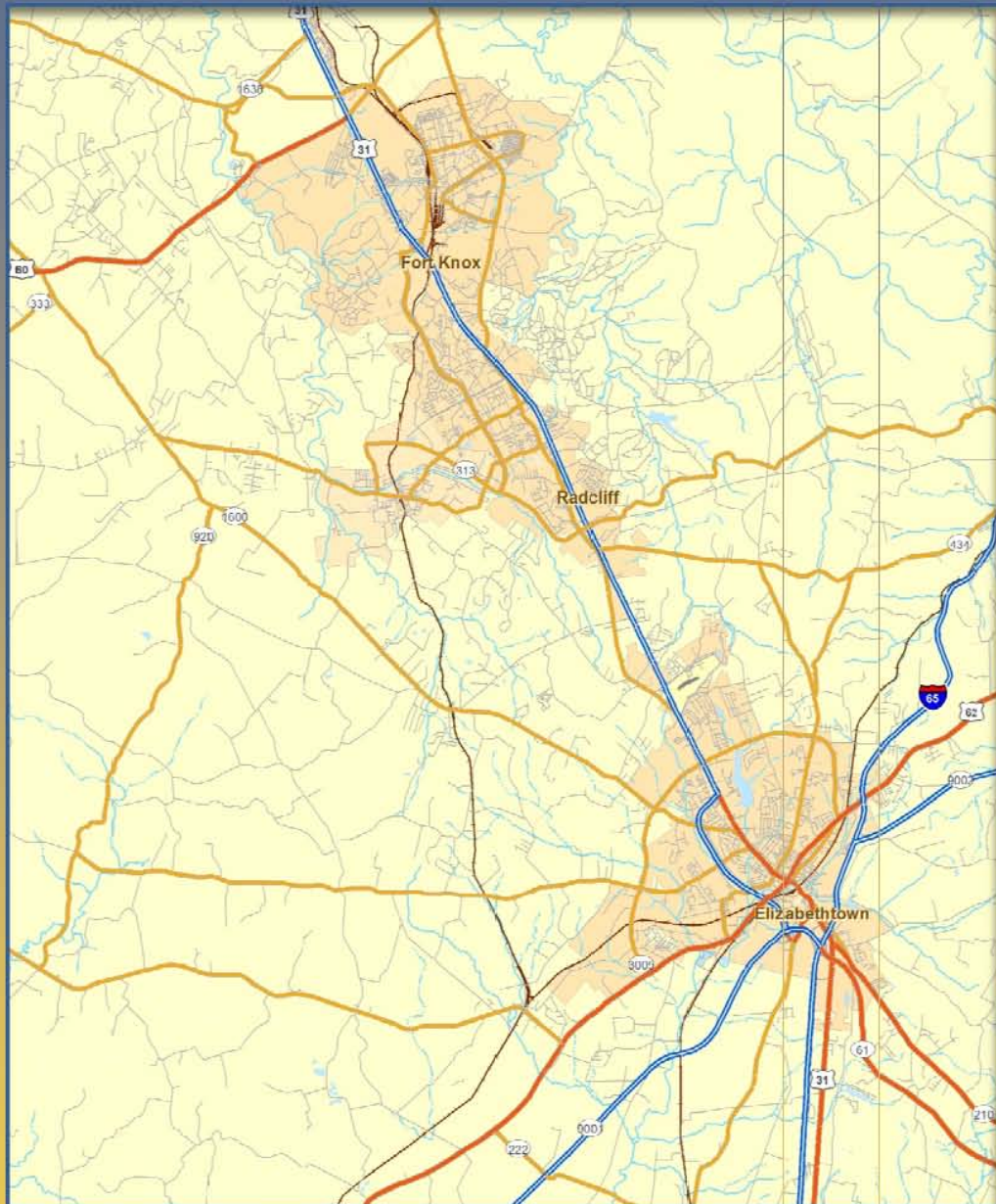


# Public Transportation Implementation Study



submitted to:  
Radcliff/Elizabethtown Metropolitan Planning Organization

submitted by:  
The Corradino Group, Inc.

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## 1. INTRODUCTION

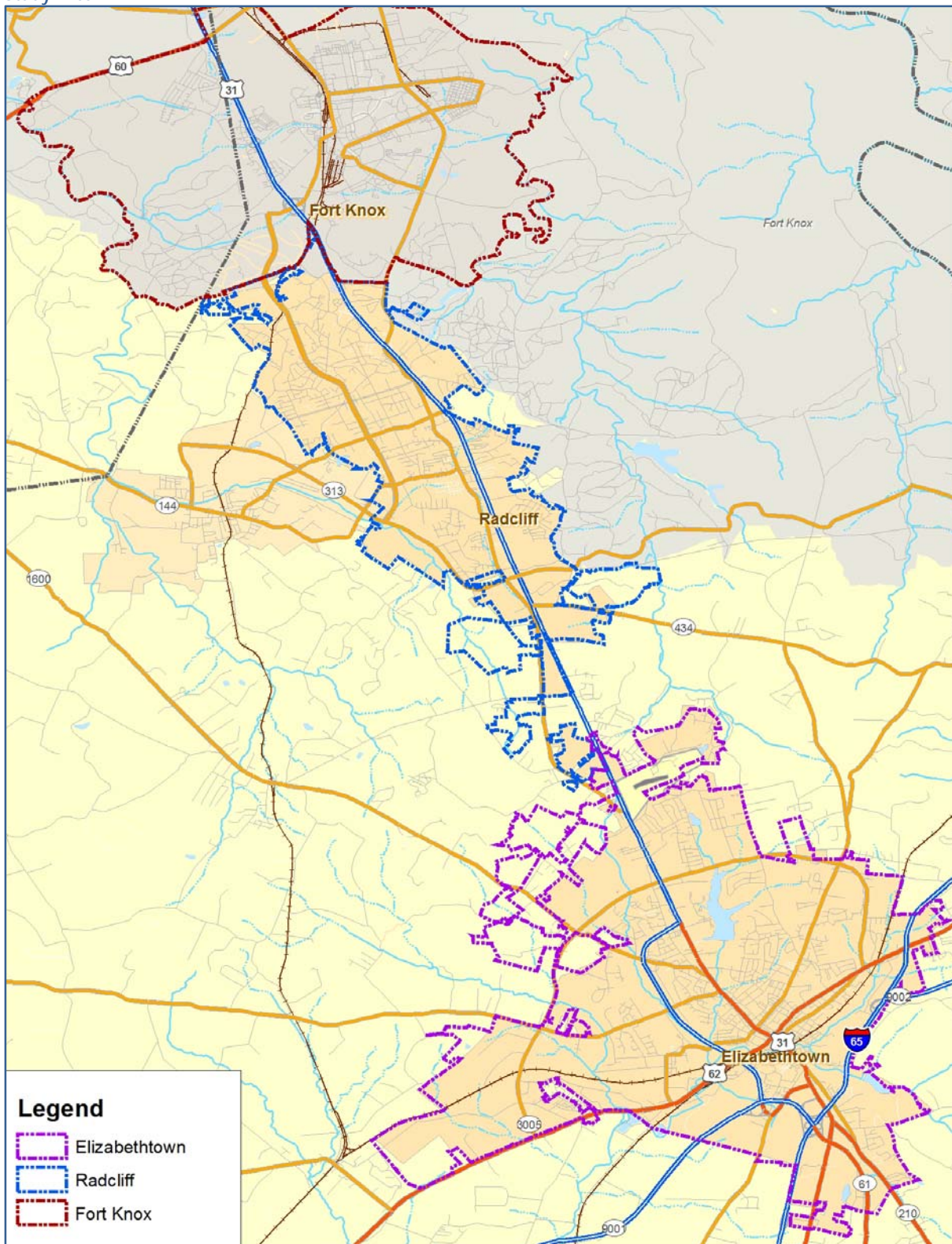
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The purpose of this study is to develop a plan for a fixed-route public transportation system that will connect Elizabethtown, Radcliff, and Fort Knox (**Figure 1-1**). The system will also include routes that circulate within each city. The study will include: refining the routes for the transit system, determining locations for stops along the routes, establishing the cost for shelters at the stops, determining the capital and operating costs for the system, determining the match required for each local government, and any other elements necessary to complete the study.

This report includes a review of the study area demographics, transit generators, existing transit resources, transportation needs, and some preliminary routing options.

A similar study was completed in September 2005. The initial study area was Radcliff, Elizabethtown, and Vine Grove, with Fort Knox being added after the study commenced. Some initial routes were proposed. As the study came to a close, the 2005 Base Realignment and Closure (BRAC) commission announcement was made and public transportation for the area was put on hold. New public transportation resources came out of BRAC in the form of a weekday park-and-ride service connecting Elizabethtown, Radcliff, and Fort Knox operated by the Transit Authority of Central Kentucky (TACK). The presence of these new resources, increasing employment at Fort Knox, and a continued interest in public transportation in the area make it appropriate once again to study additional public transportation options for the area.

Figure 1-1  
Study Area



## 2. DEMOGRAPHICS

The population trends for Hardin County are shown in **Table 2-1**. Historic Census data and forecast data are summarized for the state of Kentucky, Hardin County, and select communities with Hardin County. Hardin County experienced growth from 1960 to 2010 and growth is predicted in future forecasts from 2010 to 2035. The population in Elizabethtown experienced growth from 1960 to 2010 and growth is predicted from 2010 to 2035, but at a lower rate than historical growth. The population in Radcliff experienced growth from 1960 to 2000 and a slight decline from 2000 to 2010. Future forecasts predict growth from 2010 to 2035.

**Table 2-1**  
**Population Trends**

Area	Census Counts						Forecasts		
	1960	1970	1980	1990	2000	2010	2020	2030	2035
Elizabethtown	9,641	11,748	15,380	18,167	22,542	28,531	30,246	32,177	33,122
Radcliff	3,384	8,426	14,519	19,772	21,961	21,688	25,943	28,887	30,224
Fort Knox*	--	37,608	31,055	21,495	12,377	10,124	13,500	13,500	13,500
Hardin County	67,789	78,421	88,971	89,240	94,174	105,543	122,682	136,201	143,260
Kentucky	3,038,156	3,220,711	3,660,777	3,685,296	4,041,769	4,339,367	4,651,801	4,964,236	5,120,453

Source: Census Counts - U.S. Census Bureau

Forecasts - Radcliff/Elizabethtown Metropolitan Transportation Plan 2010-2035 and Kentucky Statewide Transportation Plan

\*not exclusively in Hardin County

The population of Fort Knox does not follow the same patterns as Hardin County. The population of Fort Knox peaked in 1970 and declined from 1970 to 2010. The population at Fort Knox is driven by the amount of military personnel and civilians on the military base. The changes dictated in the 2005 Base Closure and Realignment Commission Report (BRAC) had profound impacts on the Fort Knox population and future population forecast. The anticipated regional growth after BRAC is fully implemented is a 13,700 increase in population, a 9,850 increase in employees, and a 5,700 increase in households.<sup>1</sup> The forecasts used in this report reflect BRAC-related growth-to-date and future growth.<sup>2</sup>

The profile by age for Kentucky, Hardin County, and communities within Hardin County are defined in **Table 2-2**. Hardin County has a higher percentage of the population less than 5 years compared to all of Kentucky. Hardin County has a lower percentage of population over 50 years compared to the statewide statistics, which is likely due to the strong military presence in Hardin County.

<sup>1</sup> Fort Knox Regional Highway Capacity Study, August 2009.

<sup>2</sup> Radcliff/Elizabethtown Metropolitan Transportation Plan 2010-2035, February 2010.

Table 2-2  
2010 Population by Age

Age	Kentucky		Hardin County		Elizabethtown		Radcliff		Fort Knox	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under 5 years	282,367	6.5	8,010	7.6	2,155	7.6	1,802	8.3	1,396	13.8
5 to 9 years	282,888	6.5	7,336	7.0	1,857	6.5	1,542	7.1	1,105	10.9
10 to 14 years	284,154	6.5	7,526	7.1	1,904	6.7	1,467	6.8	780	7.7
15 to 19 years	296,795	6.8	7,352	7.0	1,948	6.8	1,507	6.9	744	7.3
20 to 24 years	289,968	6.7	7,671	7.3	2,087	7.3	1,701	7.8	1,844	18.2
25 to 29 years	285,296	6.6	7,946	7.5	2,300	8.1	1,965	9.1	1,475	14.6
30 to 34 years	280,920	6.5	6,992	6.6	1,873	6.6	1,459	6.7	1,075	10.6
35 to 39 years	285,411	6.6	7,012	6.6	1,831	6.4	1,383	6.4	754	7.4
40 to 44 years	291,251	6.7	7,074	6.7	1,838	6.4	1,334	6.2	574	5.7
45 to 49 years	323,642	7.5	8,091	7.7	2,062	7.2	1,590	7.3	220	2.2
50 to 54 years	319,455	7.4	7,492	7.1	1,912	6.7	1,493	6.9	83	0.8
55 to 59 years	288,027	6.6	6,376	6.0	1,632	5.7	1,271	5.9	47	0.5
60 to 64 years	250,966	5.8	5,057	4.8	1,361	4.8	921	4.2	18	0.2
65 to 69 years	185,664	4.3	3,764	3.6	1,000	3.5	726	3.3	6	0.1
70 to 74 years	139,650	3.2	2,846	2.7	841	2.9	556	2.6	2	0.0
75 to 79 years	105,392	2.4	2,181	2.1	664	2.3	464	2.1	0	0.0
80 to 84 years	78,313	1.8	1,501	1.4	591	2.1	284	1.3	1	0.0
85 years and over	69,208	1.6	1,316	1.2	675	2.4	223	1.0	0	0.0
Total population	4,339,367	100.0	105,543	100.0	28,531	100.0	21,688	100.0	10,124	100.0

Source: U.S. Census Bureau, 2010 Census

Elizabethtown and Radcliff have a higher percentage of the population in the 20 to 24 years and 25 to 29 years categories. This appears to be driven by members of the military living in these nearby communities. Fort Knox differs more significantly from the statewide and countywide population age profiles. Greater than 90% of the population in Fort Knox is under 40 years. The dominant age groups at Fort Knox are 20 to 24 years, 25 to 29 years, and under 5 years.

The population in households and group quarters are summarized in **Table 2-3**. Hardin County, Elizabethtown, Radcliff, and Fort Knox are compared to the statewide statistics. Hardin County and Elizabethtown have a slightly lower percentage of population in households and a lower percentage of the population specifically in family households. As expected, the group quarters population of Fort Knox is higher than that of the state.



Table 2-3  
2010 Households

	Elizabethtown		Radcliff		Fort Knox		Hardin County		Kentucky	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Population in Households	27,456	96.2	21,532	99.3	8,111	80.1	102,287	96.9	4,213,497	97.1
Family Households	22,276	78.1	17,961	82.8	7,891	77.9	88,425	86.4	3,519,934	83.5
Non-Family Households	5,180	18.2	3,571	16.5	220	2.2	13,862	13.6	693,563	16.5
Group Quarters	1,075	3.8	156	0.7	2,013	19.9	3,256	3.1	125,870	2.9
Institutionalized	995	92.6	156	100.0	0	0.0	1,163	35.7	70,779	56.2
Non-Institutionalized	80	7.4	0	0.0	2,013	100.0	2,093	64.3	55,091	43.8
Total Population	28,531	100.0	21,688	100.0	10,124	100.0	105,543	100.0	4,339,367	100.0
Total Households	11,711		8,660		2,361		39,853		1,719,965	
Average Household Size	2.34		2.49		3.44		3.04		2.98	

Source: U.S. Census Bureau, 2010 Census

The housing units in the study area are compared to the state in **Table 2-4**. The rate of vacant housing units in the study area is lower than statewide statistics. Fort Knox is an exception. There are more renter-occupied housing units in Hardin County and the cities than statewide statistics. The military population is generally considered somewhat transient, which encourages more renter-occupied housing.

Table 2-4  
2010 Housing Units

Status	Elizabethtown		Radcliff		Fort Knox		Hardin County		Kentucky	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total Housing Units	12,664	100.0	9,491	100.0	2,961	100.0	43,261	100.0	1,927,164	100.0
Occupied	11,711	92.5	8,660	91.2	2,361	79.7	39,853	92.1	1,719,965	89.2
Vacant	953	7.5	831	8.8	600	20.3	3,408	7.9	207,199	10.8
Tenure-Occupied Housing Units										
Owner Occupied	6,019	51.4	4,408	50.9	14	0.6	25,268	63.4	1,181,271	68.7
Renter Occupied	5,692	48.6	4,252	49.1	2,347	99.4	14,585	36.6	538,694	31.3

Source: U.S. Census Bureau, 2010 Census

The study area labor force is profiled and compared to the state in **Table 2-5**. Hardin County, the cities, and Fort Knox have a higher labor force participation rate compared to the statewide rate of 60 percent. The unemployment rate is similar to the statewide statistic for the county, with lower rates in Elizabethtown and Radcliff. The unemployment rate for Fort Knox is higher than the state rate and is probably associated with military spouses. The percent in the armed forces is significantly higher than statewide; in fact, over one-third of the statewide armed forces population exists in Hardin County.

Table 2-5  
Employment Status  
Population 16 Years and Over

Status	Elizabethtown		Radcliff		Fort Knox		Hardin County		Kentucky	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total Labor Force	12,987	60.2	10,326	64.6	5,789	75.8	53,785	64.9	2,066,152	59.8
Civilian Labor Force	12,563	96.7	8,851	85.7	1,468	25.4	48,922	91.0	2,052,108	99.3
Employed	11,538	91.8	7,925	89.5	1,147	78.1	43,572	89.1	1,838,401	89.6
Unemployed	1,025	8.2	926	10.5	321	21.9	5,350	10.9	213,707	10.4
Armed Forces	424	3.3	1,475	14.3	4,321	74.6	4,863	9.0	14,044	0.7
Total Population 16 Years and Over	21,563		15,979		7,642		82,901		3,456,598	

Source: American Community Survey, 2007-2011 Estimates

The civilian employment by industry for the study area and the state are characterized in **Table 2-6**. Hardin County's, Elizabethtown's, and Radcliff's civilian employment by industry profile is similar to the statewide profile. The following industries are a lower percentage of the civilian employment compared to the statewide profile: agriculture, forestry, fishing and hunting, and mining; construction; transportation and warehousing and utilities; and, educational services. The public administration industry is more prominent in Hardin County than statewide and accounts for 11 percent of the civilian employment in the study area, most likely due to the presence of Fort Knox. National defense and government-related activities are considered public administration. These are likely civilian positions associated with the military base.

Table 2-6  
Employment by Industry  
Workers 16 Years and Over

Industry	Elizabethtown		Radcliff		Fort Knox		Hardin County		Kentucky	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Agriculture, forestry, fishing and hunting, and mining	18	0.2	24	0.3	5	0.4	248	0.6	50,389	2.7
Construction	619	5.4	371	4.7	37	3.2	1,449	3.3	104,467	5.7
Manufacturing	933	8.1	620	7.8	30	2.6	6,074	13.9	246,146	13.4
Wholesale trade	432	3.7	161	2.0	14	1.2	1,748	4.0	47,607	2.6
Retail trade	1,355	11.7	1,053	13.3	102	8.9	5,875	13.5	213,898	11.6
Transportation and warehousing, and utilities	549	4.8	338	4.3	52	4.5	1,413	3.2	114,876	6.2
Information	235	2.0	169	2.1	16	1.4	279	0.6	26,811	1.5
Finance and insurance, and real estate and rental and leasing	745	6.5	244	3.1	25	2.2	2,106	4.8	100,565	5.5
Professional, scientific, and management, and administrative and waste management services	1,127	9.8	876	11.1	141	12.3	3,585	8.2	142,468	7.7
Educational services, and health care and social assistance	3,212	27.8	1,468	18.5	315	27.5	9,349	21.5	459,259	25.0
Arts, entertainment, and recreation, and accommodation and food services	890	7.7	1,125	14.2	148	12.9	4,416	10.1	157,446	8.6
Other services, except public administration	404	3.5	371	4.7	28	2.4	2,320	5.3	87,708	4.8
Public administration	1,019	8.8	1,105	13.9	234	20.4	4,710	10.8	86,761	4.7
Total Civilian Workers 16 Years and Over	11,538	100.0	7,925	100.0	1,147	100.0	43,572	100.0	1,838,401	100.0

Source: American Community Survey, 2007-2011 Estimates

The commute to work for study area residents is compared to the commute for all Kentucky residents in **Table 2-7**. The percentage of the population commuting in a carpool is 13 percent for the county, 11 percent for Elizabethtown, and 10 percent for Fort Knox, all of which are higher than or equal to the statewide percentage of 10 percent. A lower portion of the population in the county or cities walk or use public transportation compared to all Kentucky residents. A higher percentage of county and Fort Knox workers worked at home than the statewide statistic.

**Table 2-7**  
**Mode of Commute to Work**  
**Workers 16 Years and Over**

Mode	Elizabethtown		Radcliff		Fort Knox		Hardin County		Kentucky	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Drove Alone	10,048	85.3	8,083	86.9	3,247	59.7	38,325	79.9	1,505,309	83.1
Carpooled	1,295	11.0	800	8.6	543	10.0	6,189	12.9	171,579	9.5
Public Transportation	30	0.3	7	0.1	0	0.0	161	0.3	20,909	1.2
Walked	118	1.0	86	0.9	332	6.1	330	0.7	38,405	2.1
Other	96	0.8	158	1.7	116	2.1	629	1.3	22,533	1.2
Worked at Home	186	1.6	172	1.8	1,200	22.1	2,327	4.9	52,732	2.9
Total Workers 16 Years and Over	11,773	100.0	9,306	100.0	5,438	100.0	47,961	100.0	1,811,467	100.0
Mean Travel Time to Work (minutes)	19.2		20.5		13.2		22.4		22.9	

Source: American Community Survey, 2007-2011 Estimates

The annual household income in the study area is compared to the household income for all Kentucky residents in **Table 2-8**. The median household income for all components of the study area is higher than the statewide median income. Still, more than seven percent of households in Elizabethtown, Radcliff, and the county have an annual income of less than \$10,000. Fewer households are in income groups which are considered below the poverty level in Hardin County than statewide.

**Table 2-8**  
**Annual Household Income**

Income	Elizabethtown		Radcliff		Fort Knox		Hardin County		Kentucky	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Less than \$10,000	812	7.3	604	7.3	63	2.5	2,751	7.2	180,812	10.8
\$10,000 to \$14,999	826	7.4	520	6.3	15	0.6	2,727	7.1	126,759	7.6
\$15,000 to \$24,999	1,499	13.5	1,267	15.3	102	4.0	4,280	11.1	224,665	13.4
\$25,000 to \$34,999	1,338	12.1	1,012	12.2	327	12.9	4,105	10.7	195,103	11.7
\$35,000 to \$49,999	1,854	16.7	187	2.3	756	29.9	6,426	16.7	251,150	15.0
\$50,000 to \$74,999	1,661	15.0	1,796	21.6	794	31.4	7,317	19.0	290,901	17.4
\$75,000 to \$99,999	1,235	11.1	789	9.5	284	11.2	5,114	13.3	171,277	10.2
\$100,000 to \$149,999	1,096	9.9	884	10.6	165	6.5	3,829	10.0	153,890	9.2
\$150,000 to \$199,999	452	4.1	115	1.4	11	0.4	761	2.0	40,266	2.4
\$200,000 or more	330	3.0	129	1.6	9	0.4	1,137	3.0	37,311	2.2
Total households	11,103	100.0	8,303	100.0	2,526	100.0	38,447	100.0	1,672,134	100.0
Median household income	\$43,235		\$44,222		\$50,000		\$47,448		\$41,141	

Source: American Community Survey, 2007-2011 Estimates

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### 3. TRANSIT GENERATORS

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Transit generators are identified locations that generate a large number of transportation trips. Transit generators in the Radcliff/Elizabethtown area can be divided into several categories: education, medical, multifamily housing, public offices, recreation, and shopping. **Figures 3-1 and 3-2** depict major transit generators in Elizabethtown and Radcliff.

#### EDUCATION

The Radcliff/Elizabethtown Urbanized Area is home to many community colleges and universities. Western Kentucky University and Elizabethtown Community College Main Campus are located just west of US 31W in the southern portion of Elizabethtown, adjacent to a residential district. Troy University is located just east of US 31 W in the northern portion of Elizabethtown in a commercial district. McKendree University is located in Radcliff on West Lincoln Trail Boulevard, adjacent to a residential district. Several community colleges also offer programs at Fort Knox. In general, students are more apt to ride transit than other demographics.

There are four high schools within the Radcliff/Elizabethtown Urbanized Area. Two are located in Elizabethtown, Elizabethtown High School, which is centrally located just northeast of downtown, and Central Hardin High School, which is on US 62. North Hardin High School is located in the northern portion of Radcliff. John Hardin High School is located just north of Elizabethtown.

#### MEDICAL

Hardin Memorial Hospital is the main medical facility in the county. It is centrally located in Elizabethtown, near the intersection of US 31 W and Woodland Drive. The facility is adjacent to other medical facilities, including a rehab center and offices of medical specialists. There is an additional group of medical offices in Elizabethtown, located near the intersection of Ring Road and Shepherdsville Road. In Radcliff, there is a group of medical offices near Woodland Drive and West Lincoln Trail Boulevard.

#### MULTIFAMILY HOUSING

There are many multifamily housing units in the Radcliff and Elizabethtown area. The multifamily housing units are spread across the area and likely serve a variety of demographics, including military personnel and military families.

#### PUBLIC OFFICES

Elizabethtown is the Hardin County seat. The Hardin County Courthouse and other public offices are located in downtown Elizabethtown, near the public square. The Probation and Parole office is also located downtown Elizabethtown, near the intersection of South Mulberry Street and Helm Street. The Social Security Administration and the Hardin County Public Health Department are located in Elizabethtown near the intersection of John Street and Westport Rd, just east of US 31W. The Hardin County Public Library is nearby on John Street, just west of US

Figure 3-1  
Elizabethtown Transit Generators

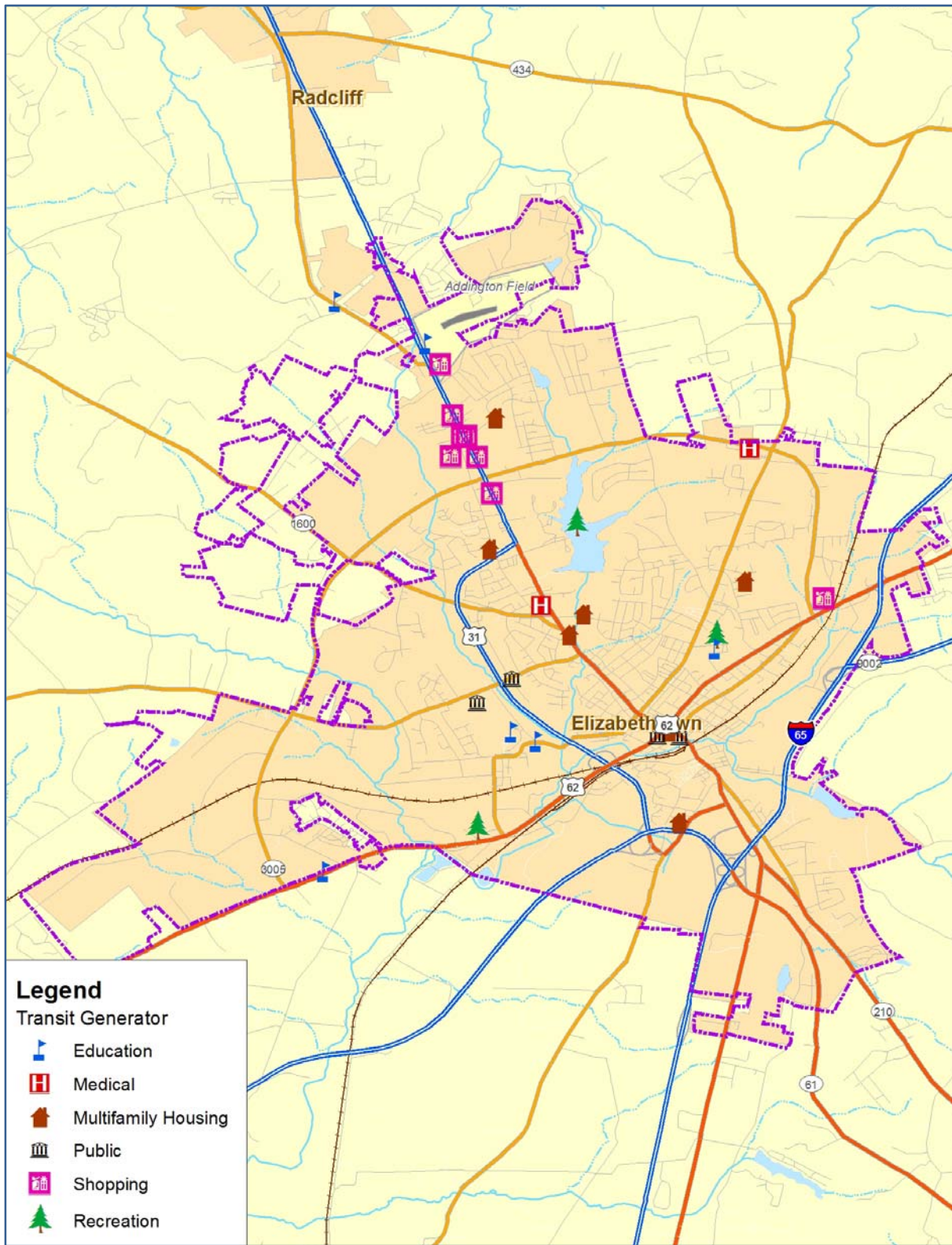
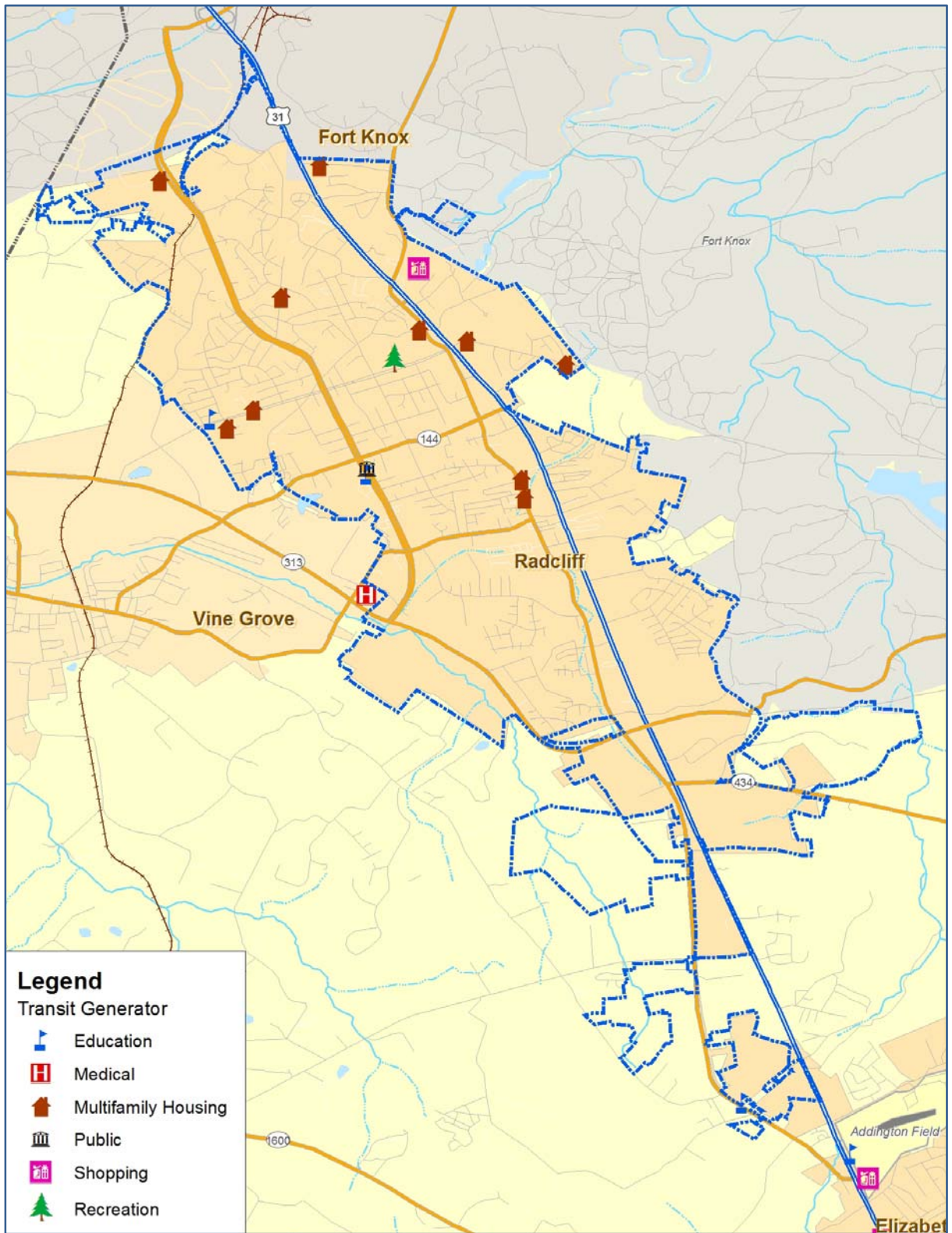




Figure 3-2  
Radcliff Transit Generators





31 W. There is a branch of the Hardin Public Library in Radcliff, on Logsdon Parkway, across from North Hardin High School.

## RECREATION

The Colvin Community Center has a public pool, tennis courts, playground, and indoor facilities. The community center hosts fitness classes and other activities. It is located in Radcliff, on West Lincoln Trail Boulevard. There are three public parks in Elizabethtown: University Park, Freeman Lake Park, and Elizabethtown City Park.

## SHOPPING

The major commercial district for the study area is located along US 31W near the northern extents of Elizabethtown. The Towne Mall, Mall Park Center, Kroger, Kmart, and Walmart Supercenter are all in this area. In addition to being a transportation trip generator for Radcliff and Elizabethtown, this commercial district likely generates transportation trips from all of Hardin County. There are additional shopping centers throughout the area. Radcliff Square Shopping Center is located near the intersection of US 31W and East Lincoln Trail Boulevard. Another Walmart Super Center is located in Radcliff, near the intersection of US 31 W and North Wilson Road.

## 4. EXISTING TRANSIT RESOURCES

The existing public transportation resources in Hardin County consist of services provided by the Transit Authority of Central Kentucky (TACK). TACK provides three types of services: demand response service in Hardin and Meade counties, vanpools, and a park-and-ride route. **Table 4-1** shows the annual operating statistics of the three services as reported to the Federal Transit Administration's (FTA) National Transit Database (NTD) for 2011. This is the most recent NTD data and also the first NTD submission by TACK.

**Table 4-1**  
**Annual Operating Statistics**

	Park-and-Ride	Demand Response	Vanpool
Annual Operating Cost	\$300,671	\$3,095,312	\$147,922
Annual Passenger Trips	47,270	117,786	79,744
Cost per Passenger Trip	\$6.36	\$26.28	\$1.85

Source: Federal Transit Administration, National Transit Database, 2011

### DEMAND RESPONSE

Within Hardin and Meade Counties, TACK offers demand response service Monday through Friday from 6 am through 8 pm and on Saturday from 8 am until 1 pm. This service is open to the general public. The fare is \$1.25 per mile with a \$7.50 minimum per one-way trip. Referring to Table 4-1, the annual operating cost of the demand response service is nearly \$3.1 million, the majority of the TACK annual operating costs. In 2011, the service provided 117,786 trips as a cost per trip of \$26.28.

### VANPOOLS

TACK currently operates 13 vanpools. The work destination of all 13 vanpools is Fort Knox with riders originating in eight surrounding counties. The monthly cost for vanpool participants is \$150 (as of March 11, 2013, up from \$120 per month). Government employees are eligible to receive a \$150 voucher (starting May 1, 2013 – currently \$120) to cover the monthly vanpool fee. As shown in Table 4-1, the annual operating cost of the vanpools in 2011 was approximately \$148,000. The service supplied 79,744 passenger trips with an average cost per trip of \$1.85.

### PARK-AND-RIDE ROUTE

The TACK park-and-ride route is targeted toward those working at Fort Knox and living in Elizabethtown or Radcliff, although it is open to the public. There are three weekday morning trips and three weekday afternoon trips as shown in **Table 4-2**. As shown in **Figure 4-1**, the park-and-ride route operates along US 31, making stops in Elizabethtown, the Pine Valley area, Radcliff and Fort Knox.

Table 4-2  
Park-and-Ride Schedule

	Elizabethtown	Pine Valley	Radcliff	
	Elizabethtown Christian Academy Poplar Drive	Kohl's Department Store	Orcheln's Lincoln Trail	Fort Knox
Route 1	5:45 AM	5:55 AM	6:10 AM	7:00 AM
	4:00 PM	4:25 PM	4:50 PM	5:00 PM
Route 2	6:15 AM	6:25 AM	7:00 AM	7:30 AM
	4:30 PM	4:50 PM	5:05 PM	5:15 PM
Route 3	6:45 AM	6:55 AM	7:10 AM	8:00 AM
	5:00 PM	5:30 PM	5:50 PM	6:00 PM

The cost of the service is \$150 per month as of March 1, 2013. Prior to that time, the monthly cost was \$120 per month. Fort Knox employees are eligible for a \$150 transportation voucher to cover the monthly cost of the park-and-ride service. The daily fare for the service is \$7.50. Contractors that are not government employees may purchase a monthly pass for \$150.

The three routes operate with either one or two vehicles depending on the number of passengers. There are no fareboxes on the buses and aside from contract employees at Fort Knox there is little if any general public ridership. Once at Fort Knox, the bus is cleared by security and the passengers are dropped off at their worksites. For the afternoon trips the passengers are picked up at their Fort Knox worksites.

In 2011, the operating cost of the park-and-ride service was approximately \$301,000. Annual passenger trips numbered 47,270 at a cost per trip of \$6.36. Discussions with TACK indicate 100 or more passengers are currently transported to and from Fort Knox on a daily basis.

## FUNDING

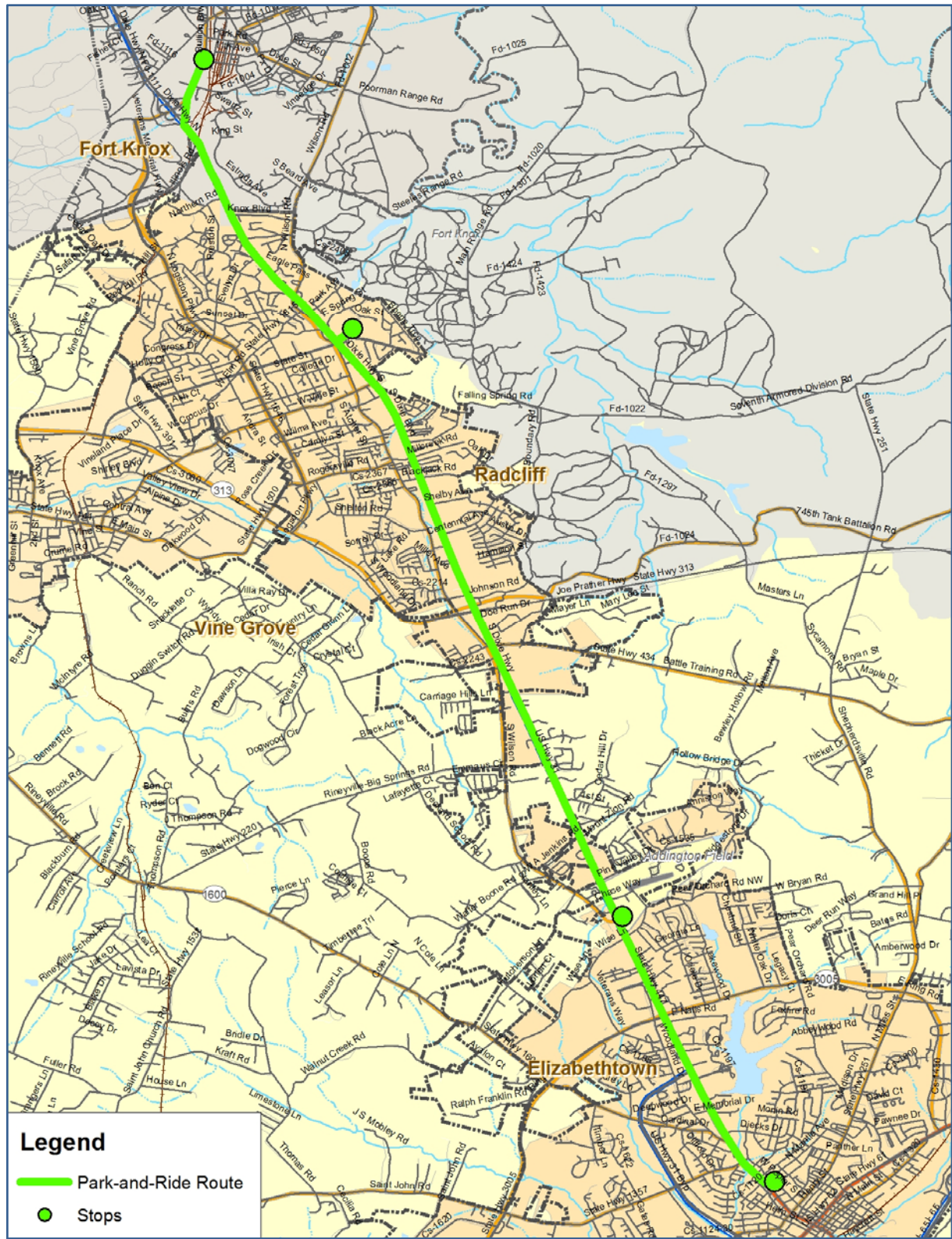
Table 4-3 is a summary of TACK operating revenues by source. In 2011, TACK spent \$3,543,905 to operate the three services. The system generated \$735,952 in revenue through fares, received federal assistance in the amount of \$1.15 million and took in other funds in the amount of \$1.66 million. The funds labeled other comprise a large share of the total operating revenues. It is possible that some of those funds should have been categorized as local funds. It is generally not possible to operate a transit system without some form of local funding to match federal funding. Transit agencies in Kentucky operate without the benefit of state funding programs to subsidize operating expenses.

Table 4-3  
Sources of TACK Operating Revenues

Source	Amount	Percent
Fares	\$735,952	20.8
Local Funds	\$0	0.0
State Funds	\$0	0.0
Federal Assistance	\$1,152,844	32.5
Other Funds	\$1,655,109	46.7
Total	\$3,543,905	100.0

Source: Federal Transit Administration, National Transit Database, 2011

Figure 4-1  
TACK Park-and-Ride Route



## 5. TRANSPORTATION NEEDS

The study area is somewhat unique in terms of its geographic, economic, and demographic characteristics. The three centers of population: Elizabethtown, Radcliff, and Fort Knox are located along a major transportation route, US 31. Fort Knox is a major provider of jobs not only for Radcliff and Elizabethtown residents, but a much larger multi-county region. The presence of Fort Knox and the somewhat transient nature of military personnel make defining the public transportation needs of the study area difficult. A general public survey was conducted to augment the results of a 2005 survey, and population and employment densities have been mapped. These, combined with the demographics presented in Chapter 1, provide an indication of transportation need.

### GENERAL PUBLIC SURVEY

A general public survey was made available on the LTADD website and some paper copies were distributed. The survey was conducted during January and February 2013. Seventy surveys were completed by the general public. During the 2005 study, a similar survey was conducted, with 610 completed questionnaires.

The first question on the survey was about residential location (**Table 5-1**). As shown, nearly 39 percent of the respondents were Elizabethtown residents, over 41 percent were Radcliff residents and there were smaller percentages from Vine Grove (5.7%), Hardin County (7.1%), Rineyville (5.7%), and Meade County (1.4%).

**Table 5-1**  
**Where do you live?**

Response	Number	Percent
Elizabethtown	27	38.6
Radcliff	29	41.4
Vine Grove	4	5.7
Hardin County (outside of a city)	5	7.1
Rineyville	4	5.7
Meade County	1	1.4
Total	70	100

As shown in **Table 5-2**, only 17.1 percent of the respondents were aware of the demand response service currently provided by the Transit Authority of Central Kentucky (TACK). More, 31.4 percent, were aware of the park-and-ride service provided by TACK along with 21.4 percent having knowledge of TACK's vanpool program. This indicates that TACK is not visible to most of the community.



Table 5-2

Are you aware of the transportation services provided by the Transit Authority of Central Kentucky (TACK)?

Response	Number	Percent*
Hardin and Meade County Demand Response	12	17.1
Park-and-ride service connecting Elizabethtown, Radcliff and Fort Knox	22	31.4
Van Pool Program	15	21.4

\*Percent of 70 total responses.

Only four of the 70 respondents had every used the TACK demand response service and two had used the park-and-ride service (Table 5-3). None had used the Vanpool service.

Table 5-3

Have you, or a member of your household, used any of the services offered by the Transit Authority of Central Kentucky (TACK)?

Response	Number	Percent*
Hardin and Meade County Demand Response	4	5.7
Park-and-ride service connecting Elizabethtown, Radcliff and Fort Knox	2	2.9
Van Pool Program	-	-

\*Percent of 70 total responses.

Just over 57 percent of respondents indicate they had difficulty meeting their transportation needs (Table 5-4).

Table 5-4

Do you, or others in your home, have problems meeting your transportation needs?

Response	Number	Percent
Yes	40	57.1
No	30	42.9
Total	70	100.0

Of these 40 respondents indicating problems meeting their or other household members transportation needs; 67.5 percent had difficulty getting out to go shopping, 65 percent had difficulty getting to work or seeking employment; 65 percent also had difficulty getting to medical or dental appointments; approximately 58 percent couldn't get to social or recreational activities; and, 35 percent had difficulty getting to school or training programs (Table 5-5).



**Table 5-5**  
What does your lack of transportation keep you or others in your home from doing?

Response	Number	Percent*
Working or seeking employment	26	65.0
Shopping	27	67.5
Attending training or school	14	35.0
Medical/dental appointments	26	65.0
Social/recreational activities	23	57.5

\*Percent of 30 respondents that had problems meeting transportation needs.

The survey associated with the previous study yielded somewhat similar results in terms of trip purpose. In the 2005 survey, of those that would use a public transit service if available, 65 percent would use it for shopping trips and 53 percent for medical trips. The major difference is that in 2005, only 39 percent would use public transit for work trips and the corresponding rate is now 65 percent. This is most likely due to the economic downturn.

Even though only 57 percent of those surveyed needed transportation, 87 percent of respondents indicated they would use a public transportation service if it were available and met their needs (Table 5-6). During the previous study, 79 percent of respondents indicated they would use public transit if it were available. Thus, there are people that would choose to use the service rather than drive or rely on other family members or friends to drive them.

**Table 5-6**  
Would you or other members of your household consider using a public transportation service if it were available and met your needs?

Response	Number	Percent
Yes	61	87.1
No	9	12.9
Total	70	100.0

As a follow-up to if people were willing to use public transit, they were asked what days of the week they would use a public transit service. As shown in Table 5-7, of the 61 respondents willing to use public transit, 96.7 percent would like service during weekdays, 78.7 on Saturday and 60.7 on Sunday.

**Table 5-7**  
What days of the week would you use public transportation if it were available?

Response	Number	Percent*
Weekdays	59	96.7
Saturday	48	78.7
Sunday	37	60.7

\*Percent of 61 respondents that would use public transportation if available.

Respondents were also asked what times of the day they would consider using transit (**Table 5-8**). Since work was a key destination for those lacking transportation, it is logical that morning commute and afternoon commute hours were often cited. The mid-day hours of 10 am to 3 pm were the most common response showing that shopping was a major trip purpose for which people needed transportation.

**Table 5-8**  
What time of day would you use public transportation if it were available?

Response	Number	Percent*
6 am to 9 am - Morning Commute	45	73.8
10 am to 3 pm - Mid-day	53	86.9
4 pm to 6 pm - Afternoon Commute	44	72.1
7 pm to 10 pm - Evening	43	70.5

\*Percent of 61 respondents that would use public transportation if available.

Most of those willing to use a public transit system preferred a regularly scheduled bus route as indicated by 93.4 percent of respondents (**Table 5-9**). Just over 36.1 percent would consider using a dial-a-ride service and only 1.6 percent would like a park-and-ride service.

**Table 5-9**  
What type of public transportation service would you consider using?

Response	Number	Percent*
A regularly scheduled bus route	57	93.4
A door-to-door (dial-a-ride) service	22	36.1
Park-and-ride	1	1.6

\*Percent of 61 respondents that would use public transportation if available.

Respondents were asked where they would like to go using public transportation. As shown in **Table 5-10**, most of the locations were in the Radcliff/Elizabethtown/Fort Knox area. A few were in Vine Grove and Louisville. The Towne Mall area in Elizabethtown was the most common response. There are several national retail chain stores in the area and it is a local if not regional draw. Grocery shopping at Kroger was a common response as well as Walmart and various medical facilities.

Those responding to the survey were asked how much they would be willing to pay for a one-way transit trip in the study area (**Table 5-11**). The most common response was \$1.50 to \$2.00. This would result in a roundtrip cost of \$3.00 to \$4.00. The second most common response was \$1.00 to \$1.50. The current cost for the TACK park-and-ride route is \$7.50 roundtrip, and the demand response service is \$1.25 per mile, with a \$7.50 minimum one-way trip.

To gauge support for transit, respondents were asked if they would support an additional local tax to fund public transportation (**Table 5-12**). Nearly 60 percent indicated they would support such a tax. The results of the 2005 survey indicated 66 percent of respondents favored a local tax to support transit.

**Table 5-10**  
**Where would you like to go using public transportation?**

Response	Number	Percent*
Between Radcliff and Elizabethtown	2	3.3
Towne Mall Area - Elizabethtown	31	50.8
Fort Knox - Commissary and PX	6	9.8
Fort Knox - not specific	9	14.8
Fort Knox - Work	1	1.6
Doctor's Office - Elizabethtown	8	13.1
Doctor's Office - Radcliff	6	9.8
Doctor's Office - No location	8	13.1
Doctor's Office - Vine Grove	1	1.6
Grocery Store	5	8.2
Kroger - not specific	10	16.4
Walmart - Elizabethtown	3	4.9
Walmart - Radcliff	7	11.5
Walmart -not specific	7	11.5
ECTC	3	4.9
Ireland Army Hospital - Fort Knox	3	4.9
Hardin County Memorial Hospital - Elizabethtown	7	11.5
Louisville	3	4.9
Kohl's	4	6.6
Hardin County Public Library	1	1.6
Walgreens	2	3.3
Government Offices/Social Services	2	3.3

\*Percent of 61 respondents that would use public transportation if available.

**Table 5-11**  
**How much would you pay (per one-way trip) to ride the bus for trips within and between Radcliff, Elizabethtown and Vine Grove?**

Response	Number	Percent
\$1 or less	8	14.0
\$1 to \$1.50	21	36.8
\$1.50 to \$2.00	25	43.9
More than \$2.00	3	5.3
Total	57	100.0

**Table 5-12**  
**Would you support an additional local tax to fund public transportation?**

Response	Number	Percent
Yes	37	59.7
No	25	40.3
Total	62	100.0

To determine the level of transit dependence among survey respondents, they were asked how many automobiles were available for use by their household (**Table 5-13**). As shown, 16.7 percent of the respondent households were without a vehicle. Another 37.9 only had one vehicle. American Community Survey data (2007-2011) estimate 4.7 percent of Hardin County households are without a vehicle.

**Table 5-13**  
How many automobiles are available for use by your household?

Response	Number	Percent
None	11	16.7
One	25	37.9
Two	21	31.8
Three or more	9	13.6
Total	66	100.0

As a means of comparing the survey respondent demographics to those of the study area as reported by the U.S. Census, respondents were asked how many people were in their household by age. **Table 5-14** shows the responses. The age breakdown shows 23 percent children up to high school age, a large portion of people age 51 to 65 (24.7%) and over 64 percent of respondent households comprised of those between the age of 18 and 65, a group that is generally part of the labor force. This is relatively close to the age breakdown for Hardin County as shown in Table 2-2.

**Table 5-14**  
How many people of the following age groups are in your household?

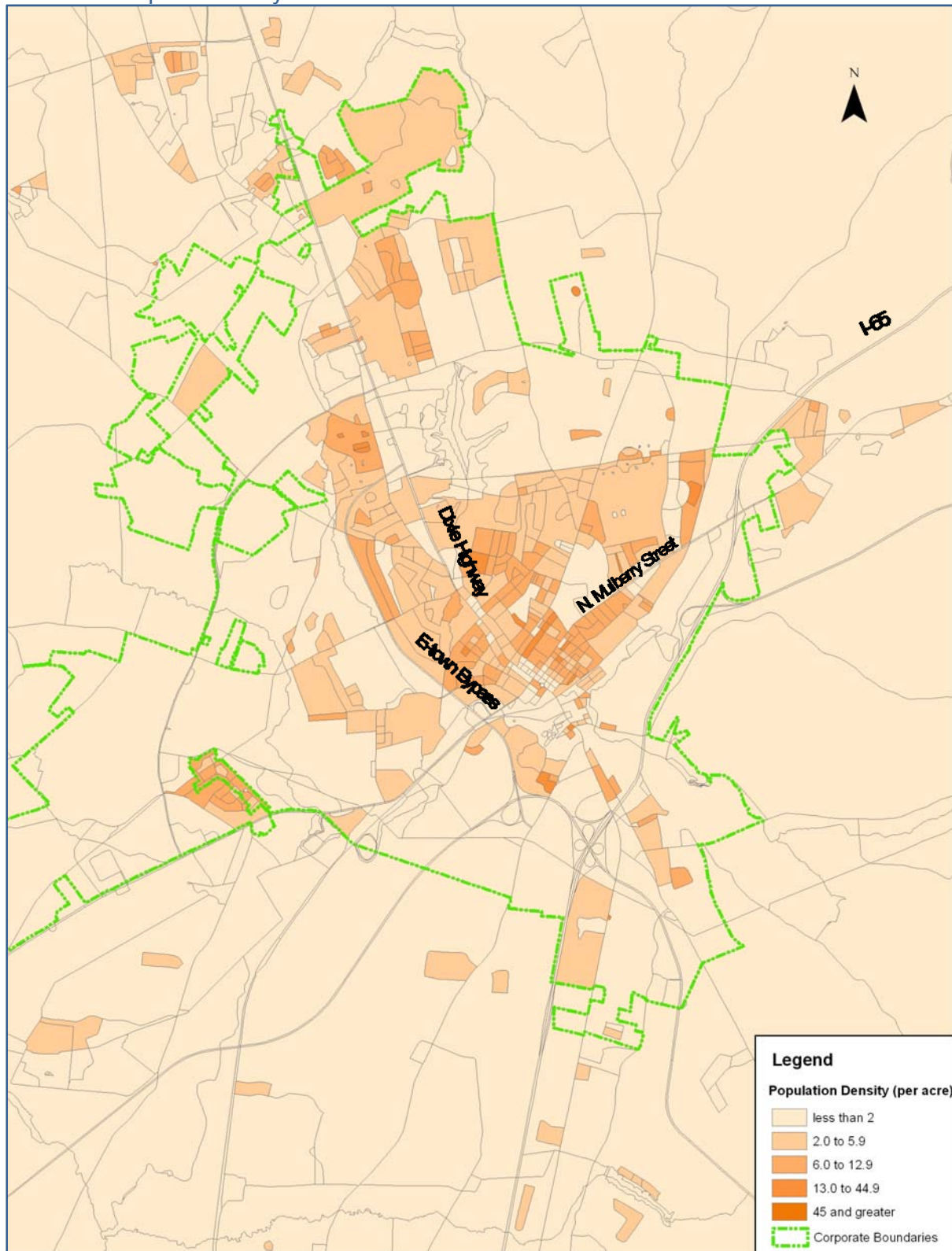
Response	Number	Percent
Under 18	41	23.0
18 to 25	13	7.3
26 to 35	25	14.0
36 to 50	33	18.5
51 to 65	44	24.7
Over 65	22	12.4
Total	178	100.0

Those completing the survey were also asked for comments and suggestions for public transportation in Hardin County. Several responses were received and they are shown in Appendix A. Most of the general comments indicate support for public transportation in Hardin County.

## POPULATION DENSITY

Population density is a key factor in the location of transit routes. **Figure 5-1** shows population density by Census block from the 2010 Census. As shown, most of the outlying areas of Hardin County are relatively low population density areas. Within Elizabethtown, there are some areas of high population density; these are along N. Mulberry Street, extending from downtown, along Dixie Highway and the area between Dixie Highway and the Bypass. Other areas include the newer housing developments in the north part of the city behind Walmart and Lowes.

Figure 5-1  
Elizabethtown Population Density



Data Source: U.S. Census, 2010

There are fewer higher density population areas in Radcliff and they are generally not directly adjacent to Dixie Highway (**Figure 5-2**). This combined with no network of grid streets makes the provision of effective fixed route or circulator service more difficult.

As shown in **Figure 5-3**, the population density within Fort Knox is relatively low. This shows that it would be difficult to serve residential areas within Fort Knox with a public transportation service.

## EMPLOYMENT DENSITY

Employment density is another factor to consider when designing transit routes. **Figure 5-4** shows jobs by Census block for the Elizabethtown area. This 2010 data set is from the U.S. Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) program. The number of workers in each Census Block has been summed and mapped to geographic points located in the center of the Census Block. As shown, the jobs are typically located along Dixie Highway, the Bypass, along Mulberry Street toward I-65, and the southwest part of the city along the rail line. Large numbers of jobs can be observed in clusters in industrial areas, near municipal offices, the Towne Mall commercial area and at the I-65 interchanges where there are hotels and restaurants.

**Figure 5-5** shows the same employment data for Radcliff and some of the Vine Grove area. The major employment areas are located in the Lincoln Trail Boulevard/Dixie Highway area as well as the area further north on Dixie Highway near the Walmart.

The employment distribution at Fort Knox (the portion inside Hardin County) is shown in **Figure 5-6**. As shown, employment is distributed across the developed portion of the base.

## SUMMARY

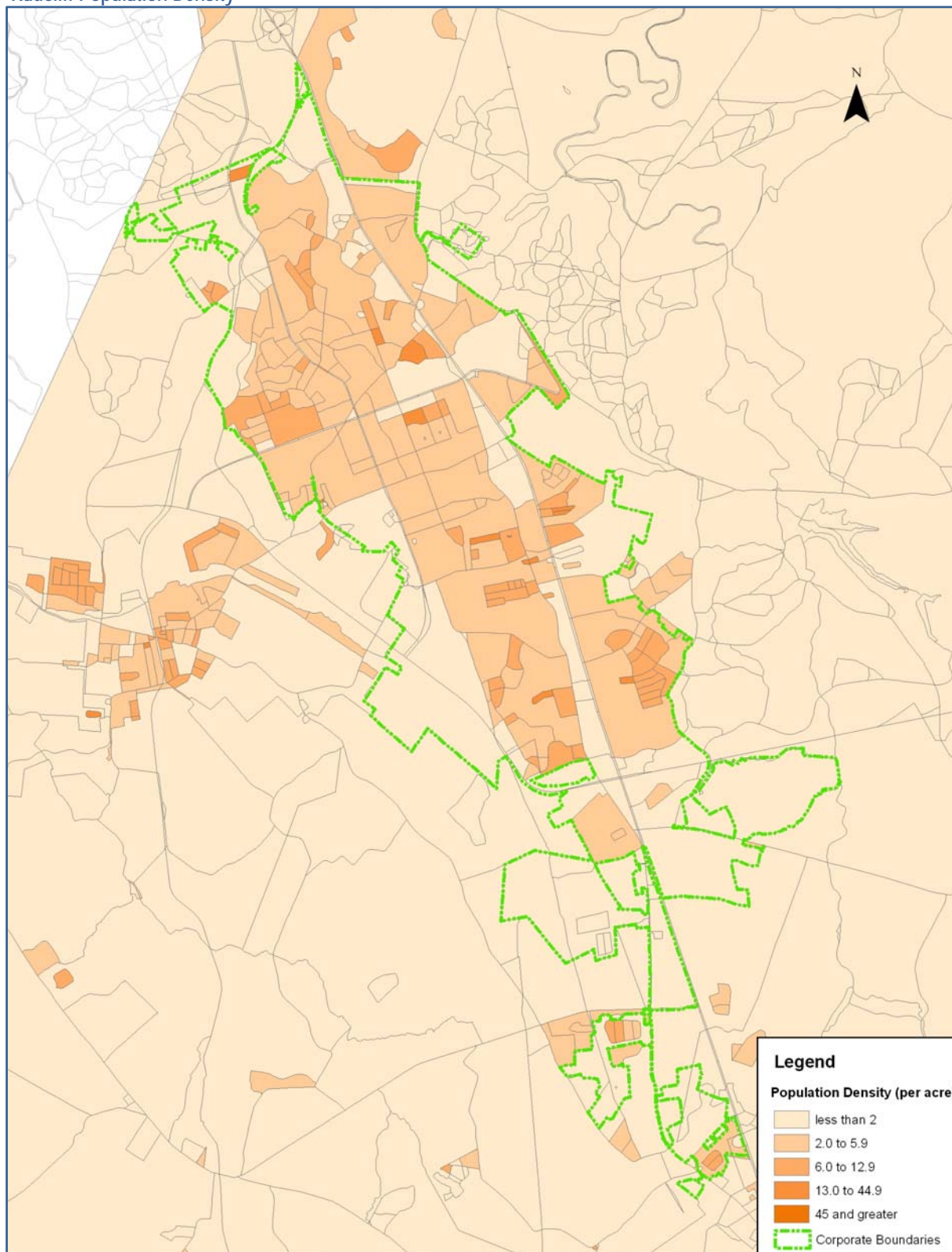
It is evident from the survey that there is a segment of the population that needs public transit. This was also evident in the survey data collected during the 2005 study. People not only want and need transportation to work, but also need to get to medical appointments, the grocery store, and to educational facilities. The need for work-related transportation points to a service that operates every day, at least during weekdays, during work commute hours.

The employment density maps indicate most of the major employers are clustered along or very near the US 31 corridor. There are also a significant number of jobs at Fort Knox held by non-military personnel and other military personnel that live off-base. The current ridership of the TACK park-and-ride service of 100 or more passengers making the roundtrip to and from Fort Knox on weekdays indicates that there is most likely a demand for service, some of which, on the general public side, is currently going unmet.

The population density maps give an indication of the problem with only providing transit along US 31. As shown, the major housing developments and residential concentrations are often set back from US 31. There needs to be a means of connecting residential areas with a US 31 service.

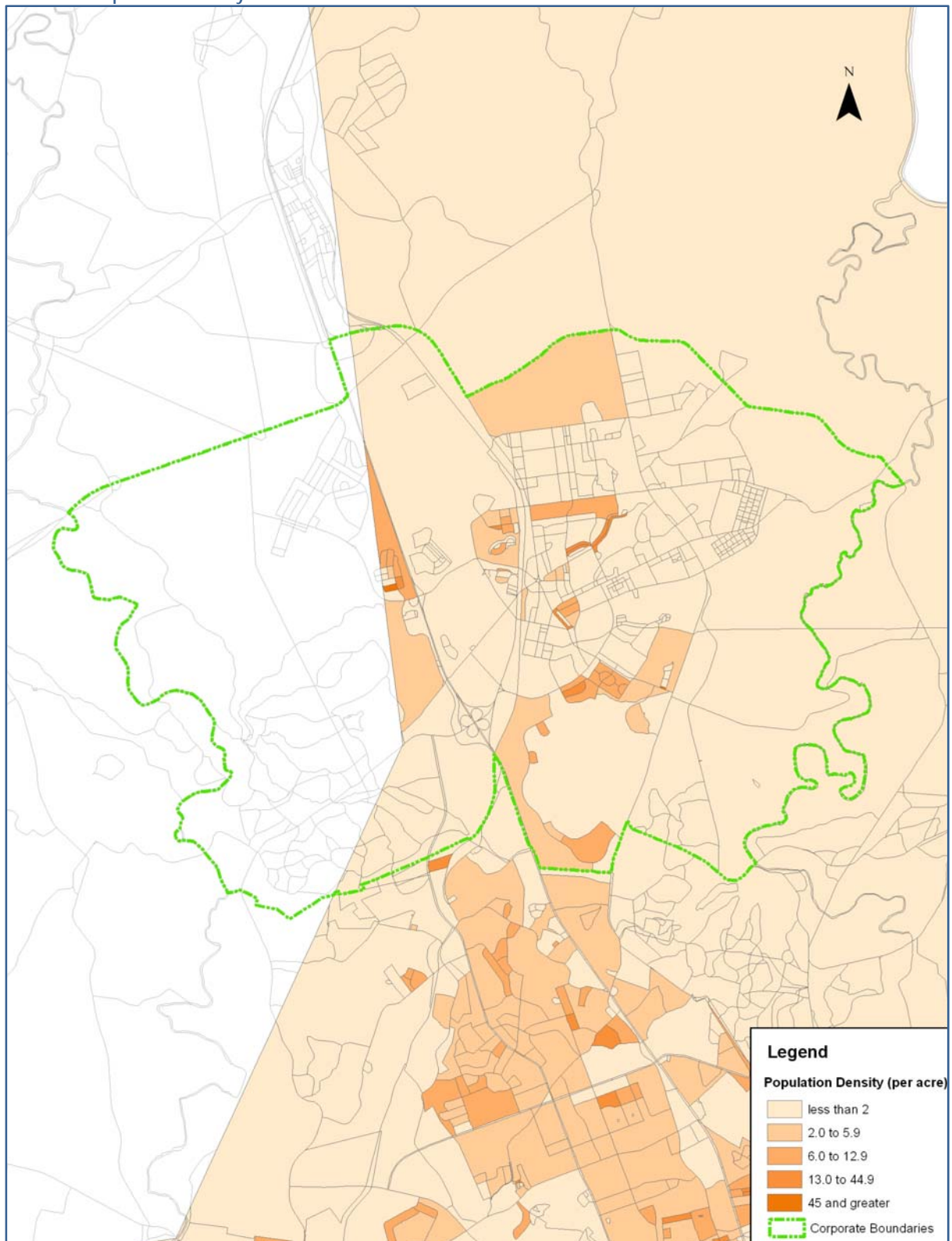


Figure 5-2  
Radcliff Population Density



Data Source: U.S. Census, 2010

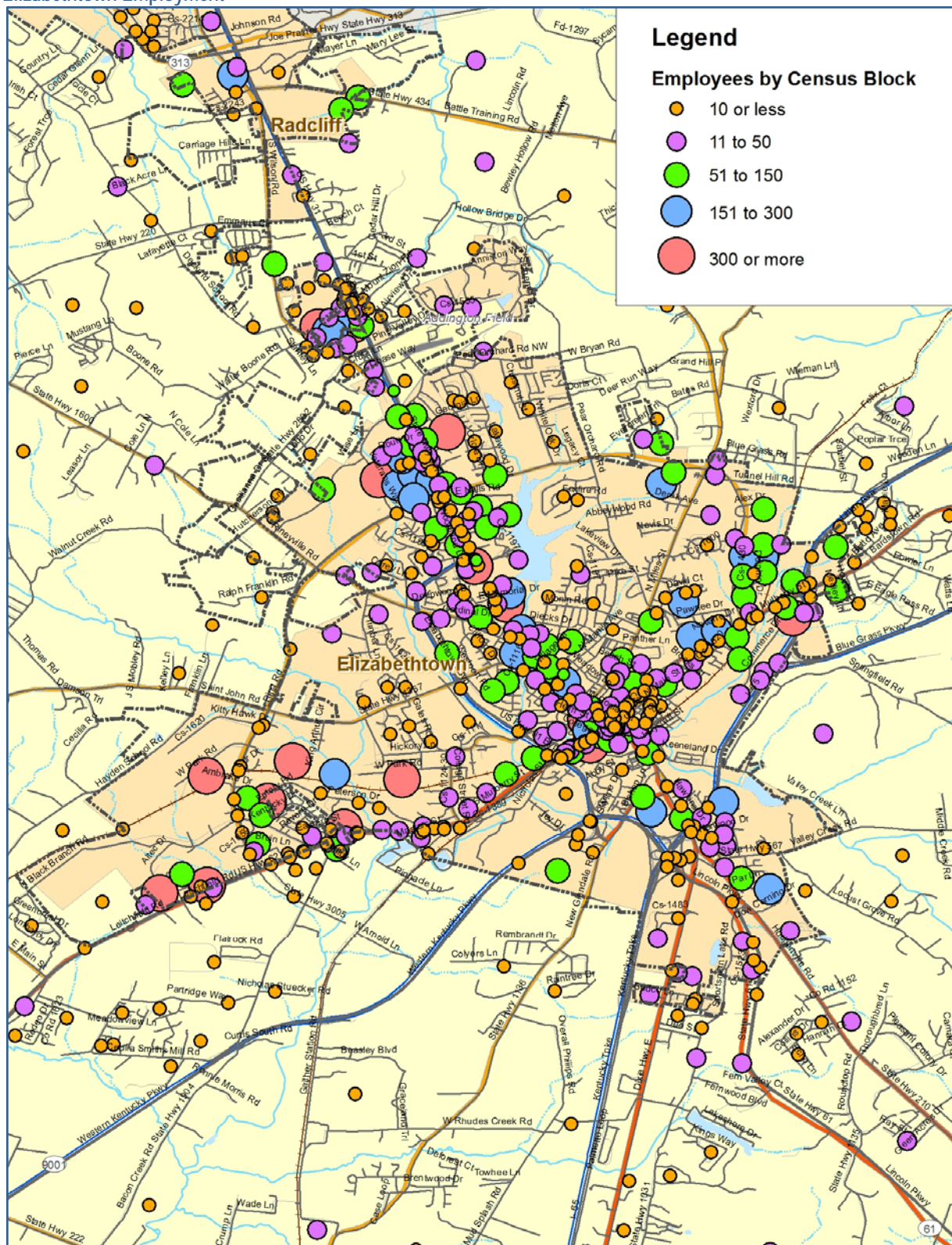
Figure 5-3  
Fort Knox Population Density



Data Source: U.S. Census, 2010



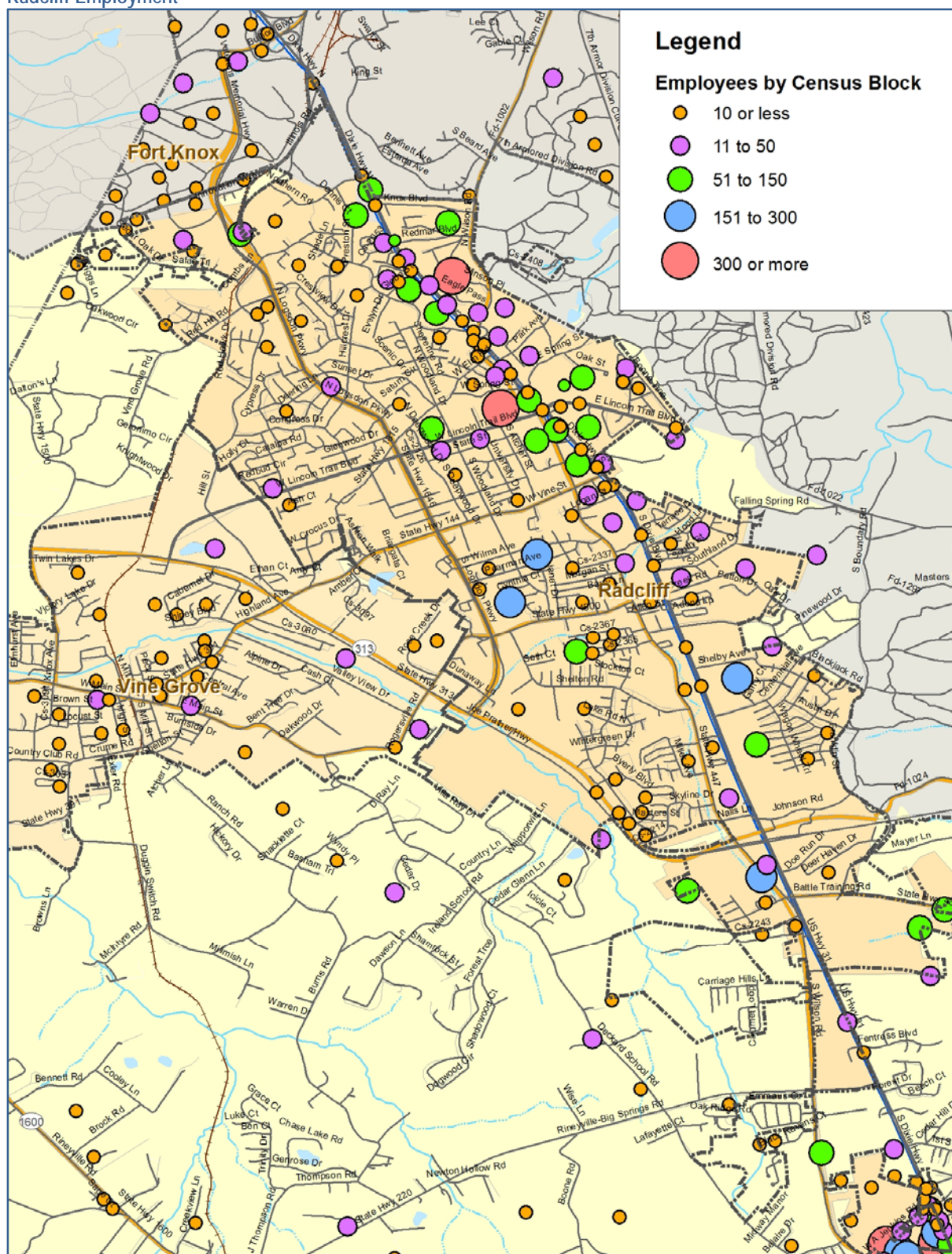
Figure 5-4  
Elizabethtown Employment



Data Source: U.S. Census Bureau, LEHD 2010



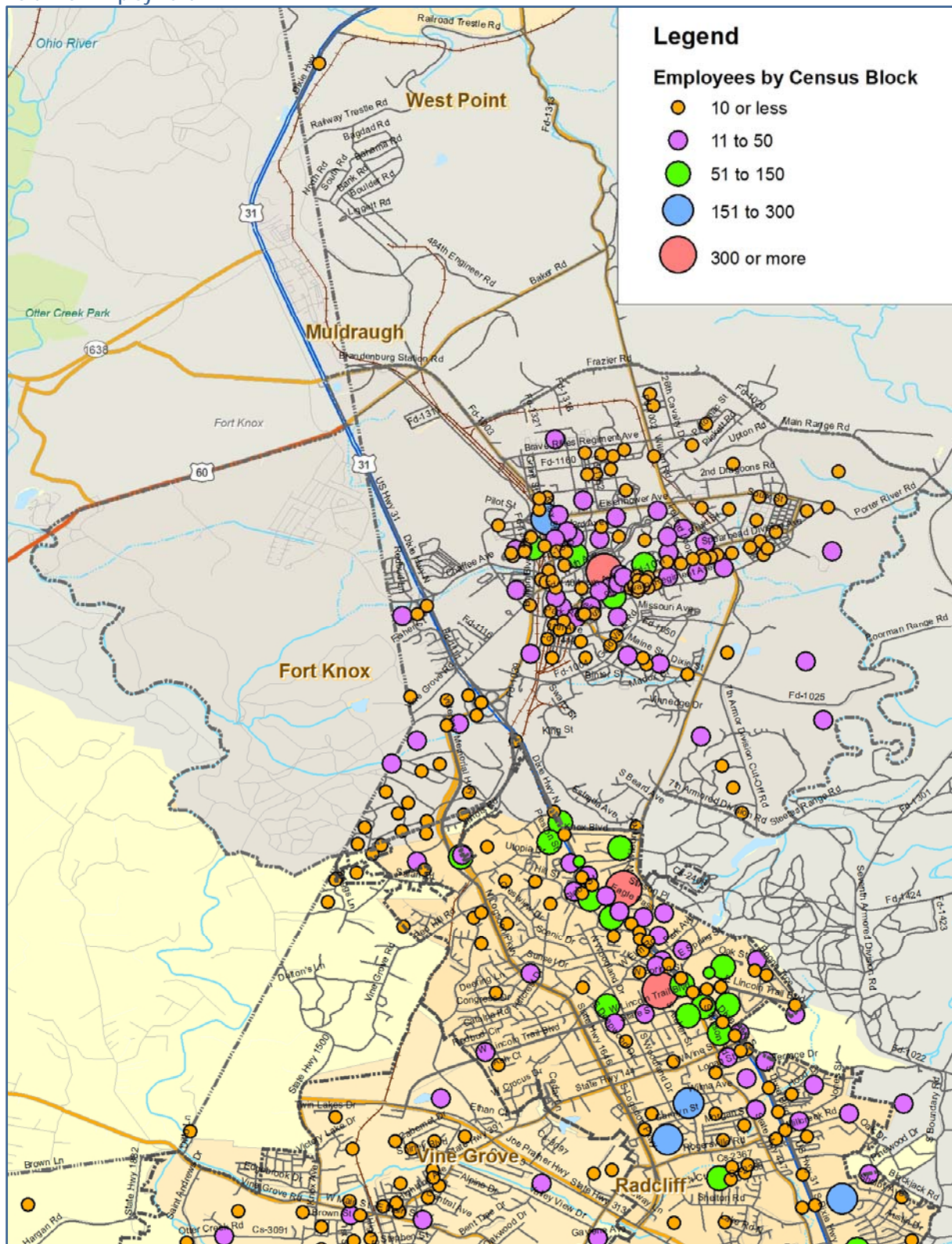
Figure 5-5  
Radcliff Employment



Data Source: U.S. Census Bureau, LEHD 2010



Figure 5-6  
Fort Knox Employment



Data Source: U.S. Census Bureau, LEHD 2010



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## 6. PROPOSED SERVICES

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The purpose of the study was to connect Elizabethtown, Radcliff and Fort Knox and to provide a circulator service within Radcliff and Elizabethtown. It is assumed that the shuttles that began operating internal to Fort Knox in 2011 will shuttle transit riders to their final destination if it is within Fort Knox.

### ROUTING AND STOPS

Three routes have been proposed to address the goals of the study. These are the Elizabethtown-Radcliff-Fort Knox Connector, Elizabethtown Circulator, and the Radcliff Circulator.

#### Elizabethtown-Radcliff-Fort Knox Connector

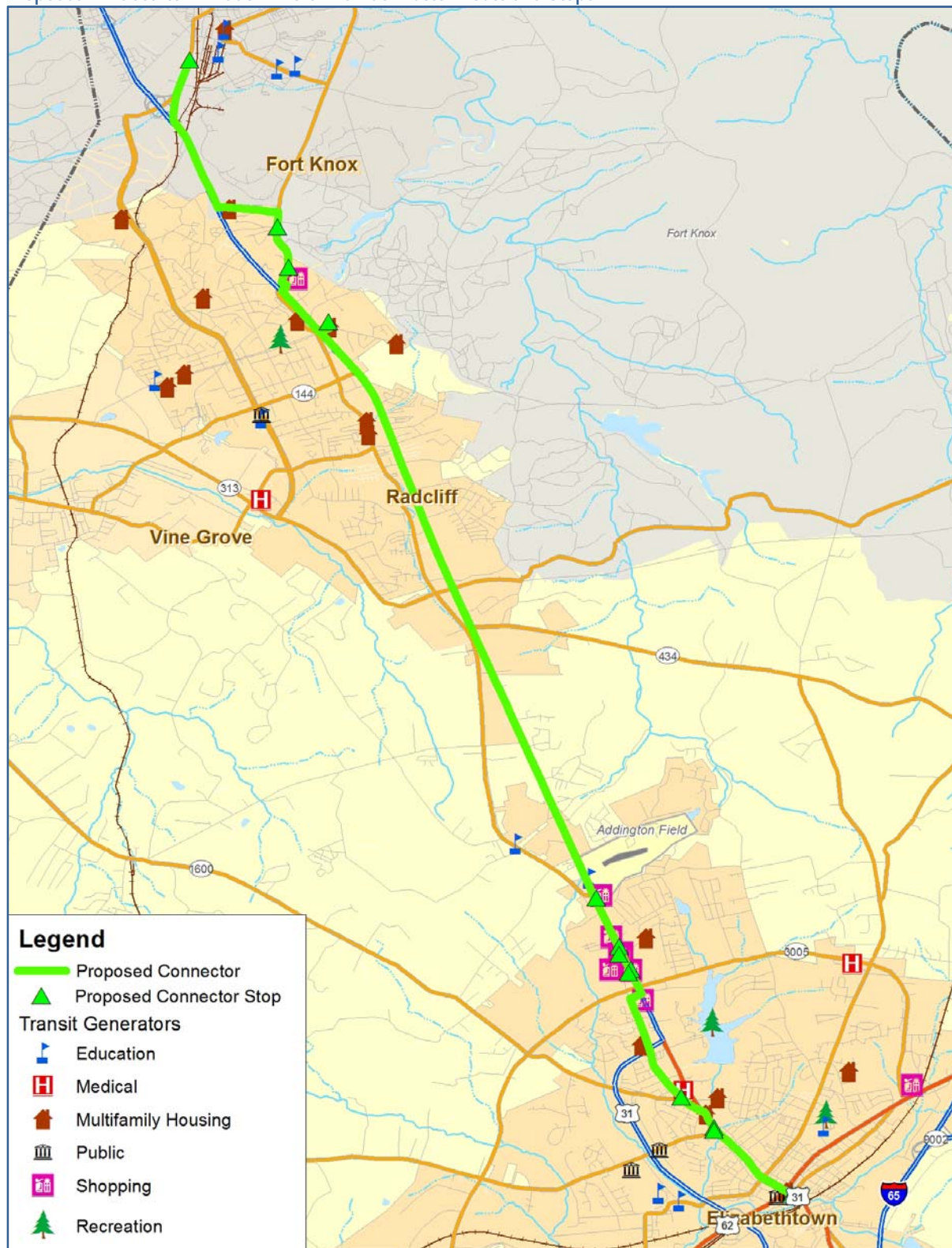
The purpose of the connector route is to connect Elizabethtown, Radcliff and Fort Knox. As noted under existing transportation resources, TACK currently provides a park-and-ride service that fills this function. The TACK service is targeted to the needs of those working at Fort Knox, operates only 6 trips per weekday and has only a few stops. The proposed connector route has more stops, somewhat different routing and includes connections to local circulator services in Elizabethtown and Radcliff.

As shown in **Figure 6-1**, the Elizabethtown-Radcliff-Fort Knox Connector (connector) routing generally runs up and down US 31 W, but does make some deviations to accommodate additional key stops. Proposed stops along the corridor for both northbound and southbound service are in the general vicinity of the following:

- Hardin County Court House;
- Roses and Walgreen's;
- Hardin County Hospital from Woodland Drive;
- Walmart Drive both north and southbound;
- Kmart Center and Towne Center Drive (near Kmart for northbound and Kroger for southbound);
- Childers Court at the entrance to the Mall Park Center and Kohl's department store;
- Orscheln Farm & Home;
- Radcliff Walmart;
- Hardin County Health Center – Radcliff location; and, Fort Knox.

These stops have been identified to provide access to key transit generators and facilitate transfers to and from the local circulator routes. Passengers with Fort Knox as a destination will exit the vehicle at the gate and then may access the internal Fort Knox shuttle to get to their final destination.

Figure 6-1  
Proposed Elizabethtown-Radcliff-Fort Knox Connector Route and Stops



## Elizabethtown Circulator

Figure 6-2 shows a preliminary circulator route for Elizabethtown. Starting downtown near the city and county offices, the route would leave downtown with the proposed routing:

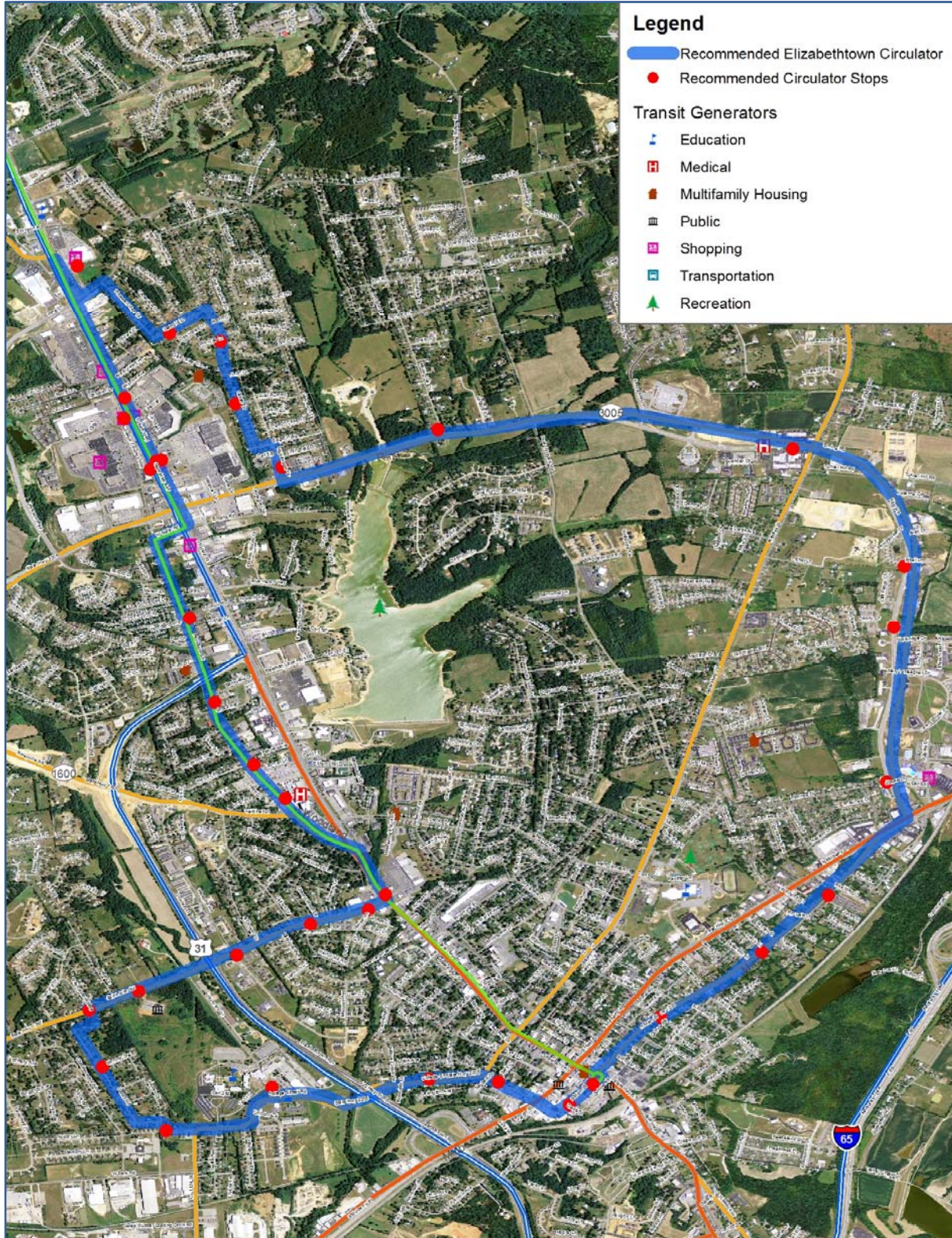
- Start at Hardin County Court House;
- Proceed northeast on Main Street;
- Right on Mulberry Street;
- Left on Ring Road;
- Right on Nightingale Drive;
- Left on Eagle Way;
- Right on Oriole Drive;
- Left on Georgia Lane
- Right on Pleasant View Drive;
- Left on Pear Orchard Road;
- Right on US 31 to Kohl's;
- Left from Kohl's back onto US 31;
- Right on Nalls Road;
- Left on Woodland Drive;
- Right on Dixie Highway;
- Right on St. John Rd;
- Left on Gates Road;
- Continue on Gates until it merges into College Street Road; and,
- Left on Main Street and back to the starting location.

Transfers to the Connector can be made at the Hardin County Court House, Walgreen's, Hardin County Memorial Hospital, Old Towne Mall, Kroger and Kohl's.

This routing provides access to and from residential areas and also city and county offices, Kohl's department store, the shopping destinations in and around the Old Towne Mall, Hardin County Memorial Hospital, the Library and the campus area of Elizabethtown Community and Technical College and the Western Kentucky University satellite campus. The route is approximately 13.5 miles long and 32 preliminary bus stop locations have been identified.



Figure 6-2  
Proposed Elizabethtown Circulator and Stops



## Radcliff Circulator

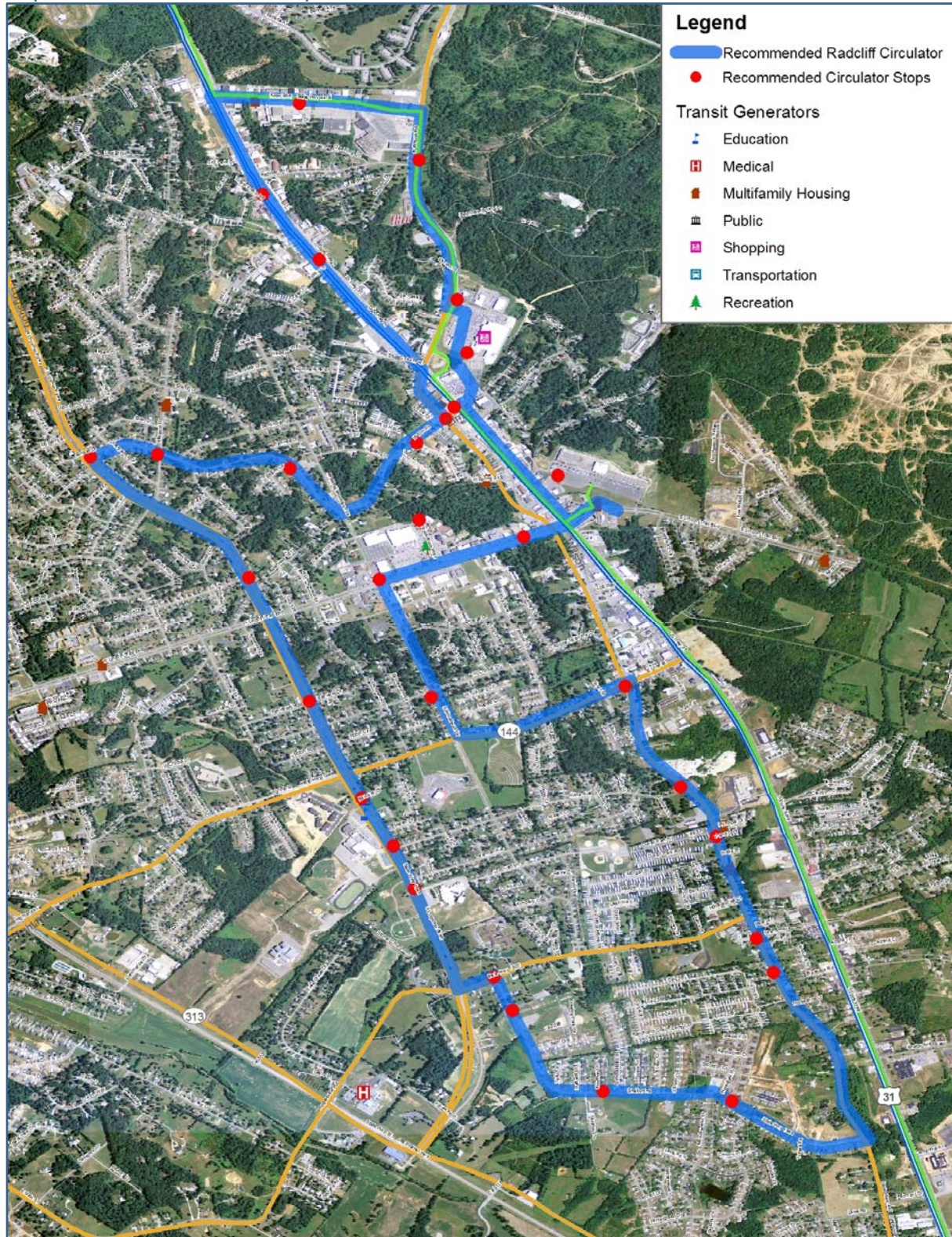
A preliminary Radcliff circulator is shown in **Figure 6-3**. Assuming a starting location of Orscheln's on Lincoln Trail just off of US 31. This is the location of the TACK park-and-ride stop in Radcliff. Preliminary routing is proposed as follows:

- Leave City Offices/Recreation and Community Center on Lincoln Trail Boulevard;
- Enter Orscheln Farm & Home parking lot;
- Leave parking lot and turn right on US 31;
- Right on Walmart Way;
- Through the Walmart parking lot;
- Exit parking lot turning left on Wilson Road;
- Left on Knox Boulevard;
- Left on Dixie Highway;
- Right on Wilson Road;
- Right on Elm Road;
- Right on Sunset Drive;
- Left on North Logsdon Parkway;
- Left on Rogersville Road;
- Right on Shelton Road;
- Left on Wilson Road;
- Left on East Vine Street;
- Right on Woodside Drive; and,
- Right on Lincoln Trail Boulevard back to City Offices/Recreation and Center.

This routing provides access to transit from residential areas and also serves shopping areas such as Orscheln's and Walmart; the library; city offices; the recreation and community center; and, the post office. The route is approximately 12.5 miles in length. Transfers to and from the connector can take place at Orscheln Farm and Home, Walmart and the Hardin County Health Center. There are approximately 30 preliminary bus stop locations along the route.



Figure 6-3  
Proposed Radcliff Circulator and Stops





## OPERATIONAL CHARACTERISTICS

TACK is the public transit services authority in Hardin County. TACK is recommended as the service provider for any new services in Hardin County, Elizabethtown or Radcliff. Initially, it is assumed that the connector route and circulators would operate on weekdays between 7:00 am and 6:00 pm. This would make the circulators and connector service a viable operation for weekday work trips. The existing park-and-ride service provided by TACK begins weekday operations at 5:45 AM and makes a final stop in Elizabethtown at 6:00 pm. With the park-and-ride service already providing the first morning trip and the last two evening trips, the connector would only need to operate eight hours of the 11 hours between 7:00 am and 6:00 pm.

An appropriate fare for services would be \$1.50 with one free transfer between the circulator and connector services.

## OPERATING AND CAPITAL COSTS

There are two elements of cost that must be considered. These are operating costs that typically reflected as the annual cost of operating the service and fluctuate with the amount of service provided and capital costs that are associated with vehicle and facility purchases.

### Operating Costs

**Table 6-1** is a summary of the annual operating cost for each route assuming Monday through Friday weekday service. The annual operating costs are estimated at \$75 per hour. TACK's hourly operating cost for the park-and-ride service as of the FTA's 2011 reporting year was \$67.05. The \$75 per hour rate is intended to reflect a 2013 hourly operating cost and account for inflation and other factors that may result in increased operating costs. This does not include the cost of the vehicle. As shown, operating the connector service would require an annual operating budget of \$156,000 and the circulators would each require 11 hours of service on weekdays at an annual cost of \$214,000 per circulator.

**Table 6-1**  
**Annual Operating Costs**

Service	Daily Hours of Service	Annual Operating Costs	Assumptions
Elizabethtown-Radcliff-Fort Knox Connector	8	\$156,000	One vehicle, one roundtrip per hour
Elizabethtown Circulator	11	\$214,500	One vehicle, one roundtrip per hour
Radcliff Circulator	11	\$214,500	One vehicle, one roundtrip per hour

### Capital Costs

Capital costs for a start-up operation can be minimized since TACK has vehicles available that could be used for the connector route and both the Elizabethtown and Radcliff circulators. TACK also has all necessary administrative, maintenance and vehicle storage facilities. Other capital items that would be required are bus stop signs, fareboxes, and bus shelters.

Table 6-2 is a listing of capital items that would be needed for the connector and circulator routes. These items include fareboxes. Although the new routes could use the same vehicles as those used for TACK's existing park-and-ride service, these vehicles are not equipped with fareboxes. It is assumed that fareboxes would be needed and that one for each vehicle in operation and two spares would be an appropriate number.

**Table 6-2**  
**Capital Requirements**

Service	Daily Hours of Service	Annual Operating Costs	Assumptions
Fareboxes	5	\$75,000	5 fareboxes at a cost of \$15,000 each
Bus Stop Signs	80	\$8,000	Signs for all 3 routes plus several extra at a cost of \$100 each which includes the sign, post and installation.
Bus Shelters	3	\$45,000	Cost of \$15,000 each including installation.

Bus stop signs would be needed for both the connector route and the circulators. It may be possible to combine some of the connector and circulator stops by perhaps adding an additional label to a circulator sign to indicate that the connector also stops at the same location. Regardless, it is assumed that a minimum of 80 signs should be purchased as they will be located adjacent to roads and parking lots where they can easily be damaged. Thus, it will be necessary to have a few extra on hand in the event that replacements are needed. The cost of purchasing a sign and post to mount it on and having it installed is approximately \$100 per sign.

Bus shelters typically are placed only at high volume stops or in locations where the rider may require additional amenities, such as adjacent to a medical facility. Most of the stops along the circulators will be in low density residential areas and will not warrant a bus shelter. The stops that will be more frequently used are in areas where bus shelter placement will be difficult, such as along Dixie Highway. For this reason, only three shelters are included in the initial capital cost summary. It may be possible to place a shelter near the Hardin County Court House to be used by both the connector and circulator services. A second location would be the stop at Hardin County Memorial Hospital if space permits, also to be used by both the connector and circulator services. A third shelter could be located in Radcliff at the Hardin County Health Center on Wilson Road. This too is a stop for both the connector and circulator services. A basic shelter with a bench, installed on a concrete pad is approximately \$15,000.

## SAFETY

Safety along US 31W is a consideration in the provision of public transit. The connector service runs up and down US 31W and people may get off on one side of the road and want to cross to the other side. An example of this would be someone exiting the connector route at Walmart in Elizabethtown and crossing US 31W to shop at a store in the Towne Mall area. Three US 31 W intersections have been identified as areas that could support bus shelters, but that should have safety improvements. These three intersections are at US 31W and Walmart Drive in Elizabethtown, at Towne Drive also in Elizabethtown and at KY 443 near the Kohl's department store. The improvements consist of marking crosswalks, extending sidewalk connections to the street and through the center median, and concrete pads to accommodate passenger boardings. The estimated cost of the safety improvements is \$15,000 per intersection. Intersection photographs and more detailed cost estimates are in Appendix B.

## FUNDING

**Table 6-3** summarizes the operating fund requirements by source. Operating funds for public transit typically comes from a number of sources. The major source is typically the federal government through the Federal Transit Administration (FTA). A large share of TACK's existing funding comes from the FTA. TACK is a recipient of 5307 Formula Funds. Typically it is this funding source that would be needed to operate the connector and circulator routes. Section 5307 funds pay up to 50 percent of operating costs and 80 percent of capital costs. Additional information on FTA 5307 Formula Funds is in Appendix C. In most states, operating funds are also provided from the state department of transportation. The Kentucky Transportation Cabinet (KYTC) has no such funding program for transit. The remaining 50 percent of the operating funding must come from local funds and fare revenue. Local funding typically comes from a city or county's general fund. However, TACK is a mass transit authority, and state statute allows voters to decide if they want to support transit with a property tax millage or a portion of the local occupational tax. Going back to the survey data collected during this study, nearly 60 percent of respondents indicated they would support an additional tax dedicated to fund transit. It is assumed that the City of Elizabethtown would provide the local match for the Elizabethtown Circulator and the City of Radcliff would provide the local funding for the city's local circulator. This would require \$96,525 annually from each municipality. The local share for the connector route could be split between the two cities or perhaps the Hardin County could assist in funding the service. It is estimated that fare revenue will generate approximately five percent of the operating funds. Funding could also be generated through advertising on the outside and inside of vehicles if fare revenue falls short of anticipated levels.

**Table 6-3**  
**Annual Operating Funding by Source**

Service	Annual Operating Costs	Source				
		Federal	State	Local (Etown)	Local (Radcliff)	Fares
Elizabethtown-Radcliff-Fort Knox Connector	\$156,000	\$78,000	\$0	\$35,100	\$35,100	\$7,800
Elizabethtown Circulator	\$214,500	\$107,250	\$0	\$96,525	\$0	\$10,725
Radcliff Circulator	\$214,500	\$107,250	\$0	\$0	\$96,525	\$10,725

Capital items such as shelters, signs and fareboxes can also be funded through the FTA's Section 5307 Formula Funds. Through this program, the federal contribution is 80 percent leaving 20 percent to be covered by state and local sources. Often KYTC will assist in the match on capital items resulting in no local contribution or a local contribution of 10 percent.

## IMPLEMENTATION

As shown in **Figure 6-4**, the connector route and the Elizabethtown and Radcliff circulators are proposed to act as a system. The circulators pick up and drop off people along the route, but also serve as a means of getting people to the connector route allowing access to the adjacent city and Fort Knox. Without the circulator routes, there is little benefit to the connector route since it serves only non-residential locations with few if any residences within walking distance of the route. The circulator routes could operate independently of the connector route if the goal were to provide access to healthcare facilities, shopping and government offices within the city in which an individual lives.

It is recommended that all three routes be implemented at the same time. It is also recommended that the services be put in place as a demonstration project and marketed as such. Marketing will be needed to let people know that the service is operating and open to the public. This means perhaps wrapping the buses initially with advertising, taking out large visible ads in local newspapers announcing the service, working with local human service agencies to let them know the service is available so that they can communicate the information to the people that they serve, and perhaps other mail targeted campaigns such as putting announcements in utility bills or sending post cards to residential addresses. TACK also needs a website to provide additional information on its services, and a one page map/schedule should be developed and made available at city and county offices and other public facilities such as libraries.

During the demonstration phase which could last anywhere from 6 months to one year, it is recommended that minimal bus stop signs be installed. Bus stop signs could be placed at the connector route stops and flag stops could be allowed along the more residential areas of the routes. (A flag stop means a patron waves at the bus to stop at any point along the route.) Time points could be listed on the printed route maps/schedules and on the website so that people would know where and when they could catch the bus. Bus shelters could be installed if the demonstration phase is successful.

## ANNUAL OPERATING BUDGET REDUCING MEASURES

Realizing that it may be difficult for the local governments to provide matching funds, several lower-cost alternatives are summarized in **Table 6-4**. These options involve reducing the number of routes and limiting days and hours of service.

### Reduce Hours of Service

The first lower-cost alternative shown in Table 6-4 is reducing the daily hours of service from 11 to 9 hours on the circulators. This reduces the annual operating cost by \$78,000 or \$39,000 per circulator. This would result in reduction to local matching operating funds from nearly \$97,000 to \$79,000 annually.

### Reduce Days of Service

Another option is to operate the services only three days per week rather than five. This reduces the combined operating cost of all three routes by \$234,000 annually. The local operating requirement for the three routes is reduced to \$158,000 from \$263,000.



Figure 6-4  
All Proposed Routes and Stops

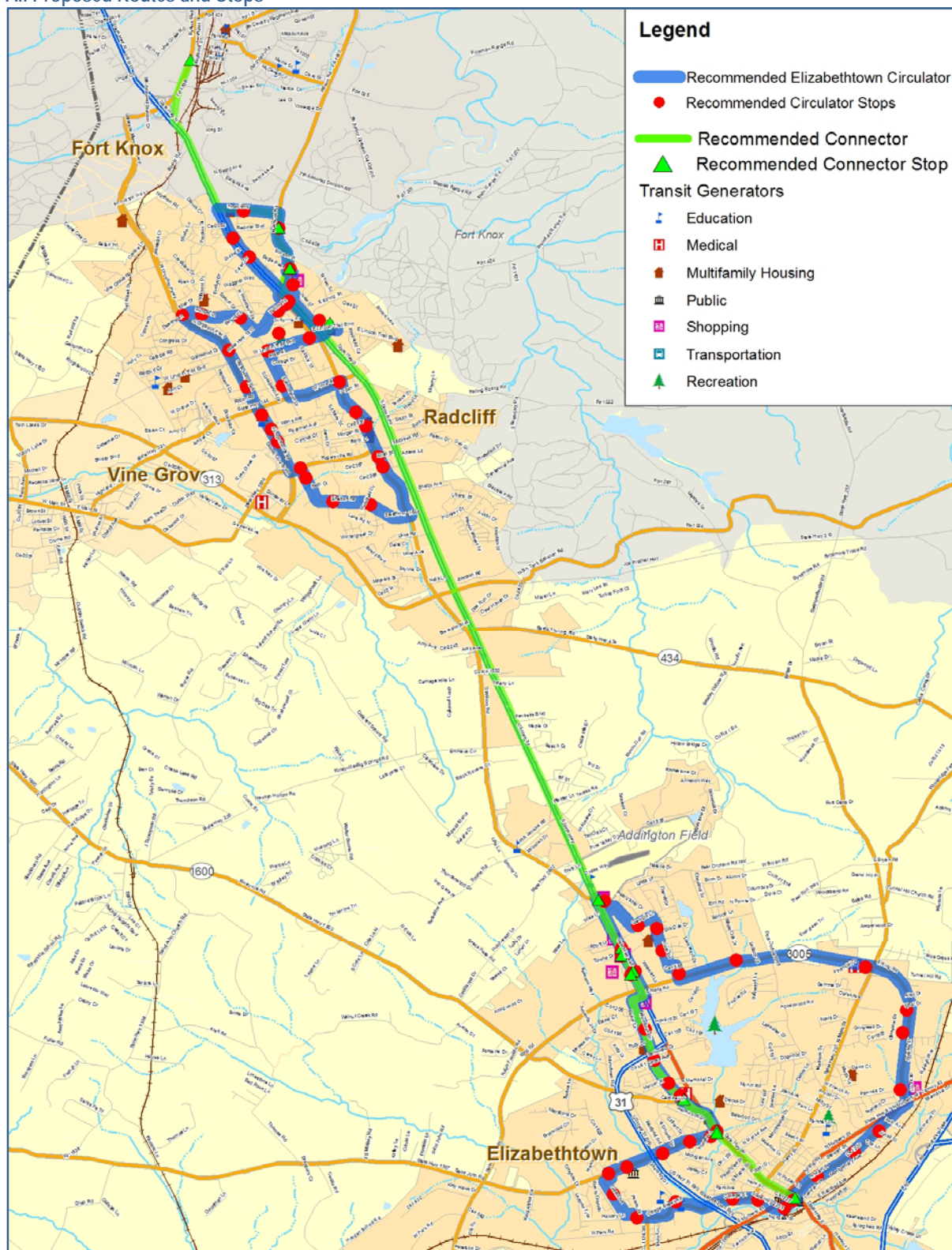


Table 6-4  
Annual Operating Cost Reduction Options

Service	Daily Hours of Service	Annual Operating Costs	Annual Operating Cost Savings	Annual Local Operating Requirement
Service as Proposed (11 hours/5 days per week)				
Elizabethtown-Radcliff-Fort Knox Connector	8	\$156,000	\$0	\$70,200
Elizabethtown Circulator	11	\$214,500	\$0	\$96,525
Radcliff Circulator	11	\$214,500	\$0	\$96,525
<b>Total</b>		<b>\$585,000</b>	<b>\$0</b>	<b>\$263,250</b>
9 hours per day/5 days per week				
Elizabethtown-Radcliff-Fort Knox Connector	8	\$156,000	\$0	\$70,200
Elizabethtown Circulator	9	\$175,500	\$39,000	\$78,975
Radcliff Circulator	9	\$175,500	\$39,000	\$78,975
<b>Total</b>		<b>\$507,000</b>	<b>\$78,000</b>	<b>\$228,150</b>
11 hours per day/3 days per week				
Elizabethtown-Radcliff-Fort Knox Connector	8	\$93,600	\$62,400	\$42,120
Elizabethtown Circulator	11	\$128,700	\$85,800	\$57,915
Radcliff Circulator	11	\$128,700	\$85,800	\$57,915
<b>Total</b>		<b>\$351,000</b>	<b>\$234,000</b>	<b>\$157,950</b>
11 hours per day/5 days per week - no connector route				
Elizabethtown-Radcliff-Fort Knox Connector	0	\$0	\$156,000	\$0
Elizabethtown Circulator	11	\$214,500	\$0	\$96,525
Radcliff Circulator	11	\$214,500	\$0	\$96,525
<b>Total</b>		<b>\$429,000</b>	<b>\$156,000</b>	<b>\$193,050</b>
9 hours per day/3 days per week				
Elizabethtown-Radcliff-Fort Knox Connector	8	\$93,600	\$62,400	\$42,120
Elizabethtown Circulator	9	\$105,300	\$109,200	\$47,385
Radcliff Circulator	9	\$105,300	\$109,200	\$47,385
<b>Total</b>		<b>\$304,200</b>	<b>\$280,800</b>	<b>\$136,890</b>
9 hours per day/5 days per week - no connector route				
Elizabethtown-Radcliff-Fort Knox Connector	0	\$0	\$156,000	\$0
Elizabethtown Circulator	9	\$175,500	\$39,000	\$78,975
Radcliff Circulator	9	\$175,500	\$39,000	\$78,975
<b>Total</b>		<b>\$351,000</b>	<b>\$234,000</b>	<b>\$157,950</b>
9 hours per day/3 days per week - no connector route				
Elizabethtown-Radcliff-Fort Knox Connector	0	\$0	\$156,000	\$0
Elizabethtown Circulator	9	\$105,300	\$109,200	\$47,385
Radcliff Circulator	9	\$105,300	\$109,200	\$47,385
<b>Total</b>		<b>\$210,600</b>	<b>\$374,400</b>	<b>\$94,770</b>

### Reduce Routes

The circulator routes can operate independent of the connector route. Eliminating the connector route would result in a savings of \$156,000 in operating costs annually and reduce the local funding component to \$193,000.

### Reduce Hours and Days of Service

If the daily hours of service were reduced to nine hours and the service were offered three days per week, the cost of providing public transit could be reduced by \$281,000 annually. This would reduce the local operating match to \$137,000 annually for all three routes.

### Reduce Hours and Routes

Reducing the daily hours of service to nine hours per day and eliminating the connector route would reduce the annual operating cost by \$234,000. This would result in reducing the local funding requirement to \$158,000 annually for the two remaining routes.

### Reduce Hours and Days of Service and Routes

A final alternative is shown that involves reducing the daily hours of service to nine hours with three days of service per week and no connector service. This would result in a total annual operating cost of \$211,000 and a local funding requirement of \$95,000 annually.

## appendix a | SURVEY COMMENTS

## Appendix A Survey Comments

Comments
Advertise - Public Notices - Even a route going along Dixie Hwy, Elizabethtown to Radcliff would work.
All for it.
Between federal funding, grants, sponsorship, local taxation and advisory/assistance offered by TARC you'd thought a bus system would be already there and running but it's interesting that elected officials say there's not enough funds.
Bus Transportation would be wonderful for Hardin Cty, I rode it all my life everywhere in Louisville, my children still ride it every day there. I am unable to get to a bus stop due to medical conditions, and would love to have a service that could pick me up at home and bring me back, anytime I need them , not just on special times and days .and have to call several days ahead.
Door to door may be too expensive for some. Wasn't aware of park and ride services. Regular bus transportation for (shopping, Dr. visits, entertainment) would be wonderful. Definitely to the college for continuing education.
Elizabethtown is far too small to support a public transportation system. When the population reaches 50 to 75 thousand, then maybe, but not now.
Finding a mode of transportation would help my family a great deal. With access to transportation we would be able to gain employment.
Hardin County is now big enough to support public transportation. It would be wonderful to park and ride at an affordable price to not have to fight traffic. Thank You.
Hardin county needs public transportation from Glendale to Fort Knox. It's long overdue hope it comes soon
Hardin County, specifically Elizabethtown, Radcliff, and Ft Knox is and has been in need of Public Transportation (public Bus system) for a very long time now. The area in which people need to go on a daily basis is spread of over a large distance making it hard for people without cars or reliable transportation to conduct business, work, and further their education.
Having public transportation system could help our communities grow.
I believe a public transportation system is needed in Hardin County to help those trying to get on their feet and need to get to work, etc. I filled this out but am not that target and live in a location that would not likely have any stops, South Wilson Road in the area with E-town addresses but in Radcliff. Unfortunately the people in need the most of the system are less likely to have access or awareness of the survey to be able to voice their needs.
I have transportation but many who are unable to drive or can't afford vehicles don't. Public transportation would be an attrition for people wanting to transfer in.
I hope there is really serious efforts being made to offer public transportation to Hardin co. About 4 years ago ,I made an effort to talk to some of Elizabethtown's employers to talk to city officials about this however there was too much of a cost issue .I drive a school bus for a living and believe me ,I have a route out by the mall and north Dixie and it is the worst!!!!!! .There is so much traffic, not only in that area but all over Elizabethtown that I have more than one time thought I am just about ready to quit driving period. I think public transportation would help people who do not have transportation very much and also older people who have a hard time dealing with so much traffic
I think this is definitely needed for our senior citizens and community.
I think this would be the biggest waste of resources for a city/county of our size. Look at other cities small or large. All are struggling to maintain services and it is a joke to even consider putting resources to such a service. We have some services now and to consider this benefit is a waste of time! I would adamantly oppose any tax to provide this service and would campaign against any politician that would vote in support of a transit program.
I wish that there were bicycle paths. It would be nice if a bike lane/path system could be developed. I am excited about the paths being developed at Saunders Springs and Fort Knox. It currently has been come less safe to bike compared to when I arrived in 1990. It should be mandatory for any new roads to have bike lanes,
I would consider park and ride for trips between Radcliff and Elizabethtown
I would like to see this happen but I really don't think it will. Because for me I would not be willing to walk more than 1/4 mile to the bus stop.
I would really love to see the public transportation put in place soon in Hardin co. I really think it would be of great help to a lot of us that live on a fixed income, cabs are so expensive for so many of us, plus I think it would reduce the # of accidents by lowering the # of automobiles on our very busy streets. HURRY ALONG WITH THIS WE REALLY NEED IT BAD!!!!!!Hardin co. also is still growing
If monetary aid is a major concern, maybe advertisement can provide aid to economical development in local community
If the city has money for a multi-million dollar sports park used by people with disposable income, in which taxpayers funded, they should have money to provide transportation to residents without the income to get around. This county is always behind the times in the way it approaches improvements and services for a population that has reached 50,000. The fact that this is even an argument for an area so spread out shows that the monies are being earmarked for projects with special interests in mind. If we want to be viewed as a 21st century city, than it is time to act like one. Additional taxes for the public transportation is not the answer. If BRAC is the main reason for our road expansions city-wide, what is being done with the collections of vehicle registrations and taxes? When you drive around and see that no one is utilizing a vehicle that is older than the year 2000, shows that those monies are enough to supplement any public transportation. Funding could also be appropriated from the attraction of corporations to Ring Road. Not continuously allowing local businesses and other entities to re-locate to our prime real estate left within the city limits. Thank you. Resident of 20 years.
It would be nice to be able to go out and have a few drinks with friends without worrying about being over.08
Needs to be safe. Free from unruly kids and criminals. Need to have a safe area to park our cars.



## Appendix A Survey Comments

Older people need transportation since driving a car becomes more difficult, especially after dark. Rineyville need to be included in the route schedule. Many people live here without stores and restaurants. Offer: Monthly or yearly Bus Ticket's, maybe with Student and Senior discounts as done in Europe. Transportation is needed for the following reason: 1. Less "Drinking and Driving" 2. People required to walk more for good health and losing weight 3. Senior are more independent and active 4. Less parents are "Taxi's for their children. Quality of Life starts with independence. Park-and-Ride needs to be established at designated Bus-Stops. Teenagers with Dental and medical appointments, using a Bus allows a Parent to stay at work. instead of driving to the appointment. Many low-income People living without a Car, could find work. As proven in Europe, "Bus-Service" works if: a. Maintain departure and arrival time. b. Cover a wide area (County Clerk functions - Shopping- Hospital- Dining out- Recreation). c. Requires a minimum of two Buses, one starting at each end of route, so there is a constant flow.
Public transportation is needed in this area to help people with no vehicle and to help keep gas expensive.
Public transportation would greatly improve the economy in the area. It would allow people to shop and provide access to college, improving their personal economic situation.
set up a system similar to bus system operating in Covington/Newport
Son is disabled and can't drive. He walks to work here in Radcliff. He has to depend on others for rides to anywhere he needs/wants to go. Transportation would greatly benefit him and improve quality of life for other disabled, low income and elderly persons.
This is a biased survey! It does not provide sufficient answer choices for those who have no need for increased access to public transportation; it does not define or describe the public transportation envisioned by the survey; does not indicate how much of a tax would be required to provide any level of increased public transportation, or ask how much is the maximum the potential users of any proposed public transportation would be willing to spend per one-way or round trip, nor how much additional annual tax they would be willing to pay to provide this to the community.
This is a very serious issue, and Public Transportation should have been put in place years ago as I have watched the cities grow from 1982 till present. It is definitely needed and politics should not play an issue in the matter. I beg of the voters, residents, doctors, business owner, to please support the implementation of such a program. Let's look forward to also having transportation to Louisville.
Transpiration is so much of a need here in Hardin comfort so many reason I myself do not drive some people do not choose to drive due to the winter weather, some have DUI"S and cannot drive, a lot of people just like myself don't drive nor own cars and with the way that gas prices are just can't afford to drive, this service would be very much used and is in high demand. just the other day I seen a older lady walking with large shopping bags that caused her to have to stop and rest not once but several times, I myself live on Wilson rd. here in Radcliff and had to walk to my job on logs don parkway a few time and not only is it dark some mornings but scary unsafe and cold, please help this to happen for out town, what a blessing this would be. please help put out other surveys for people whom do not have on line service to go on line and do this survey, please go door to door and get people to do surveys. thank u so very much for ever thanking of this. Again it's so needed
Transportation is long overdue in the Radcliff, Elizabethtown and Fort Knox area. There are many people who would take advantage of this opportunity. It's time we get with the times and provide for those who need it. Also, for those who want to save gas and ride to work by way of an transit or metro system.
We definitely need it.
We need public transportation. I know several people in Radcliff that have limited job opportunities due to lack of transportation. In Elizabethtown, we need routes going north and south on Dixie, in a loop around Ring Rd, and up and down 62 from Cecilia to I-65. It would also be helpful to have a Dixie Highway Express bus that connects with the number 18 TARC route in Louisville during morning and afternoon commute times. This would enable Hardin County residents to access higher-paying jobs in Louisville without paying high gas costs. For example, I made \$8.75 an hour as a CNA in Elizabethtown. I could get a job doing the same work for \$11-\$13 in downtown Louisville, but can't afford the gas cost.
Would like service to the Louisville - West Point area in Jefferson County.

## appendix b | SAFETY IMPROVEMENTS

## Appendix B Safety Improvements

### Bus Stop/Pedestrian Generalized Cost per Location

Clearing of curb/gutter	\$1,500
Earthwork	\$1,500
Sidewalks	\$2,400
Traffic and crossing signals	\$6,000
Maintaining traffic	\$1,500
Mobilization & Contingencies	\$2,600
Total	\$15,500

### Clearing

This includes removing existing items as needed but is mostly for curb and gutter removal to construct sidewalk ramps. With the relatively small quantities in isolated areas say this unit cost will be \$ 25.00/LF. Work will happen in three quadrants of each intersection plus the median. Say 10' of removal for each of the four locations or 40' total.

Cost: \$ 25.00/LF \* 40' = \$ 1,000.00

### Earthwork

There will likely be some small amount of grading if nothing else to dig out for the sidewalks. Also there will likely need to be some erosion control and seeding/restoration.

Say a crew of 1 laborer, 1 operator, a backhoe and a dump truck will take an hour for each of the three quadrants and the crew goes for \$ 300.00/HR.

Say erosion control and seeding will take \$ 150.00 per each intersection.

Grading: \$ 300.00/HR \* 1HR \* 3EA = \$ 900.00

Erosion/Seeding: \$ 150.00

Sub-Total = \$ 1,050.00

### Sidewalk

Say area of bus stop pad itself will be about 6' by 10' (60 sf), then another 30' of 4' wide walk to get to an existing sidewalk (120 sf), then each quadrant will need some sidewalk for a landing say an average of 4' by 25' (100 sf or 300 sf per intersection), and also some sidewalk in the median or 4' by 12' (48 sf) for a total of 528 sf or about 60 SY. Unit cost of 4" thick concrete sidewalk is about \$ 35.00/SY

Cost: \$ 35.00/SY \* 60 SY = \$ 2,100.00

## Appendix B Safety Improvements

### Traffic Signals and Striping

Two pedestrian signal heads will need to be added to three of the signal poles and push buttons will need to be added to three quadrants. Say that the existing signal has a control cabinet that can accept these without any upgrade and that there is conduit in the ground and only new wiring will be needed for the pedestrian heads and push buttons. Stop lines may need to be moved and the corresponding traffic detector loops may need to be moved as well on the side street.

Pedestrian Heads: 6 EA at \$ 500.00/EA = \$ 3,000.00

Push Buttons: 3 EA at \$ 200.00/EA = \$ 600.00

Stop Line: 100 LF at \$ 5.00/LF = \$ 500.00

Traffic Loops: 1 EA at \$ 500.00/EA = \$ 500.00

Wiring: 500 LF at \$ 1.00/LF = \$ 500.00

Sub-Total = \$ 5,100.00

### Maintaining Traffic

Assume that a lane will need to be closed during construction of the bus stop pad itself. This will likely not be an overnight lane closures but with the volume of traffic a flashing arrow sign may still be needed. Add Road Construction Ahead and End Construction Signs on four legs and a Merge Ahead sign on one leg and there could be nine construction signs needed. Say two laborers at \$ 50.00/HR will need a half hour in the morning and half hour in the afternoon to put up and take down the barrels. Say work will take place over five days.

Construction Signs: \$ 100.00/EA \* 9 EA = \$ 900.00

Traffic Barrels: \$ 50.00/HR \* 1 HR/DAY \* 5 DAYS = \$ 250.00

Flashing Arrow Sign: \$ 50.00/DAY \* 5 DAYS = \$ 250.00

Sub-Total = \$ 1,400.00

### Total

\$ 1,000.00 + \$ 1,050.00 + \$ 2,100.00 + \$ 5,100.00 + 1,400.00 = \$ 10,650.00

## Appendix B Safety Improvements

### Examples of Pedestrian Crossing Improvements

(view to north)

#### US 31W @ Walmart Drive (E-town)



#### US 31W @ Town Drive (E-town)





## Appendix B Safety Improvements

**US 31W @ KY 443 (Kohl's Dept Store) Needs sidewalk on SW corner**



appendix c

FTA SECTION 5307 FACT SHEET

## Appendix C

### FTA Section 5307 Fact Sheet



U.S. Department of Transportation  
Federal Transit Administration



#### FACT SHEET: URBANIZED AREA FORMULA GRANTS SECTION 5307 & SECTION 5340

	FY 2013 (in millions)	FY 2014 (in millions)
5307 Grants	\$4,367.95	\$4,428.65
Passenger Ferry Grants	\$30.00	\$30.00
<b>5307 Program Total</b>	<b>\$4,397.95</b>	<b>\$4,458.65</b>
Growing States/High Density Formula (5340)	\$518.70	\$525.90

#### Purpose

This program provides grants to Urbanized Areas<sup>1</sup> (UZA) for public transportation capital, planning, job access and reverse commute projects, as well as operating expenses in certain circumstances. These funds constitute a core investment in the enhancement and revitalization of public transportation systems in the nation's urbanized areas, which depend on public transportation to improve mobility and reduce congestion.

#### Statutory References

49 U.S.C. Sections 5307, 5336, and 5340 / MAP-21 Sections 20007, 20026



#### Eligible Recipients

FTA apportions funds to designated recipients, which then suballocate funds to state and local governmental authorities, including public transportation providers.

#### Eligible Activities

- Capital projects.
- Planning.
- Job access and reverse commute projects that provide transportation to jobs and employment opportunities for welfare recipients and low-income workers.
- Operating costs in areas with fewer than 200,000 in population.
- Operating costs, up to certain limits, for grantees in areas with populations greater than 200,000, and which operate a maximum of 100 buses in fixed-route service during peak hours (rail fixed guideway excluded).

<sup>1</sup> An area with a population of 50,000 or more, defined and designated in the most recent decennial census as an 'urbanized area' by the U.S. Secretary of Commerce.

(cont.)

## Appendix C

### FTA Section 5307 Fact Sheet

#### Urbanized Area Formula Grants

##### What's New?

- Operating costs, up to certain limits, for grantees in areas with populations greater than 200,000, and which operate a maximum of 100 buses in fixed-route service during peak hours (rail fixed guideway excluded).
- Transit enhancements are removed and replaced by more narrowly defined "associated transportation improvements." Recipients must expend at least 1% of their 5307 apportionment on these improvements.
- Funding provided by other government agencies or departments that are eligible to be expended on transportation may be used as local match.
- Certain expenditures by vanpool operators may be used as local match.
- MAP-21 removes eligibility for the transfer of 5307 transit funds to highway projects.

##### Ongoing Provision

- Recipients must expend 1% for transportation security projects or certify that it is not necessary to do so.

##### Funding

- Federal share is 80% for capital assistance.
- Federal share is 50% for operating assistance.
- Federal share is 80% for Americans with Disabilities Act (ADA) non-fixed-route paratransit service, using up to 10% of a recipient's apportionment.

##### Formula

- For areas of 50,000 to 199,999 in population, the formula is based on population and population density, and number of low-income individuals.
- For areas with populations of 200,000 and more, the formula is based on a combination of bus revenue vehicle miles, bus passenger miles, fixed guideway revenue vehicle miles, and fixed guideway route miles, as well as population and population density and number of low-income individuals.

##### Passenger Ferry Grant Program

- \$30 million is set aside for passenger ferry grants, to be allocated through competitive selection.

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For additional information on FTA and MAP-21, visit [www.fta.dot.gov/map21](http://www.fta.dot.gov/map21).