2. Existing Conditions

KAT History

Knoxville's transit history is a familiar one similar to many other American cities, large and small, beginning with private operation, decline during the great depression and the onset of the automobile, public takeover in the post-war period, and growth and improvement as a public entity in the recent decades. Public transit in Knoxville began in 1876 with horse-and mule-drawn streetcars of the Knoxville Street Railway Company operating on Gay Street. Knoxville Real Estate Company started a steam street railway from Gay Street to their property in East Knoxville. A second "dummy" line later connected downtown to North Knoxville. These improvements facilitated the development of these areas and the growth of the city in the years before widespread auto use. The first electric street car began operating in 1890. By 1910, after several name changes, the Knoxville Railway and Light Company ran 42 miles of track and carried 11 million passengers per year. Ridership peaked in 1923 at 20 million passengers but then began feeling the effects of auto ownership. By 1933, in the midst of the depression, ridership had fallen back to 1910 levels at 11 million passengers per year.

Buses began operating in Knoxville in 1929 and originally were used to reach areas beyond the streetcar lines. The relative versatility and cost-effectiveness of buses soon became apparent in an environment where roads were being maintained publicly for use by private vehicles. Buses can operate on any public roads, while streetcars are limited to their own privately -maintained track and overhead wire. The last streetcars ended service in 1947. Shuttle bus service on the University of Tennessee campus began in the 1950s. The City of Knoxville took over operation of the transit system in 1967, naming it the Knoxville Transportation Corporation. The city moved the transit system into a renovated facility in 1975. In the same year, Knoxville Transportation Authority was established by city ordinance. The public name was changed that year to K-Trans. Currently named Knoxville Area Transit (KAT), the system moved into its current maintenance and storage facility in 1989. The system was restructured in 1995 and reversed a long-term decline in ridership.

In 2004, the American Public Transportation Association's (APTA) awarded KAT its annual Public Transportation System Outstanding Achievement Award for the category of systems that carry between one and four million riders per year. The award honors systems that demonstrate achievement in efficiency and effectiveness in many areas such as services and programs, safety, operations, customer service, financial management, attendance and employee costs, minority and women advancement, marketing, policy and administration, and community relations. In 2004 KAT achieved its highest ridership in 20 years at 3.2 million trips. KAT also implemented a Clean Fuels Program to focus on alternative fuels and clean air programs.

KAT Operations

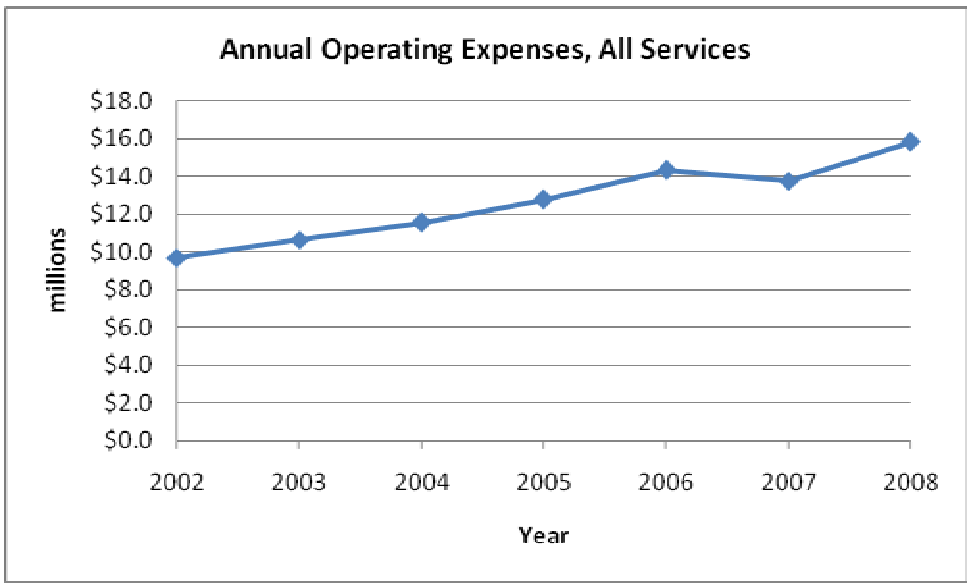
Existing conditions for the KAT system were examined using National Transit Database (NTD) data for the most recently-completed seven years (2002-2008). This data indicates a system that has expanded in recent years, with an increasing operating budget, a growing number of services provided, and ridership gains. The KAT system underwent a number of changes during the 2002-2008 time period, including implementing the "T" service on the University of Tennessee campus in 2003, changes to the fare structure in 2006, the conversion of the demand responsive Call-A-KAT to fixed-route service in 2007, and the loss of CMAQ operating funds in 2008. Externally, the 2002-2008 time period was marked by steadily rising fuel costs, culminating in record high diesel fuel prices in 2008, as well as the rising cost of providing fringe benefits to employees.

As Table 2-1 and Figure 2-1 indicate, annual operating expenses increased from $9.7 million in 2002 to $15.8 million in 2008, an increase of more than 60 percent over the time period. Table 2-1 shows that the rate at which operating expenses are increasing continues to grow. The sharp rise in 2008 operating expenses can be at least partially attributed to the spike in diesel fuel costs in the summer of 2008, but other factors have also contributed to the continued rise in costs. Transit agencies across the country have seen operating expenses increase as a result of the rising cost of labor and fringe benefits, including health care, and the increase in demand for paratransit services. Implementation and expansion of service to the University of Tennessee during the 2002-2008 time period also contributed to the increase in KAT's operating expenses.

Table 2-1
Annual Operating Expenses, All Services

Year	Amount	Percent Change from Previous Year
2008	$15.8	15.0%
2007	$13.8	-3.9%
2006	$14.3	12.0%
2005	$12.8	10.8%
2004	$11.5	8.5%
2003	$10.6	9.9%
2002	$9.7	

Figure 2-1
Annual Operating Expenses, All Services



KAT's farebox recovery ratio as reported to the NTD shows less than ten percent of operating expenses being covered by fare revenue. Typical farebox recovery ratios are in the ten to 25 percent range. KAT's farebox recovery ratio remained fairly steady around eight percent for much of the 2002-2008 time period. It should be noted that UT service is part of the overall expenses reported to NTD but the dollars from the UT contract are not considered fares so the actual ratio of revenues to costs would be more in line with other systems. The farebox recovery ratio increased slightly in 2007 as a result of reduced operating costs with the elimination of Call-A-KAT service. Increased ridership induced by high fuel prices in 2008 allowed KAT to maintain its nine percent farebox recovery ratio even as operating expenses increased. Early 2009 data indicate that the farebox recovery ratio will continue to improve as a result of fare increases implemented in January 2009.

Table 2-2
Farebox Recovery Ratio, All Services

Year	Amount	Percent Change from Previous Year
2008	9.1%	0.1%
2007	9.0%	19.0%
2006	7.6%	1.3%
2005	7.5%	-5.1%
2004	7.9%	-7.1%
2003	8.5%	-2.3%
2002	8.7%	

Tables 2-3 and 2-4 show annual operating expenses for fixed route service and demand responsive service, respectively. As the tables show, the cost of operating fixed route service has been increasing at an average rate of about ten percent per year (as have overall operating expenses—fixed route service represents more than 90 percent of overall operating expenses). Fixed route operating expenses fell slightly in 2007, but rose sharply in 2008 as a result of record high diesel fuel prices. Figure 2-2 indicates that operating costs for demand responsive services followed a similar trajectory for the 2002-2008 time period, with double digit growth rates in all years except 2004 and 2007. As Table 2-5 shows, operating costs for demand responsive service grew slightly as a percentage of total operating expenses over that period. The growth of paratransit-related expenses has been a problem in many transit agencies across the country, both large and small, and will be an important statistic to monitor going forward.

Table 2-3
Annual Operating Expenses, Fixed-Route Service

Year	Amount (millions)	Percent Change from Previous Year
2008	$14.3	15.4%
2007	$12.4	-4.3%
2006	$12.9	11.0%
2005	$11.7	10.6%
2004	$10.5	9.4%
2003	$9.6	9.4%
2002	$8.8	

Table 2-4
Annual Operating Expenses, Demand Responsive Service

Year	Amount (millions)	Percent Change from Previous Year
2008	$1.51	11.1%
2007	$1.36	-0.3%
2006	$1.37	23.0%
2005	$1.11	12.4%
2004	$0.99	-0.8%
2003	$1.00	15.2%
2002	$0.87	

Figure 2-2
Annual Operating Expenses, Demand Responsive Service

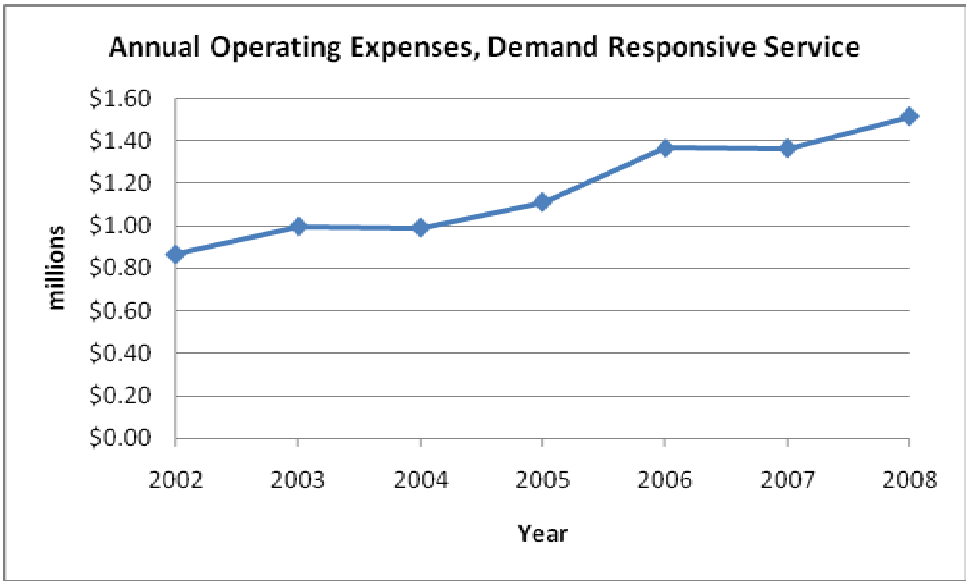


Table 2-5
Annual Operating Expenses for Demand Responsive Service
as Percentage of Total Operating Expenses

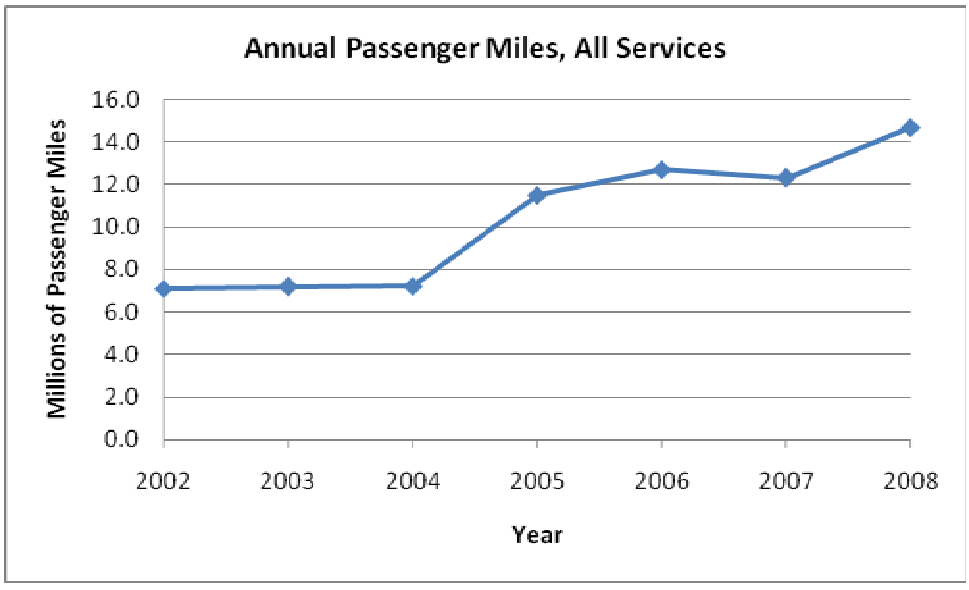
Year	Percent of Total Operating Expenses
2008	9.57%
2007	9.90%
2006	9.55%
2005	8.70%
2004	8.57%
2003	9.37%
2002	8.94%

As Table 2-6 and Figure 2-3 show, annual passenger miles rose sharply between 2004 and 2005, and experienced further gains in 2008. The sharp rise in passenger miles in 2005 is likely the result of a number of new services, including the Congestion Mitigation Air Quality (CMAQ) funding for express routes to Oak Ridge and the Job Access Reverse Commute (JARC) funding for Call-A-KAT program. Notably, annual passenger miles remained high even as these funding sources and services were eliminated in 2007 and 2008, respectively. Passenger mile gains in 2008 mirror patterns experienced by transit agencies across the country, as rising fuel prices made transit a more attractive and cost-effective transportation choice.

Table 2-6
Annual Passenger Miles, All Services

Year	Passenger Miles (millions)	Percent Change from Previous Year
2008	14.7	19.4%
2007	12.3	-3.0%
2006	12.7	10.3%
2005	11.5	59.2%
2004	7.2	0.6%
2003	7.2	1.0%
2002	7.1	

Figure 2-3
Annual Passenger Miles, All Services



Annual passenger miles for demand responsive service (Table 2-7) increased dramatically over the time period, growing by 66 percent between 2002 and 2008. The slower growth rates in demand responsive passenger miles in 2007 and 2008 can likely be attributed to the conversion of the demand responsive Call-A-KAT service to fixed route service in 2007.

Table 2-7
Annual Passenger Miles, Demand Responsive Service

Year	Passenger Miles (thousands)	Percent Change from Previous Year
2008	487.0	0.9%
2007	482.8	5.3%
2006	458.5	10.2%
2005	416.0	12.1%
2004	371.2	16.9%
2003	317.7	8.4%
2002	293.0	

Tables 2-8 and 2-9 show operating expenses per unlinked trip for all services and demand responsive service, respectively. Similar to most transit agencies, the operating expense for demand responsive service is roughly five times that of fixed route bus service. However, within each of the services, this indicator of efficiency remained fairly steady over the period. The expense per unlinked trip for the system as a whole rose slightly from $4.25 in 2002 to $4.36 in 2008. Expense per trip for demand responsive service also increased slightly from 2002 to 2008, with some fluctuation in the interim years. This is another indicator of efficiency gains by steadily increasing ridership on the system to offset the rising operating costs over the period.

Table 2-8
Operating Expense per Unlinked Trip, All Services

Year	Amount	Percent Change from Previous Year
2008	$4.36	5.6%
2007	$4.13	-0.7%
2006	$4.15	1.5%
2005	$4.09	12.2%
2004	$3.65	-11.6%
2003	$4.13	-3.0%
2002	$4.25	

Table 2-9
Operating Expense per Unlinked Trip, Demand Responsive Service

Year	Amount	Percent Change from Previous Year
2008	$27.43	13.1%
2007	$24.25	0.2%
2006	$24.20	11.0%
2005	$21.80	2.5%
2004	$21.27	-16.8%
2003	$25.56	2.1%
2002	$25.03	

Operating expense per vehicle revenue mile and vehicle revenue hour are common measures of operating efficiency. Table 2-10 and Table 2-11 show the trend in operating expense per vehicle revenue hour and per vehicle revenue mile for fixed-route bus service. The number of revenue hours and revenue miles remained fairly stable for fixed-route bus service over the 2002-2008 time period, with only a 2.2 percent overall increase in vehicle revenue hours and 3.6 percent increase in vehicle revenue miles. Consequently, operating costs per hour and operating costs per mile rose at roughly the same rate as operating expenses overall.

Table 2-10
Operating Expense per Vehicle Revenue Hour, Fixed-Route Service

Year	Operating Expense per Vehicle Revenue Hour	Percent Change from Previous Year
2008	$66.02	16.6%
2007	$56.64	-3.3%
2006	$58.60	13.2%
2005	$51.78	1.6%
2004	$50.98	19.1%
2003	$42.79	3.0%
2002	$41.55	

Table 2-11
Operating Expense per Vehicle Revenue Mile, Fixed-Route Service

Year	Operating Expense per Vehicle Revenue Mile	Percent Change from Previous Year
2008	$5.35	17.8%
2007	$4.54	-5.5%
2006	$4.81	10.2%
2005	$4.36	6.6%
2004	$4.09	13.0%
2003	$3.62	5.9%
2002	$3.42	

Operating expense per vehicle revenue hour and vehicle revenue mile for demand responsive service are shown in Tables 2-12 and 2-13. For demand responsive service, vehicle revenue miles increased by 66 percent over the 2002-2008 time period, while vehicle revenue hours more than *doubled*. Consequently, operating expense per revenue mile remained nearly constant, while operating expense per revenue hour actually decreased by 14.7 percent over the time period. These efficiency measures indicate that as KAT has become much more efficient at operating demand responsive service as the amount of service provided has increased over the past seven years. Given projected growth in demand for paratransit services in the future, it will be important for KAT to continue to operate its demand responsive services with similar levels of efficiency.

Table 2-12
Operating Expense per Vehicle Revenue Hour, Demand Responsive Service

Year	Operating Expense per Vehicle Revenue Hour	Percent Change from Previous Year
2008	$38.63	6.0%
2007	$36.45	-7.7%
2006	$39.49	9.3%
2005	$36.14	-2.7%
2004	$37.13	-15.0%
2003	$43.69	-3.5%
2002	$45.29	

Table 2-13
Operating Expense per Vehicle Revenue Mile, Demand Responsive Service

Year	Operating Expense per Vehicle Revenue Mile	Percent Change from Previous Year
2008	$2.74	10.2%
2007	$2.48	-5.4%
2006	$2.62	11.6%
2005	$2.35	0.3%
2004	$2.34	-14.9%
2003	$2.75	6.0%
2002	$2.60	

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