift if needed. The trainer will make at least one transfer with the passenger and complete at least one full round trip. Passengers will be taught about everything from what a bus stop looks like to safe procedures for waiting for the bus.

Figure 24: CTS Paratransit Trips FY 2002 – FY 2015



5. RECOMMENDATIONS

Recommendations for the CTS Strategic Plan were developed in consultation with CTS' staff, the MPO staff and with input from various stakeholders. The development of recommendations began with a review of the previous Strategic Plans as well as the existing fixed route and paratransit operations. Input was also received at a stakeholder workshop held on September 29, 2015. Stakeholders representing a diverse cross-section of businesses, government and institutions in the Clarksville area were invited to attend, including:

- Austin Peay University
- Fort Campbell Army Post
- Airport
- CUAMPO
- City of Clarksville elected officials
- CTS
- Clarksville Public Works
- Housing Authority
- NAACP
- Gateway Medical Center
- Two Rivers Industrial Board
- Other employers

Only twelve (12) stakeholders participated from those invited. However, the depth and breadth of the comments received were beneficial to the plan and process. Feedback from these stakeholders can be found in Appendix B.

Based on the existing system operations, the context of the Clarksville operations area and other parameters such as number of vehicles, and budget, as well as stakeholder involvement, the following recommendations are presented for implementation during the next one to five years:

Fixed Route Operations

- Continue to monitor the performance of each route (number of passengers, on-time performance, etc.) and adjust the schedule to maintain on-time performance goals of 85% during peak and 90% during off-peak;
- Adjust times for time-points in schedule to reduce the number of trips that are operating too early;
- Identify permanent and cost effective solutions for improving on-time performance on routes that are operating late, such as removing unproductive diversions or loops;
- Undertake a Comprehensive Operations Analysis (COA) to examine route and segment productivity and the feasibility of another type of operations model. Alternatives could include mini hubs, mini hubs and spoke(s), or perhaps lowering headways on line-haul routes;

- Discontinue the Route 812 (Exit 8 express) once the park-and-ride lot relocates to Exit 11. Work with the RTA and other regional service providers to find more cost-effective options for CTS patrons;
- Study needs and requests of riders on Route 8 between Kmart and Wal-Mart on Fort Campbell Boulevard. The route in its current state is very unproductive and those resources could be used to improve service on the main portion of Route 8 (Downtown to Gateway Medical Center) or other routes in the CTS network;
- Explore the creation and use of a Riders' Advisory Committee or similar group who would meet periodically with CTS management and operations supervisors to give feedback and suggestion for improved operations;
- Explore the feasibility of implementing a business access transit (BAT) lane along Wilma Rudolph Boulevard that would improve transit travel time and reliability;
- Relocate transit stops to the street and away from building entrances and other unproductive diversions and loops, to allow buses to remain on the main route thereby reducing unproductive diversions/loops and improving on-time performance, travel time, and rider experience. These include locations such as Clarksville Square Shopping Center, Durrett Center, and the Peachers Mill Road diversions.



A BAT lane is the right most lane along a multi-lane arterial road that is typically used for turning right in and out of adjacent businesses or commercial areas. This lane is often underutilized and may provide a convenient location to operate a BRT-like service without adding or taking a lane from general traffic. Such a concept has been utilized in other parts of the U.S. cost-effectively with other BRT characteristics (such as off-board fare collection and real-time vehicle information) to reduce travel times, improve speeds and trip reliability. The lane use can be enforced all day or only during peak times, as indicated on the sign to the left.

From Magnoliavoice.com

- If the CTS' grant is successful, implement and monitor the Dial-A-Ride services, potentially expanding that system to serve new / more areas, possibly changing them to fixed route service(s) if enough origins and destination are clustered or in close proximity to make that feasible.
- Consider bringing back transfers for passengers. The fare increase and elimination of free transfers adversely and permanently decreased ridership. CTS should strongly consider bringing back the transfers to gain back ridership, and provide a price point for services that is more attractive to seniors and other customers. Boosting ridership will also help with funding from formula grants based on ridership.

Paratransit / ADA Operations

- Consider charging a higher fare for paratransit services which could be \$3.00 based on the existing regular fixed-route fare of \$1.50.
- Consider limiting the ADA services to only $\frac{3}{4}$ mile from the existing fixed routes. If this is not considered feasible, consider charging a "premium fare" for trips outside the $\frac{3}{4}$ mile area.
- If staffing and resources permit, consider opening paratransit/dial-a-ride service to general public to increase efficiency of service, charging service at cost.
- Continue with existing travel training programs.
- Offer free fixed-route rides to passengers who are somewhat ambulatory but would otherwise qualify for ADA services.
- Continue to monitor the number of trips and costs; revisit service area, qualifications and other policies to combat cost escalation if necessary.

Facilities and Maintenance

- Work towards a more robust "State of Good Repair" for CTS vehicles and buildings (See following sections for more specific recommendations).
- Consider developing a mini hub at the north Wal-Mart location.
- Consider developing a mini hub at the southeast K-Mart location.
- Apply for additional grant funds to address critical sidewalk needs along transit routes, working in partnership with the City of Clarksville and CUAMPO.
- Monitor the number of buses using the downtown transit center currently, or as proposed by a COA or other studies, being cognizant of the fact that the facility cannot accommodate increased vehicles due to space constraints.

Vehicles

- Examine investments in Automatic Passenger Counting (APC) including equipment on-board vehicles, communications with farebox, etc., to facilitate data collection of stop-level boardings and alightings. Stop-level boardings / alightings data will enable CTS to see more precisely where passengers use the routes and identify whether routes or segments of routes are candidates for adjustments such as consolidation and/or elimination, thereby improving system efficiency.

- Examine investments in talking bus / on-board enunciators to improve service for customers and increase drive efficiency and to provide consistent delivery of services.
- Partner with Austin Peay University to develop a CTS next bus real-time information app for iOS and Android devices.
- Consider deployment of real time arrival information at the proposed mini hubs.
- Work with CUAMPO and other partners to replace all vehicles rated as “Poor” or worse. Currently this is all vehicles in model year 2006 or older.
- Coordinate vehicle replacement and additional needs with service area changes that may arise from the COA and/or other initiatives.

Marketing

- Provide necessary data required to provide transit trip directions via Google Transit.
- Market and publicize the “free rides for seniors” program funded by AARP.
- Continue to sell bus transit advertising and bus wrapping.
- Continue to partner with employers to examine potential service expansion(s).
- Continue existing partnerships with Austin Peay University and other educational entities.

Asset Management

- Please refer to Appendix A for Asset Management and State of Good Repair recommendations

APPENDIX A: STATE OF GOOD REPAIR: PRACTICE REVIEW AND RECOMMENDATIONS

STATE OF GOOD REPAIR: PRACTICE REVIEW AND RECOMMENDATIONS

Background

Two new phrases for the U.S. transit industry in the last few years are “Asset Management” and “State of Good Repair”. What they mean to the Clarksville Transit System (CTS) and what impact they have is explored in this section. The narrative and guidance below is based on the understanding of the existing CTS system as of December 2015 and the limited guidance available from the FTA as of the same date concerning Asset Management and State of Good Repair.

As with many U.S. transit agencies, CTS is attempting to understand and comply with Federal guidelines regarding Asset Management and State of Good Repair (SGR). In a 2010 SGR assessment by the FTA it was found that 40% of U.S. bus assets were in marginal or poor condition and there was a tremendous backlog of deferred maintenance and vehicle replacement needs.

The FTA's SGR grants and the enactment of the federal transportation legislation, *Moving Ahead for Progress in the 21st Century* (MAP-21), has put focus on improving the U.S. transit industry's asset management activities. This legislation requires public transportation agencies receiving federal assistance or grant money to develop an asset management plan. This plan needs to touch on several elements. At minimum, it needs to address an agency's inventory, condition assessment and investment prioritization.

All transit agencies manage some of their assets on a daily basis to some level, and CTS is no different. The intent of SGR is to increase the level of asset management to a point of highly satisfactory customer service and very effective lifecycle management. Asset management is viewed as a critical element for accomplishing an agency's goals and objectives, similar in manner to risk management and performance management.

Definitions

SGR: The APTA SGR Standards Committee has developed a simple and straightforward definition of a state of good repair: “SGR is a condition in which assets are fit for the purpose for which they were intended.”

Asset: The same APTA SGR Standards Committee adopted the definition for “assets” from the Federal Transit Administration (FTA) Asset Management Guide. Transit assets are rolling stock, right-of-way, stations, facilities, systems and equipment. It goes on to define both “asset category” and “asset class.” An asset category is defined as a primary grouping of asset classes. For example, “vehicles” is the asset category for two asset classes (rail and rubber-wheeled vehicles.) The term “asset” can be confusing, as it has different meanings to different audiences. In this context, an asset does not refer to financial assets typically documented in accounting statements, nor does it refer to non-physical assets such as trademarks and intellectual property.

Asset Management: The FTA's Asset Management Guide defines transit asset management as a strategic and systematic process through which an organization procures, operates, maintains, rehabilitates and replaces transit assets to manage their performance, risks and costs over their lifecycle to provide safe, cost-effective, reliable service to current and future customers.

Asset Management Plan: The FTA's Asset Management Guide defines an asset management business plan as a document that outlines the implementing activities, roles, responsibilities, resources and timelines needed to address an agency's asset management policy and strategy.

The plan or program is referred to as a Transit (or Transportation) Asset Management Plan/Program and identified by the acronym TAMP or TAM or AMP (Asset Management Plan).

Smaller Agencies

It has been recognized that smaller transit agencies like CTS will have a different approach than larger agencies that have more resources. Reference A in this document, *Creating a Transit Asset Management Program*, contains the following information regarding small agencies' development of a TAMP:

"Considerations for small agencies: A major consideration to take into account regarding the development of a Transit Asset Management (TAM) system in smaller agencies is the limited capital funding these agencies receive. For the most part, smaller agencies focus on bus operations, and the major assets that must be rehabilitated and replaced over time, which are buses, bus garages, and other fixed facilities. While buses are replaced on a more, frequent cycle and are less costly per unit to maintain than rail vehicles and infrastructure, smaller transit agencies have fewer options when faced with insufficient capital funds.

One of the consequences of limited funding includes less maintenance staff and replacement equipment, which in turn leads to a crisis-based approach for maintenance and operation of a transit system. As a result, the impact of important information such as operation duration and service quality, life cycle costs, environmental impacts, and safety requirements are not fully explored. Although a fixed asset inventory list may be in place, it may not always be up to date with the status of the existing assets.

There is no doubt that implementing an asset management system will provide many useful benefits to all agencies in the long term, but some small and rural agencies will struggle because of the budget shortages, lack of human and technology staffing and little to no training opportunities. While this is the case, it is still important for small agencies to maintain an inventory of their fleet and facilities, plan for and conduct preventive maintenance (as much as possible), and monitor their assets' condition to inform how and when investments are made."

While CTS certainly has a smaller staff dedicated to maintenance and maintains a smaller number of vehicles and other assets, and probably has opportunities to improve its maintenance plan, practices and outcomes, its current practices with regard to SGR are in no way to be characterized as in "crisis". In fact, for an agency its size and with its resources, it takes care of what it has in a safe and efficient manner.

TAMP Principles and Benefits

The three key principles of a TAMP are:

1. To recognize the economic value of assets.
2. To achieve economic efficiency and optimization of lifecycle costs over the life of the asset.
3. To understand and embrace the role of the agency as a "steward" of the assets.

Benefits of a TAMP include:

- Better customer service through:
 - ✓ Improving on-time performance and service operations.
 - ✓ Improving vehicle and facility cleanliness.
 - ✓ Reducing missed trips.
 - ✓ Focusing actions and investments around customer-centered goals and objectives.
- Improved productivity and reduced cost by maintaining assets more effectively and incorporating new strategies such as predictive maintenance.
- Optimized resource allocation by maximizing spending for greatest return on investment. Also by incorporating lifecycle costs, risk analysis and performance trade-offs into capital and operations budgeting.
- Improved stakeholder communications through more timely/accurate performance indicators and clearer performance metric forecasting.

Basic Steps of Developing a TAMP:

1. Prepare for TAMP Implementation
 - Identify the level of awareness and understanding of asset management within the agency.
 - Establish department leaders.
 - Review quality of asset data.
2. Assess Agency TAMP Maturity

The following table, from Reference E in this document (*AASHTO Transportation Asset Management Guide—Executive Summary*), provides a means of determining the current level of TAMP capability for an agency.

TAM Maturity Scale Level	Generalized Description
Initial	No effective support from strategy, processes, or tools. There can be lack of motivation to improve.
Awakening	Recognition of a need and basic data collection. There is often reliance on heroic effort of individuals.
Structured	Shared understanding, motivation, and coordination. Development of processes and tools.
Proficient	Expectations and accountability drawn from asset management strategy, processes, and tools.
Best Practice	Asset management strategies, processes, and tools are routinely evaluated and improved.

Based on existing maintenance practices reviewed at CTS, the agency's current state could be characterized as between "Awakening" and "Structured."

3. Develop a Plan

The plan should include the following elements at a minimum: (List from Reference B of this document, *Defining a Transit Asset Management Framework to Achieve a State of Good Repair*):

Develop an accurate inventory of assets: Current assets must be inventoried and cataloged. Procedures must be set in place to document all asset procurements, implementations and disposals. It is essential for agencies to know their assets and how they are being used.

- CTS has this in place.

Perform a condition assessment of assets: Knowing the condition of assets relative to standard criteria provides the agency with a measure of overall SGR and provides information for determining asset needs and replacement priorities. Knowing sub-component conditions is useful for complex systems and buildings, and judgment needs to be made whether or not additional information say for a building it ultimately useful or not.

- CTS has much of this knowledge, but lacks an in-depth reporting of the condition of sub-components for some assets such as its buildings.

Develop a system of asset performance measures: Measures of performance are used to determine the adequacy of the asset for the intended purpose. Measures are also used to compare actual operation with planned operation. This measure can also be used to determine optimum levels of asset support, functions such as preventative maintenance, spare parts inventory and employee training.

Cost tracking: Costs of procurement, implementation, operation, maintenance and disposal (lifecycle) should be tracked and used to identify areas needing attention, as well as to evaluate asset strategies. Using net present values, asset strategy scenarios such as renewal versus replacement can be compared relative to available funding to determine the optimum strategy. Cost tracking is also used to set budgets necessary to achieve a desired level of asset performance.

- CTS tracks costs by some asset types

Financial planning: Program element information is used to identify and communicate to stakeholders the asset funding necessary to provide for the organization's strategy. This information is critical to communicate, on both a short- and long-term basis, the asset funding necessary to ensure agency sustainability.

- CTS has budgeting and financial planning in place. However, through no fault of its own, the amount and type of funds available aren't always certain or predictable.

Continuous improvement: The program must be periodically evaluated to determine its effectiveness in providing accurate information and to ensure continuous improvement in the management of assets. Regular program updates and revisions with testing are encouraged. Program generated reports should be communicated throughout the agency to maximize buy-in.

- CTS strives for ongoing improvements and performs internal analysis, although on an infrequent basis.

Evaluation of risk: The criticality of each asset is identified to determine the best use of agency resources. Focus should be placed on the assets that are key to the mission of the agency. In addition, risk with regard to regulation must be mitigated through the effective management of assets.

- CTS has identified its key assets, those being vehicles, the transit center and its administration / maintenance building.

Additional TAMP Development Tips:

Philosophy and Action

First is the idea that every asset has a life expectancy, or lifecycle, ranging from new to the point that maintaining it is no longer cost effective. The philosophy of SGR and asset management is that items deemed to be assets are effectively managed so that they meet or exceed their expected lifecycle. Since a large percentage of transit agency assets are procured with taxpayer dollars the interest is in getting the “bang for the buck” for procurements. General action items include:

- Developing a plan
- Identifying and listing assets
- Identify maintenance activities and responsibility
- Developing a system by which the TAMP is monitored and managed

Transit Asset Management Plan (TAMP) Updates

The documented TAMP must be a living document that may change due to internal and / or external influences such as funding, service demands, and Federal or State requirements. The plan must include processes, activities, and tools required to manage the program.

Asset Inventory

The foundation of the TAMP is an asset inventory. As defined above in Asset Definition, asset examples include facilities/buildings, equipment, and vehicles. Assets may be broken into sub-classes; however it is advisable to start with a manageable listing of the most important ones. As an example, vehicles should be broken down into these categories:

- Non-revenue
- Heavy-duty bus
- Mobility/paratransit
- Service vehicles
- Yard vehicles

Identify Means of Maintenance

As we know from our personal lives, most items we purchase must be maintained to some extent or they will not last long. Houses must be painted, oil changed in cars; and the list goes on and on. Similarly, in a transit agency most assets must receive a level of maintenance and someone must take responsibility for those activities.

Level of Complexity

Dependent on the resources of the agency, and the complexity of assets, an asset management system may be as fundamental or sophisticated as required. The use of a procured asset management computerized system does not indicate that the assets are being properly managed. The system should be designed so that users are not intimidated to the point they are reluctant to use it. The system is intended to help – not hinder.

Business Practices

The asset management plan must be engrained into the culture and operations of the organization. Interest in the plan must be displayed from the top down and be aligned with the organizational mission, values, strategies and objectives to achieve the greatest value for each asset-related dollar invested.

Organizational Change

Evolving to the plans described will involve a cultural change at the agency. There must be a champion at the executive level to set the example and expectations. Employees at all levels should understand the concept of SGR and TAMP. Plans and processes should be proactive rather than reactionary. Departments must cooperate with each other and assist where possible. The intended level of effort must be consistent with staffing and funding limitations to allow for the greatest chance of success.

Performance Measures

Since assets procured by transit agencies are purchased for the value they hold in their intended purpose, their performance should be measured by what they produce.

The following is from Reference B of this document, *Defining a Transit Asset Management Framework to Achieve a State of Good Repair*:

A linked tier of measurement hierarchy covers the important dimensions of how an agency expects its assets to perform. The tiers are 1) condition, 2) function, and 3) capacity. Assets pass or fail tests at each of these levels, leading to data-driven decisions about the need for maintenance, upgrade or replacement of the asset.

Every transit operator must determine the specific performance measures best applicable to the delivery of its service. The following are example performance measures for vehicles:

- Maintenance cost per vehicle mile
- Percent of useful life
- Mean distance between failure
- On-time performance
- Ridership
- Passenger feedback

TAMP Considerations for Clarksville Transit System

While there is not a single approach to designing a TAMP for all transit agencies, there are many fundamental similarities. Reference B of this document contains example cases of how seven U.S. transit agencies approached TAMP within their systems. Interestingly, one of the agencies began their TAMP program by means of assigning summer interns the fundamental tasks.

The following list of considerations is listed in order of 1) those that are fairly fundamental, 2) would be good business practice in any event, and 3) will build toward State of Good Repair.

Reference F of this document includes a list of nine questions that were posed to CTS by Parsons Brinckerhoff. Based on the responses, the following action items are recommended for CTS to form the basis of an effective TAMP:

1. Develop an action plan based on the following considerations.
 - a. Identify an executive champion, affected departments, and manpower allocations to form a TAMP committee.
 - b. Set a regularly scheduled update meeting.
2. Decide on grading criteria. (See Reference G in this document for the SGR Grading Matrix, which is a recommended criterion.)
3. Decide on the method of capturing data, which may be as simple as Microsoft Excel, Word, etc.
4. Develop a list of assets and decide on the level of hierarchy to start with. The following is an example of the level of hierarchy for revenue bus vehicles:

Asset Class

- Revenue Bus Vehicles (Primary)

Sub-Assets

- Passenger buses
- Shuttle buses
- Paratransit vans

Related Assets

- Wheel and axle sets
- Power plants and propulsion systems
- Braking systems
- HVAC systems
- Auxiliary power supplies
- Transmissions/gearboxes

It is suggested to begin with lists of the following assets:

- Revenue buses
- Non-revenue vehicles
- Facilities
- Facility equipment such as HVAC, elevators
- Shop equipment

4. Perform condition assessments of the assets listed above and document the findings. Develop a grading methodology for the condition of the assets. (See Reference G, which is a grading matrix for consideration.) CTS may elect to perform asset assessments by use of in-house staff or through a third party. Through condition assessments a baseline can be established by which to measure future improvements.
5. Development of standard operating procedures (SOP). Methods of accomplishing goals and means to accomplish specific procedures are routinely designed by staff of transit agencies. Most of the time these are engrained into the culture of the agency but usually are not documented in writing. As staff come and go, and memories fade, some details may be lost or arbitrarily changed. Documenting these methods of action into an SOP develops a formal iteration that can be referred to when questions on procedure come up. SOPs should be living documents and each should be assigned a revision date for review.

SOPs should be maintained in an assembled manual electronically and paper copies should be available for staff to refer to. A good starting point could be an SOP on CTS' approach to state of good repair and asset management. Other suggested SOPs that might be needed, but that CTS currently does not have include:

- Maintenance department goals and objectives
- Accident damage reporting

- Environmental
- Daily vehicle service Maintenance Policy
- Scheduled predictive component replacement
- Daily and detailed vehicle cleaning
- Quality assurance
- Road calls
- Parts and supplies
- Facility Maintenance (shop, general offices, vehicle service / storage and exterior property)

Introduction

Brief Agency History
 General Maintenance Information
 Accessible (ADA) Service

Current System
 Overview of Current Bus Fleet and Operating Practices
 Bus Maintenance Facilities
 Existing Transit Bus Fleet
 Operating Spare Ratio
 Vehicle Demand and Supply Balance

Service Quality Parameters
 Quality of Service
 Passenger Satisfaction
 On-Time Performance
 Safety and Accident Data
 Service Delays
 Maintenance Service Reliability – In-Service Failures
 Operating Strategies Used to Reduce In-Service Delays
 Service Truck Operation
 Average Miles per Mechanical Road call

Present Revenue Vehicle Demand
 Estimation of Passenger Demand and Resulting Peak Vehicle Requirements
 Service Planning Model
 Schedule Design
 Average Weekday Boardings
 Peak Vehicle Requirements
 Passenger Load Standards
 Load Factor Evaluation
 System and Route Load Factors
 Factors Influencing Peak Period Ridership
 Events and Influencing Factors Accounted for in Fleet Management Plan

Future Vehicle Demands

- New Routes
- Alignment Adjustments
- Service Frequency Improvements
- Non-Vehicle Infrastructure Capital Improvements

Vehicle Maintenance

- Maintenance Manpower Allocation
- Estimation of Fleet Demand Resulting from Vehicle Maintenance Requirements
- Scheduled Preventative Maintenance
- Cleaning Program
- Preventative Maintenance Program Monitoring and Support
- Unscheduled Corrective Maintenance
- Bus Failure Definitions and Actions

Supply of Revenue Vehicles

- Environmental Conditions Affecting the Spare Factor
- Bus Fleet Allocations
- Planned Bus Procurements
- Bus Funding Plan

Performing the items listed above will provide that start or foundation for achieving a state of good repair through an asset management plan. As CTS goes through the process, all assets and their subcomponents should be reviewed and woven into the process as CTS staff feels appropriate and capable. The process of going through the steps will cause CTS to review asset conditions and processes, allowing for improvement along the way. CTS should strive to begin the process within a year and make progress towards having a SGR program, pending further guidance from FTA within three to five years.

SGR References:

- A. APTA-SGR-TAM-RP-001-13 (From: <http://www.apta.com/about/Pages/Standards.aspx>)
Creating a Transit Asset Management Program by the APTA Working Group: Transit Asset Management.
- B. APTA-SGR-TAM-RP-002-13 (From: <http://www.apta.com/about/Pages/Standards.aspx>)
Defining a Transit Asset Management Framework to Achieve a State of Good Repair by the APTA Working Group: Transit Asset Management.
- C. APTA-SGR-TAM-RP-003-13 (From: <http://www.apta.com/about/Pages/Standards.aspx>)
Capital Asset Inventory and Condition Assessment by the APTA Working Group: Transit Asset Management.
- D. The Federal Transit Administration (FTA) Asset Management Guide, FTA Report No. 0027, published in October of 2012. The report itself was published with the intention of being a “technical assistance product”. The report in its entirety may be found at the following link: <http://www.fta.dot.gov/13248.html>.
- E. AASHTO (American Association of State Highway and Transportation Officials) Transportation Asset Management Guide—Executive Summary. Available on-line in PDF format.

F. SGR Grading Matrix

Asset Rating Score	Asset Age	Asset Condition	Asset Performance	Level of Maintenance	Asset Condition Rating	
	Percent of Useful Life Remaining	Quality, Level of Required Maintenance	Reliability, Ambiance, Safety, Meets Industry Standards	Level of Preventive and Corrective Maintenance	Rating Description	Scoring Range
5	Asset new or nearly new 75 to 100%	Asset new or like new, no visible defects	Asset meets or exceeds all performance and reliability metrics, industry standards	No unfunded or deferred maintenance activities	Excellent	4.4 to 5.0
4	Asset nearing or at its middle point 50 to 75%	Asset showing minimal signs of wear; some slight defects or deterioration	Asset generally meets performance and reliability metrics, industry standards	Some temporary deferments of PM and CM, but no activities skipped completely	Good	3.4 to 4.3
3	Asset has passed its midlife point 25 to 50 %	Some moderately defective or deteriorated components; expected maintenance needs	Occasional performance and reliability issues; may be substandard in some areas	More frequent and extended deferments of PM and CM; some activities skipped altogether	Adequate	2.5 to 3.3
2	Asset nearing or at end of its useful life	Increasing number of defects, deteriorating components; growing maintenance needs	Performance and reliability problems becoming more serious; substandard elements	PM and CM activities frequently delayed or skipped until major problems surface	Marginal	1.8 to 2.4
1	Asset is past its useful life	Asset in need of replacement or restoration; may have critically damaged components	Frequent performance and reliability problems; does not meet industry standards	Significant backlog of PM and CM work due to history of deferred and skipped activities	Poor	1.0 to 1.7
0	Asset non-operable	Asset non-operable	Asset non-operable	Asset non-operable	Non-operable	0

SAMPLE SCORING

Asset Age	Asset Condition	Asset Performance	Level of Maintenance	Asset Condition Rating
20%	30%	30%	20%	
3	3	2	3	2.7

APPENDIX B: STAKEHOLDER ENGAGEMENT FEEDBACK



**Clarksville Transit System (CTS)
Strategic Plan Update
Stakeholders' Meeting**

Agenda

1. Welcome & Introductions
2. Overview of CTS Strategic Plan Update
3. Overview of CTS Existing Service Area & Operations
4. Discussion
 - a. SWOT Analysis
 - b. Future Improvements
 - c. Service Expansion / Delivery Options
 - d. Barriers to Success
5. Next Steps
6. Adjournment



SIGN-IN SHEET

Clarksville Transit System (CTS)
Strategic Plan Update
Stakeholder Meeting
329 Main Street
Tuesday, September 29, 2015
10:00 AM to 12:00 PM

Name / Agency (Please Print)	Address (Street, City, State, Zip)	E-mail Address (if you would like to receive future correspondence by e-mail)
Elizabeth Black Montgomery County Gov.	1 millennium Plaza Clarksville, TN 37040	elblack@mcgtn.net
Jill Hall Clarksville MPO	329 Main St 37040	jill.hall@cityofclarksville.com
John Patterson Clarksville Regional Airport	2004 Outlaw Field Rd Clarksville, Tennessee 37042	jpatterson@clarksvilleregional.com
Melinda Shepard Chamber of Commerce	25 Jefferson Street, 300	melinda@clarksville.tn.us
Paul Nelson Clarksville Transit	430 Boillin Lan Clarksville, TN 37040	Paul.nelson@cityofclarksville.com
Arthur Bin, CTS	17	arthur.bin@cityofclarksville.com
Kenneth Lund WSP/B	1109 W. 2nd Street Suite 824 Cleveland, OH 44113	liw@kcc.pbworld.com
Shawn Dikes WSP/B		dikes@pbworld.com



SIGN-IN SHEET

Clarksville Transit System (CTS)
Strategic Plan Update
Stakeholder Meeting
329 Main Street
Tuesday, September 29, 2015
10:00 AM to 12:00 PM

Name / Agency (Please Print)	Address (Street, City, State, Zip)	E-mail Address (if you would like to receive future correspondence by e-mail)
Nikki Radford City of Hopkinsville	715 S. Virginia St Hopkinsville KY 40460	nradford@hopkinsvilleky.us
David Ripple Montgomery Co. Regional Planning Agency	329 Main St., Clarksville, TN 37040	ripple9014@cityofclarksville.com
Chris Brown Fort Campbell Public Works	852 16th Street 42223	christophery.brown18.civ@gmail.com
Mike Wilson, APSU GIS	PO Box 4424 Clarksville TN 37044	wilsonm@apsu.edu
Stan Williams Civ MPD	329 main st civ	stanwilliams@cityofclarksville.com
Wally Crow DPW MP Ft. Campbell, Ky		crowwally1@gmail.com



**Clarksville Transit System (CTS)
Strategic Plan Update
Stakeholder Meetings - NOTES**

Sept. 29, 2015

Morning stakeholder meeting

- Demographic analysis should be expanded to include areas with higher than average minority population and/or higher than average presence of low-income households. [DR]
- Note that the concentration of senior citizens is the same geographic area where Gateway Hospital was located until recently. There are still medical offices in this area, but they are starting to relocate to be near the hospital's new location. [SW]
- Regarding service to the city/county industrial park, east of I-24:
 - Since the park is located outside the urbanized area, CTS would not be able to serve it without executing an agreement with the Mid-Cumberland Human Resources Agency.
 - CTS did run a route to the industrial park for a couple of years which typically had about 13 riders per day. As soon as people had been working for a few months, they would purchase a car and stop riding CTS. In addition, CTS staff spent some time meeting with the employers in the industrial park about transit service, but each employer had different start times for their shifts and there did not appear to be much motivation among them to coordinate their schedules. [AB]
 - However, CTS staff is currently building a good relationship with new employer Hankook Tires, who has purchased a 3-year agreement for a bus wrap.
- It appears that PB's analysis includes only the NTD data for the Tennessee portion of the CTS service. Need to add the corresponding data for the Kentucky portion. [AB]
- As Clarksville expands, CTS service continues to be stretched further from downtown and traffic congestion worsens. This combination of factors has made it difficult to use a pulse system, because it now takes buses longer to get back to the downtown center where riders can transfer to another route. For example, the trip between Fort Campbell and downtown used to take 30 minutes, and now takes an hour. [AB]
- Route 4 does one of the best jobs addressing peak trips for workers and students. [PN]



- Ridership is down after CTS implemented a fare increase in 2013 and then eliminated transfers in 2014. [AB]
- On-time performance for Route 5 has greatly improved. After investigation, CTS staff realized Route 5 carries 50% of the system's wheelchair users, so they assigned only low-floor buses to the route. [PN]
- On-time performance on Saturday for Route 7 (serving Governor's Square Mall) is affected not only by shopping-related traffic congestion on Wilma Rudolph Blvd., but also by heavy ridership in the late morning as local teenagers use the bus to travel to the mall. It is not unusual for passengers to stand on Saturday morning. [AB]
- Some sort of bus priority treatment on Wilma Rudolph Blvd. could help on-time performance for the CTS routes that must use it. [SW]
- CTS is currently attempting to improve schedule adherence by using vans to collect riders from neighborhoods so that buses can remain on the main trunk of their routes. [AB]
- A number of new Walmart Neighborhood Markets have recently opened, all of which are on existing CTS routes. [PN]
- Strengths:
 - CTS' travel training program has helped control the demand for paratransit trips. Note that the training is available to anyone, not just seniors or persons with disabilities.
 - CTS just received a major grant from AARP – the first such partnership in Tennessee – to provide free rides to senior citizens. The program started in July and will continue for 18 months. At that point it is hoped that many seniors will have become accustomed to using transit, and continue to ride even while paying a fare.
 - The transfer point at Walmart North, where multiple CTS routes interface, seems to work very well even though it is not very formalized. CTS' relationship with Walmart is excellent.
 - Strong partnership with Austin Peay University.
- Weaknesses:
 - There is a demand for Sunday service beyond people requesting a ride to church services. The additional service hours would help many retail and service employees reach their jobs, even if only certain routes were operated on Sunday. People often don't understand the true cost of adding another day of service; even if only some



routes were operated on Sunday, CTS would still need to have dispatchers on duty, staffing for the transit center, etc. [PN]

- Need a transfer point in the St. Bethlehem area similar to what exists at Walmart North. A site in the area of K-mart would be preferable. [AB]
- Opportunities:
 - Improve/expand Fort Campbell service. Main users of the existing CTS service are people either employed at, or visiting, the commissary, PX, hospital or education center. The group thought most military personnel have a car, so if there is an opportunity to serve anyone else, it would be the military spouses who live in a one-car household. The Ft. Campbell origin/destination study may shed light on the level of demand.
 - Service for the flight crews, and perhaps passengers, using the Clarksville-Montgomery County Regional Airport. The airport is implementing a strategic plan to develop commercial service.

Austin-Peay State University

- Students pay \$8 per semester for unlimited rides on the “Peay Pickup” trolley. *[Faculty and staff can also ride, but not clear whether university covers the cost.]*
- The service runs every 12 minutes. Its intent is to help connect perimeter parking lots to the main campus. The walking distances are not great, and observations suggest that most people tend to use the trolley only in inclement weather.
- The service runs only on weekdays and ends at 4:30 p.m. APSU’s main campus offers very few evening classes so it is felt that the service is not needed past this time.
- APSU recently purchased the downtown Ford dealership across from its campus and plans to use the site for additional student parking, so the Peay Pickup route will probably need to be restructured.
- APSU is considering whether they may want CTS to use smaller vehicles. They would like to have more frequent service and to access more areas of campus. The turning radius required for the trolley does not permit it to travel on some of APSU’s interior streets, including the new developments on the west side of campus.
- Ridership is generally highest in the Emerald Hills area, where there is housing occupied by married students, students with physical disabilities, and international students. The new president of APSU has set a goal to attract a larger number of international students, which could lead to higher transit usage.



- APSU students do use some of the other routes in the CTS system, not just the Peay Pickup. Students, particularly freshmen, ride CTS to get to the mall. There are also a significant number of students using the Tiny Town Road route, many of whom are probably military dependents who are taking courses at APSU.
- Although transit service to APSU's Fort Campbell service was mentioned in the morning stakeholder meeting as a possible opportunity, funding would likely be an obstacle. APSU funds the Peay Pickup route with a portion of the student activity fee, but they are prohibited by law from charging any such fee to students enrolled at Fort Campbell.

Meeting with CTS staff

- All buses are equipped with security cameras and AVL.
- CTS has recently replaced, or is in the process of replacing, a number of new vehicles. They used CMAQ funds and Clean Buses grant funds to purchase 11 new buses, and are using 5310 funds to purchase 9 new paratransit vans.
- Other recent capital projects include upgrading all AC units in the main office building.
- CTS hired a marketing coordinator July 1, which was a new position recommended in the last CTS Strategic Plan. As of May 1, they also converted all of their drivers last year to full-time employees, which has helped to reduce employee turnover and the amount of time spent on training.
- The staff at the downtown transit center can sometimes be overwhelmed with the number of tasks being juggled, i.e. assisting customers, monitoring the CTS radio, police radio, paratransit radio, answering the phone, etc.
- Staff's highest priority is to increase service frequency, as opposed to expanding service area.
- The Strategic Plan should briefly address the implications for CTS service related to the planned closure of the park & ride lot at I-24 Exit 8, and the fact that when the lot is replaced, it will be constructed at Exit 11. About 7-8 people per day are currently riding the shuttle service between downtown and the Exit 8 P&R lot. CTS staff is not planning to provide service to the new Exit 11 lot although they would like a recommendation on that issue.
- CTS is working to improve on-time bus performance with a number of strategies. One strategy is the use of vans to shadow buses on particular routes, as discussed in the morning stakeholders meeting. They are also constructing shelters along the street as part of a general effort to keep buses on the main arterial streets rather than driving through parking lots to pick up riders directly in front of building entrances. *[Note this increases the importance of adding sidewalks, shelters, and generally improving pedestrian safety on CTS routes.]*



- Route 6, through the Sango area, is the highest ridership route. CTS staff originally thought it was because this route served the hospital, but when the hospital relocated, ridership remained high. Staff could envision placing a hub in the Sango area to serve the city's future growth. *[May want to coordinate this with recommendations for stations for future Northwest Corridor service.]*
- CTS staff are considering re-establishing transfers because they saw ridership drop after transfers were abolished in 2014, and it is continuing to decline. One of the items in the COA scope is to provide recommendations on the use of transfers.
- CTS is also interested in recommendations on the use of stored value cards. Their existing fareboxes do have the capability to process this type of payment.
- Congestion on Wilma Rudolph Blvd. is hurting bus service on the hospital route, as noted in earlier discussions. Other areas where traffic congestion is a problem for CTS include the Gate 4 area of Fort Campbell, and the Boot Hill area, especially during afternoon rush hour on Providence Blvd.
- The hospital route doesn't have high ridership, but CTS has to serve it. Hopefully as the area around the hospital continues to develop, ridership will grow. Traffic congestion continues to be a major challenge for this route, however.
- CTS is almost out of space at their Boilin Avenue site. As soon as they expand their vehicle fleet, they won't have enough bays for maintenance.
- One of the things CTS staff is looking for in the Strategic Plan: if their annual budget is currently \$6 million, what level of funding will they need in 5 years to operate the current system plus the other things that are planned or recommended?

Clarksville Transit System (CTS) Strategic Plan Update

Thank you for taking the time to provide your input on this study. This project is an update of the CTS' Strategic Plan and will produce a series of action items aimed at improving CTS' service over the next five years so it may better serve its existing and future transit customers.

Respondent Information

Name :

[REDACTED]

Agency / Representative of:

Chamber of Commerce

Email (if you would like to receive any project updates):

Survey Questions

1: How important is transit service in Clarksville?

- ☒ Very Important
- ☐ Important
- ☐ Slightly Important
- ☐ Less Important
- ☐ Not Important at All

2: What role do you see transit playing in local economic development?

- ☒ Very Important Role
- ☐ Important Role
- ☐ Slightly Important Role
- ☐ Less Important Role
- ☐ No Role at All

3: Please rank the following issues (i.e. 1 being the most concerned and 7 being the least concerned).

- 2 Travel Time
- 1 Reliability
- 3 Connectivity
- 6 Impacts / Benefits to the Environment
- 5 Aesthetics of Vehicles
- 4 Frequency of Service
- Other: _____

4: What in your estimation are the strengths of the current CTS' system? Please be as specific as you can.

Extremely helpful and wants to provide the best service for the riders. Feel they are focused on the right issues.

Please Continue on the Back Page



5: What in your estimation are the weaknesses of the current CTS' system? Please be as specific as you can.

The perception of our bus system and how to educate the community.

6: What specific improvements should CTS concentrate on in the next five years? Please be as specific as you can.

Improving the perception in our community. Continuing to look at ways to improve the current system.

6: What are the potential barrier or obstacles to implementing the improvements identified in question #6? Please be as specific as you can.

Funding

7: Please provide any other comments.

Thank you for your time and input!

Please return this form to a project representative or return it to:

Shawn Dikes

dikes@pbworld.com



**PARSONS
BRINCKERHOFF**

Clarksville Transit System (CTS) Strategic Plan Update

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Respondent Information

Name :

[REDACTED]

Agency / Representative of:

Clarksville-Montgomery Co. Regional Planning Commission

Email (if you would like to receive any project updates):

[REDACTED]

Survey Questions

1: How important is transit service in Clarksville?

- ☒ Very Important
- ☐ Important
- ☐ Slightly Important
- ☐ Less Important
- ☐ Not Important at All

2: What role do you see transit playing in local economic development?

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- ☒ Important Role
- ☐ Slightly Important Role
- ☐ Less Important Role
- ☐ No Role at All

3: Please rank the following issues (i.e. 1 being the most concerned and 7 being the least concerned).

- 1 Travel Time
- 3 Reliability
- 4 Connectivity
- 6 Impacts/Benefits to the Environment
- 5 Aesthetics of Vehicles
- 2 Frequency of Service
- Other: _____

4: What in your estimation are the strengths of the current CTS' system? Please be as specific as you can.

- 1) The ability to provide basic service to the transit dependent
- 2) The ability to meet the needs of the disabled & elderly with demand response services

Please Continue on the Back Page



• need better info on trip origins-destinations & transfers

5: What in your estimation are the weaknesses of the current CTS' system? Please be as specific as you can.

- The low frequency of service on many routes
- The round trip time on routes is excessive.
- The combination of radial & circumferential components with the same route #.
- Poor bus transfer/shelter facilities at North Wal-Mart, Wilma Rudolph K-Mart & Wal-Mart, and Hurrett Center
- Lack of transit service on Peachers Mill between 101st Parkway & Tipton Rd.
- Lack of transit service from Tipton Walgreens to Tipton Rd to Oakland Rd to Wilma Rudolph. Lack of transit service on Benton Road from Wilma Rudolph to Tipton Rd.

6: What specific improvements should CTS concentrate on in the next five years? Please be as specific as you can.

- Establish suburban transfer centers (such as North Wal-Mart, Wilma Rudolph K-Mart or Wal-Mart & possibly Hurrett Center) with protection from elements & amenities.
- Continuous digit information boards on bus arrival/departures at key route transfer & termini points.
- Improve performance of Routes 4 & 8 through reconfiguration
- Unless already resolved on Route 5, examine demand response service to reduce wheel

6: What are the potential barrier or obstacles to implementing the improvements identified in question #6? Please be as specific as you can.

- money
- political will
- Failure to make promised improvements to Warfield & Trenton promised State.
- identification of funding source for Clarksville-Nashville Express service when federal demonstration funds run out

7: Please provide any other comments.

- The routes on the Ft. Campbell, Wilma Rudolph, & Madison St. (to lesser extent) lack bus shelters and sidewalks for transit users.
- Set stage for short-term, intermediate & long-term improvements to be examined in comprehensive operational analysis.

Thank you for your time and input!

Please return this form to a project representative or return it to:

Shawn Dikes
dikes@pbworld.com



**PARSONS
BRINCKERHOFF**

Clarksville Transit System (CTS) Strategic Plan Update

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Respondent Information

Name :

[REDACTED]

Agency / Representative of:

MPO

Email (if you would like to receive any project updates):

Survey Questions

1: How important is transit service in Clarksville?

- ☒ Very Important
- ☐ Important
- ☐ Slightly Important
- ☐ Less Important
- ☐ Not Important at All

2: What role do you see transit playing in local economic development?

- ☐ Very Important Role
- ☒ Important Role
- ☐ Slightly Important Role
- ☐ Less Important Role
- ☐ No Role at All

3: Please rank the following issues (i.e. 1 being the most concerned and 7 being the least concerned).

- ☒ Travel Time
- ☒ Reliability
- ☒ Connectivity
- ☒ Impacts / Benefits to the Environment
- ☒ Aesthetics of Vehicles
- ☒ Frequency of Service
- ☐ Other: _____

4: What in your estimation are the strengths of the current CTS' system? Please be as specific as you can.

on time perf. overall good considering

Please Continue on the Back Page



5: What in your estimation are the weaknesses of the current CTS' system? Please be as specific as you can.

possible more 30 min service - but have to cost
More City of CV - sidewalks to get to Bus
CTS - Shelters Stops

6: What specific improvements should CTS concentrate on in the next five years? Please be as specific as you can.

* Apps all Rts * possible Bus Lane on Ft. Cumberland & 100th St
* another Sub Hub at K-mart on Wilm Rd Bldg
* Wm on Madison/Kanoga Area
* possible service for spouses of Ft. Cumberland
* market the Sr. 65+ ride free

6: What are the potential barrier or obstacles to implementing the improvements identified in question #6? Please be as specific as you can.

\$

7: Please provide any other comments.

Thank you for your time and input!
Please return this form to a project representative or return it to:

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dikes@pbworld.com



**PARSONS
BRINCKERHOFF**

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Respondent Information

Name:

Agency / Representative of:

Montgomery County Gov.

Email (if you would like to receive any project updates):

Survey Questions

1: How important is transit service in Clarksville?

- ☒ Very Important
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- ☐ Less Important
- ☐ Not Important at All

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- ☐ Slightly Important Role
- ☐ Less Important Role
- ☐ No Role at All

3: Please rank the following issues (i.e. 1 being the most concerned and 7 being the least concerned).

- 5 1 Travel Time
- 3 Reliability
- 2 Connectivity
- 5 Impacts/Benefits to the Environment
- 6 Aesthetics of Vehicles
- 4 Frequency of Service
- Other: _____

4: What in your estimation are the strengths of the current CTS' system? Please be as specific as you can.

Safety and Security

• coverage and route availability

Please Continue on the Back Page



5: What in your estimation are the weaknesses of the current CTS' system? Please be as specific as you can.

Travel time - congestion of roadways
marketing - advertise the new free senior rider program

6: What specific improvements should CTS concentrate on in the next five years? Please be as specific as you can.

investigate industrial park expansion
and continue look into Ft. Campbell services

6: What are the potential barrier or obstacles to implementing the improvements identified in question #6? Please be as specific as you can.

timing and funding
still a stigma to bus riding.
overcoming that stigma through marketing efforts.

7: Please provide any other comments.

Bus wraps improved the look of buses
while providing a funding source

Thank you for your time and input!
Please return this form to a project representative or return it to:

Shawn Dikes
dikes@pbworld.com



**PARSONS
BRINCKERHOFF**

Clarksville Transit System (CTS) Strategic Plan Update

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Respondent Information

Name: _____

Agency / Representative of: Clarksville MPO

Email (if you would like to receive any project updates): _____

Survey Questions

1: How important is transit service in Clarksville?

- ☒ Very Important
- ☐ Important
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- ☐ Less Important
- ☐ Not Important at All

2: What role do you see transit playing in local economic development?

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- ☒ Important Role
- ☐ Slightly Important Role
- ☐ Less Important Role
- ☐ No Role at All

3: Please rank the following issues (i.e. 1 being the most concerned and 7 being the least concerned).

- 3 Travel Time
- 1 Reliability
- 2 Connectivity
- 5 Impacts / Benefits to the Environment
- 6 Aesthetics of Vehicles
- 4 Frequency of Service
- Other: _____

4: What in your estimation are the strengths of the current CTS' system? Please be as specific as you can.

Strong Management
Reliability
Connectivity - especially for EJ areas

Please Continue on the Back Page



5: What in your estimation are the weaknesses of the current CTS' system? Please be as specific as you can.

funding

6: What specific improvements should CTS concentrate on in the next five years? Please be as specific as you can.

Shorter wait times

6: What are the potential barrier or obstacles to implementing the improvements identified in question #6? Please be as specific as you can.

funding

City's growth faster than increased funding

Increased congestion w/ growth

7: Please provide any other comments.

Thank you for your time and input!
Please return this form to a project representative or return it to:

Shawn Dikes
dikes@pbworld.com



**PARSONS
BRINCKERHOFF**

Clarksville Transit System (CTS) Strategic Plan Update

Thank you for taking the time to provide your input on this study. This project is an update of the CTS' Strategic Plan and will produce a series of action items aimed at improving CTS' service over the next five years so it may better serve its existing and future transit customers.

Respondent Information

Name :

Agency / Representative of:

Clarksville Regional Airport

Email (if you would like to receive any project updates):

Survey Questions

1: How important is transit service in Clarksville?

- ☒ Very Important
- ☐ Important
- ☐ Slightly Important
- ☐ Less Important
- ☐ Not Important at All

2: What role do you see transit playing in local economic development?

- ☒ Very Important Role
- ☐ Important Role
- ☐ Slightly Important Role
- ☐ Less Important Role
- ☐ No Role at All

3: Please rank the following issues (i.e. 1 being the most concerned and 7 being the least concerned).

- 3 Travel Time
- 1 Reliability
- 2 Connectivity
- 6 Impacts /Benefits to the Environment
- 5 Aesthetics of Vehicles
- 4 Frequency of Service
- Other: _____

4: What in your estimation are the strengths of the current CTS' system? Please be as specific as you can.

The size of Clarksville and the long distances between living, shopping, and working is the challenge that CTS addresses. This service closes these gaps and ensures transportation for everyone to all aspects of needs. Increases standards of living.

Please Continue on the Back Page



5: What in your estimation are the weaknesses of the current CTS' system? Please be as specific as you can.

Travel time from north of town to areas downtown and south seen long to and may negatively affect the CTS causing riders to look at alternative transportation.

6: What specific improvements should CTS concentrate on in the next five years? Please be as specific as you can.

Based on size of area serviced the number of vehicles should be considered. An increase in vehicle numbers would shorten passenger wait times.

6: What are the potential barrier or obstacles to implementing the improvements identified in question #6? Please be as specific as you can.

Physical barriers that could only be addressed through funding at this point.

7: Please provide any other comments.

Great presentation very informative.

Thank you for your time and input!

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**PARSONS
BRINCKERHOFF**

Clarksville Transit System (CTS) Strategic Plan Update

Thank you for taking the time to provide your input on this study. This project is an update of the CTS' Strategic Plan and will produce a series of action items aimed at improving CTS' service over the next five years so it may better serve its existing and future transit customers.

Respondent Information

Name :

[REDACTED]

Agency / Representative of:

AUSTIN PEAY STATE UNIV.

Email (if you would like to receive any project updates):

Survey Questions

1: How important is transit service in Clarksville?

- ☒ Very Important
- ☐ Important
- ☐ Slightly Important
- ☐ Less Important
- ☐ Not Important at All

2: What role do you see transit playing in local economic development?

- ☒ Very Important Role
- ☐ Important Role
- ☐ Slightly Important Role
- ☐ Less Important Role
- ☐ No Role at All

3: Please rank the following issues (i.e. 1 being the most concerned and 7 being the least concerned).

- 4. Travel Time
- 3. Reliability
- 2. Connectivity
- 5. Impacts /Benefits to the Environment
- 6. Aesthetics of Vehicles
- 1. Frequency of Service
- Other: _____

4: What in your estimation are the strengths of the current CTS' system? Please be as specific as you can.

AFFORDABLE TRANSPORTATION

EASE OF USE

PARTNERSHIPS WITH AUSTIN PEAY

Please Continue on the Back Page



5: What in your estimation are the weaknesses of the current CTS' system? Please be as specific as you can.

TIME OF SERVICE AND DAYS SERVICE IS OFFERED

6: What specific improvements should CTS concentrate on in the next five years? Please be as specific as you can.

ENHANCED ROUTES

MAKING SURE ROUTES ARE WELL PUBLICIZED

EXPAND SERVICE HOURS AND DAYS OF SERVICE

6: What are the potential barrier or obstacles to implementing the improvements identified in question #6? Please be as specific as you can.

FINANCING FROM CITY

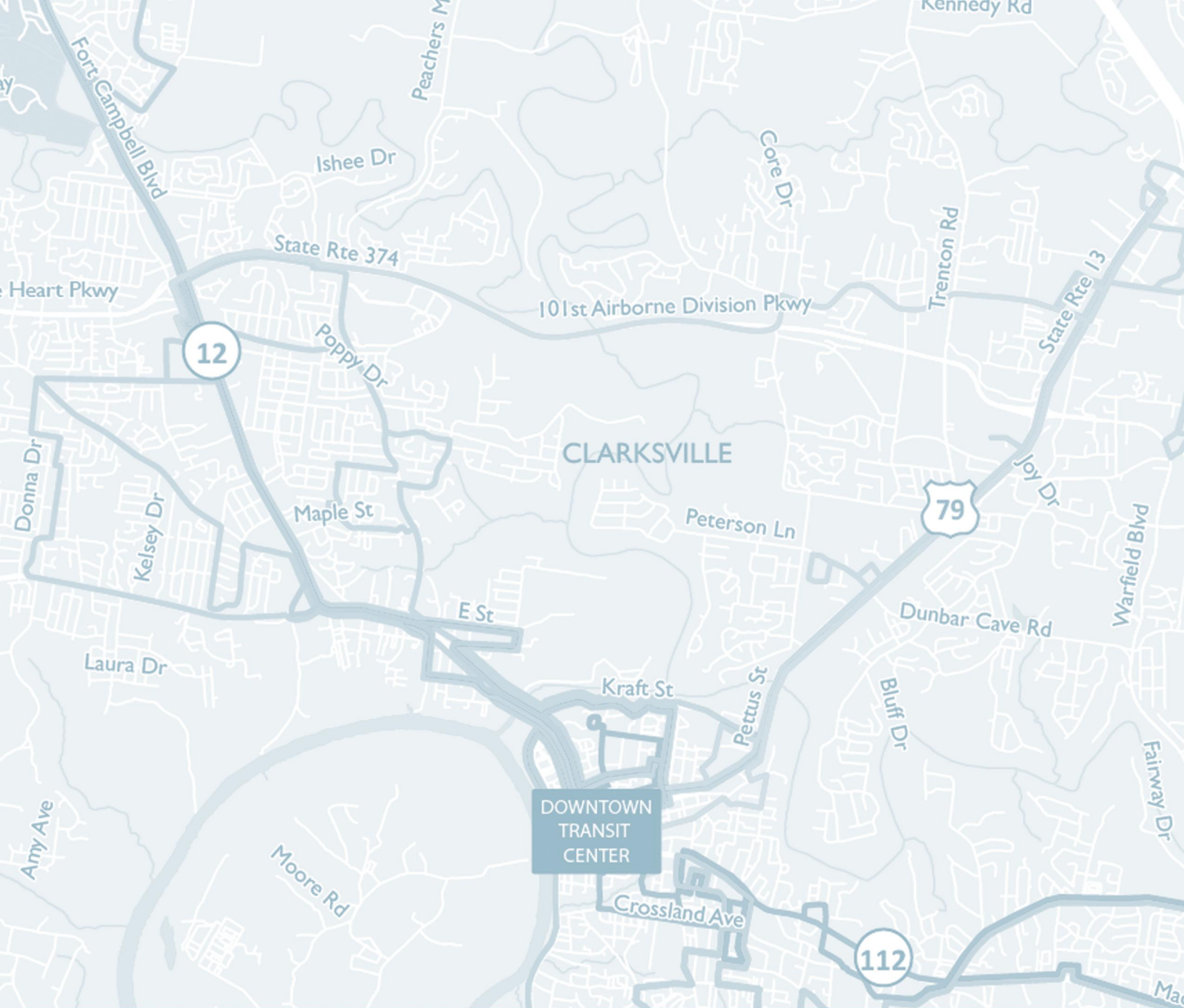
7: Please provide any other comments.

Thank you for your time and input!
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dikes@pbworld.com



**PARSONS
BRINCKERHOFF**



CLARKSVILLE STRATEGIC TRANSIT PLAN

Clarksville, Tennessee