

Jefferson City Transit Development Plan Final Report

Prepared for



Prepared by



2400 Pershing Road, Suite 400
Kansas City, Missouri 64108
Phone: (816) 329-8600

In Association with

ETC Institute
TJ Brown and Associates

Revised March 15, 2006

Table of Contents

LIST OF TABLES	III
LIST OF FIGURES	IV
SECTION 1: INTRODUCTION	1
1.1 STUDY PROCESS	1
1.2 GOALS AND OBJECTIVES	2
1.3 ABOUT JEFFTRAN	2
SECTION 2: STUDY AREA INVENTORY	4
2.1 DEMOGRAPHICS.....	4
2.1.1 <i>Population Demographics</i>	4
2.1.2 <i>Employment</i>	4
2.1.3 <i>Growth Forecasts</i>	4
2.1.4 <i>Trip Generators</i>	5
2.2 EXISTING FIXED ROUTE SERVICE.....	5
2.2.1 <i>Current Fixed Route Structure</i>	5
2.2.2 <i>Schedules</i>	7
2.2.3 <i>Running Time Check</i>	7
2.2.4 <i>Transfers</i>	7
2.3 EXISTING PARATRANSIT SERVICE.....	8
2.4 PASSENGER COUNT	8
2.4.1 <i>Data and Maps</i>	9
2.4.2 <i>Ridership Trends</i>	9
2.5 PASSENGER SURVEY FINDINGS	11
2.6 PEER AGENCY REVIEW.....	12
2.7 INVENTORY OF FACILITIES & EQUIPMENT	13
2.7.1 <i>Operating and Maintenance Facilities</i>	13
2.7.2 <i>Fleet Inventory</i>	13
2.8 PUBLIC INVOLVEMENT	14
2.8.1 <i>Public Involvement Components</i>	14
2.8.2 <i>Summary of Input</i>	14
SECTION 3: TRANSFER CENTER	17
SECTION 4: TRANSIT SERVICE REVIEW	20
4.1 TRANSIT SERVICE EVALUATION	20
4.1.1 <i>Service Evaluation Conclusions</i>	21
4.2 TRANSIT NEEDS ANALYSIS	22
4.3 FLEXIBLE ROUTE TRANSIT SERVICES	22
4.4 POTENTIAL TRANSIT SERVICE MODIFICATIONS.....	23
4.4.1 <i>Extend Transit Service Hours</i>	23
4.4.2 <i>Modifications to Existing Routes</i>	24
4.4.3 <i>New Service Areas</i>	24
4.4.4 <i>Other Potential Service Modifications</i>	25
4.5 PARATRANSIT EVALUATION.....	27
4.5.1 <i>ADA Eligibility</i>	27
4.5.2 <i>Driver Training and Certifications</i>	27
4.5.3 <i>Vehicle Inventory</i>	27

4.5.4	<i>Handi Wheels User Information</i>	27
4.5.5	<i>Trip Scheduling</i>	28
4.5.6	<i>Demand Analysis</i>	28
4.5.7	<i>Other Paratransit Providers</i>	29
SECTION 5: FUTURE TRANSIT DEMAND AND MOBILITY NEEDS.....		30
5.1	FUTURE TRANSIT DEMAND	30
5.2	FINANCIAL ANALYSIS	30
5.2.1	<i>Revenue Sources</i>	30
5.2.2	<i>Future FTA Funding</i>	31
5.2.3	<i>Financial Projections - Operating Costs and Revenues</i>	32
5.2.4	<i>Financial Projections for Service Increase Scenarios</i>	32
5.3	FACILITIES AND EQUIPMENT PLAN	34
5.3.1	<i>Facilities Evaluation</i>	34
5.3.2	<i>Bus Replacement Program</i>	36
5.4	DRIVER AND SUPERVISORY STAFFING	38
5.4.1	<i>Drivers</i>	38
5.4.2	<i>Dispatchers and Supervisors</i>	39
5.4.3	<i>Conclusions</i>	39
5.5	IMPLEMENTATION PLAN.....	39
5.6	MARKETING PLAN.....	41
5.7	SYSTEM MONITORING	42
5.7.1	<i>Performance Measures</i>	42
5.8	LONG RANGE TRANSIT PLANNING	44
5.8.1	<i>Future Transit Service Levels</i>	44
5.8.2	<i>Geographic Expansion and Transit System Structure</i>	44
5.8.3	<i>Operating Facilities</i>	45
5.8.4	<i>Transit Land Use and Development Planning</i>	45
5.8.5	<i>Community Partnerships</i>	45
5.8.6	<i>Transit Funding</i>	45
SECTION 6: CONCLUSION AND RECOMMENDATIONS.....		46
6.1	TRANSIT ORGANIZATIONAL STRUCTURE AND GOVERNANCE	46
6.2	FIXED ROUTE TRANSIT SERVICE IMPROVEMENTS	46
6.3	PARATRANSIT SERVICE	49
6.4	PASSENGER FARES	51
6.5	CAPITAL IMPROVEMENTS.....	51
6.6	DRIVER AND SUPERVISORY STAFFING	53
6.7	MARKETING.....	53
6.8	LONG RANGE PLANNING	54

List of Tables

TABLE 1: STEERING COMMITTEE	2
TABLE 2: POPULATION PROJECTIONS	4
TABLE 3: PART OF LIST OF POSSIBLE TRANSIT GENERATORS.....	5
TABLE 4: TRANSFER COUNT SUMMARY	8
TABLE 5: FIXED ROUTE DAILY RIDERSHIP	9
TABLE 6: DAILY RIDERSHIP HISTORY	10
TABLE 7: PEER AGENCY SYSTEM COMPARISON.....	13

TABLE 8: JEFFTRAN REVENUE VEHICLE FLEET SUMMARY	14
TABLE 9: PUBLIC INVOLVEMENT	14
TABLE 10: SUMMARY OF PUBLIC INPUT.....	15
TABLE 11: FIXED ROUTE PRODUCTIVITY	20
TABLE 12: SUMMARY OF ALTERNATIVES	26
TABLE 13: HANDI WHEELS VEHICLE ROSTER.....	27
TABLE 14: BASELINE PROJECTIONS OF JEFFTRAN RIDERSHIP	30
TABLE 15: JEFFTRAN 2006 BUDGET OPERATING REVENUE SOURCES	31
TABLE 16: APPORTIONMENTS AND ESTIMATES OF FTA FORMULA FUNDING	32
TABLE 17: BASELINE PROJECTIONS OF JEFFTRAN OPERATING COSTS AND REVENUES	32
TABLE 18: PROJECTIONS OF JEFFTRAN OPERATING COSTS AND REVENUES – HIGH INVESTMENT	33
TABLE 19: PROJECTIONS OF JEFFTRAN OPERATING COSTS AND REVENUES – MEDIUM INVESTMENT	34
.....	
TABLE 20: PROJECTIONS OF JEFFTRAN OPERATING COSTS AND REVENUES – LOW INVESTMENT .	34
TABLE 21: JEFFTRAN REVENUE VEHICLE FLEET ROSTER.....	37
TABLE 22: JEFFTRAN REVENUE VEHICLE REPLACEMENT PROGRAM	38
TABLE 23: CHECKLIST FOR TRANSFER CENTER MOVE AND TRANSIT SERVICE MODIFICATIONS	40
TABLE 24: CHECKLIST OF FARE INCREASE IMPLEMENTATION.....	41
TABLE 25: TYPICAL PERFORMANCE INDICATORS.....	42
TABLE 26: SERVICE IMPROVEMENT PROGRAM.....	48
TABLE 27: SERVICE EXPANSION PROGRAM	49

List of Figures

FIGURE 1: REGULAR TRANSIT ROUTES.....	6
FIGURE 2: DAILY RIDERSHIP TRENDS	10
FIGURE 3: TRANSIT SURVEY SYSTEM RATING.....	11
FIGURE 4: TRANSIT SURVEY SUGGESTED IMPROVEMENTS	12
FIGURE 5: BUS STATION AT 620 WEST McCARTY.....	17
FIGURE 6: BUS STATION CONCEPT DESIGN	18
FIGURE 7: DAILY DEMAND FOR HANDI WHEELS TRIPS.....	29
FIGURE 8: RECOMMENDED TRANSIT ROUTES	47

Section 1: Introduction

The Jefferson City Transit Development Plan (TDP) was initiated to evaluate and develop recommendations for the future of transit within Jefferson City and the surrounding urbanized area.

The Transit Development Plan (TDP) was prepared for the City of Jefferson and the Capital Area Metropolitan Planning Organization. A comprehensive analysis of the transit system was conducted. Existing transfer, operations, maintenance and storage facilities as well as all fixed routes and paratransit service were assessed for adequacy and effectiveness. Recommendations for improvements and associated costs were developed.

The study included a transfer center evaluation, initiated in part due to interest in moving the transfer location elsewhere due to operational issues for some bus maneuvers at the existing site and in order to provide an indoor waiting area for passengers.

Service alternatives were developed for the route network. Solutions were identified and provided to address existing problems and develop creative and innovative alternatives for serving the community. The study considered unserved areas where there is potential demand for public transportation and opportunities for possible expansion of service in the urbanized area surrounding the City.

Public involvement was very important in the development of the Transit Development Plan. The study involved focus groups, public meetings and surveys to gather public input. A five-year operations and capital investment plan was developed to assess the status of the existing transit system and to set in place the framework for providing an improved transit system over the next five years. An implementation plan and a marketing plan were developed to put the recommended improvements into place in order to provide a successful transit system in the Jefferson City area.

Beyond the immediate term of the next five years, long range planning was also discussed to address the development of transit within the Jefferson City area well into the future. The list of long range planning elements included future transit levels, geographic expansion and transit system structure, operating facilities, transit land use and development planning, community partnerships and transit funding.

1.1 Study Process

The study involved meetings with City staff; Steering Committee meetings; focus groups with riders, employees and stakeholders; public meetings and community surveys. Work products were submitted as technical memorandums for review and approval by the City incrementally throughout the project. This final report is a summary of the interim work products.

The Steering Committee was comprised of key community stakeholder representatives. Members of the Steering Committee are shown in Table 1.

Table 1: Steering Committee

Name	Affiliation
Billings, Steven	Missouri Dept. of Transportation – Multi-modal Operations
Bonnot, Missy	Jefferson City Area Chamber of Commerce
Carroll, Carrie	Jefferson City Downtown Association
Casey, Jim	Cole County Residential Services
Crane, Councilman Brian	City of Jefferson City Council
Ferguson, Councilman Ken	City of Jefferson City Council
Kindrick Hartsfield, Dr. Paula	Jefferson City Public School District
Martin, Councilman Dean	City of Jefferson City Council
Robinett, Bill	Missouri Dept. of Transportation - Transit Section
Schroder, Bonnie	Jefftran Rider/City of Jefferson Admin
Schroeder, Roger	Jefferson City Chief of Police/Jefftran Rider
Wekamp, Brian	Jefferson City Chapter, National Federation of the Blind

1.2 Goals and Objectives

Goals and objectives were identified at the outset of the study. The following lists the goals and objectives that were developed:

GOALS

1. To provide convenient, reliable, comfortable, accessible, and safe transportation for the public.
2. To promote the advantages of Transit.
3. To support the City's objectives for increased transit ridership.

OBJECTIVES

1. Expand the transit route network where appropriate.
2. Improve transit by expanding service hours and increasing frequency.
3. Improve cost-efficiency.
4. Adopt measures to ensure the adequacy of future revenues and funding.
5. Provide an efficient paratransit service.
6. Provide clear transit information to customers.

1.3 About JEFFTRAN

The Jefferson City Transit Division is responsible for providing convenient, reliable, comfortable, accessible, and safe transportation for the citizens and visitors of Jefferson City. The Jefferson City Transit System operates fixed route transit service and paratransit service – Handi Wheels, for people with disabilities.

The Jefferson City Transit Division is commonly referred to as "JEFFTRAN." JEFFTRAN has a revenue fleet of 26 vehicles and currently operates seven regular fixed routes, four commuter school tripper routes and two state shuttle routes that provide transportation for state employees from state parking lots. JEFFTRAN also provides a complementary paratransit service called "Handi Wheels." More detail regarding JEFFTRAN's existing services is provided in Section 2.2 of this report.

JEFFTRAN is a division of the City's Department of Community Development. Pat Sullivan, Department Director and Janice O. McMillan, AICP, Deputy Director for Planning and Transportation Services for the Department of Community Development have responsibility for

JEFFTRAN. Richard Turner, Division Director is directly responsible for JEFFTRAN operations. The Division is managed by the Division Director, Mr. Turner, two operations assistants and two dispatchers.

As a City division, JEFFTRAN is accountable to the City Council through the Department of Community Development and receives funding for capital and operations at the discretion of the City Council. JEFFTRAN receives operating assistance (FTA Section 5307) directly from the Federal Transit Administration. JEFFTRAN also receives transit operating assistance through the Missouri Department of Transportation (MoDOT) and MoDOT administers federal transit capital project grants on JEFFTRAN's behalf.

Section 2: Study Area Inventory

Information on the transit system, its facilities, passengers, the service area and attitudes in the community was assembled for the Jefferson City Transit Development Plan. The purpose was to collect and assemble baseline data that was thorough and of sufficient detail in order to effectively develop future transit improvement alternatives.

2.1 Demographics

This section summarizes the compilation of the demographic data assembled for the Transit Development Plan. The data includes population demographics, employment data, growth forecasts and existing and proposed transit trip generators.

2.1.1 Population Demographics

Demographic data included population, housing, elderly and low-income was compiled and mapped. The mapped data was examined to determine how well the existing transit system was serving that population group. For the most part, current routes serve high population density areas. However, some routes serve lower density areas of the community. The current system does a good job in serving areas with high housing densities. The current route structure serves some areas with high percentage of senior citizens well while other areas are not served as well. All of the routes serve low income areas well. Most of the current routes serve the areas with households without vehicles. The areas with higher concentrations of persons with disabilities within the urbanized area are being served well by the current transit routes. In general, current routes serve the areas of the community most in need of transit.

2.1.2 Employment

Employment data provided by City staff was compiled by census block group and mapped. Most of the employment is concentrated in the downtown area. Medium concentrations extend west along Missouri Boulevard and to the southwest.

2.1.3 Growth Forecasts

Population projection data was provided by the city and is shown in Table 2.

Table 2: Population Projections

	Projected population change [†]				
	2000	2005	2010	2020	2030
Holts Summit	2,935	3,001	3,749	4,683	5,850
Lake Mykee	326	336	348	370	392
St Martins	1,023	1,073	1,335	1,701	2,166
Jefferson City	39,636	42,072	45,193	50,919	57,370
Cole County*	71,397	75,680	80,179	90,041	101,116

*Includes populations of all Cole County cities.

[†]Base year is U.S. Census 2000 data. Projections provided by the city based on current annual growth rates.

2.1.4 Trip Generators

The study team with help from City staff generated a comprehensive list of existing land uses that could generate transit demand within the study area. The list also shows which locations are already being served by transit. Table 3 shows a portion of the list. The complete list is included in the Study Area Data Inventory technical memorandum.

Table 3: Part of List of Possible Transit Generators

Type	Name	Address	Probable traffic generation scale			Current Transit Service
			Large	Medium	Small	
Shopping Malls	Capital Mall	3600 Country Club Dr.	X			X
	Kmart	2304 Missouri Blvd.		X		X
	Target	735 W. Stadium Blvd.		X		X
	Wildwood Crossings	3535 Missouri Blvd.		X		X
	Jefferson Shopping center	1406 Missouri Blvd.		X		X
	Mart Shopping Center	2305 Missouri Blvd.		X		X
	Wal-Mart	724 W. Stadium Blvd.	X			X
Groceries	Gerbes Family Shopping Center East	1226 E. McCarty St.	X			X
	Gerbes Family Shopping Center West	2805 W. Truman	X			X
	Gerbes Super Store	2101 Schotthill Woods Dr.	X			X
	Mosers	2411 Missouri Blvd.		X		X
	Rainbow Market	4404 Rainbow Dr.		X		X
	Schnucks Supermarkets	1801 Missouri Blvd.	X			X
	Schulte's Fresh Foods	1904 Southwest Blvd.	X			X
	Hy Vee	3721 West Truman Blvd.	X			X
	Wal-Mart	724 W. Stadium Blvd.	X			X
Hospitals & Medical Centers	Capital Region Medical Center	1125 Madison St.	X			X
	Capital Region Medical Center	1500 Southwest Boulevard			X	X
	Capital Health Network	1411 Southwest Blvd.	X			X
	Central Medical Park-Surgical Center	1705 Christy Dr.		X		X
	St. Mary's Health Center	100 St. Mary's Medical Plz	X			X
	Jefferson City Medical Group	1241 W. Stadium Blvd.	X			X
	Cole County Health	1616 Industrial Dr.			X	
Cole County Health	398 Dix Rd			X		

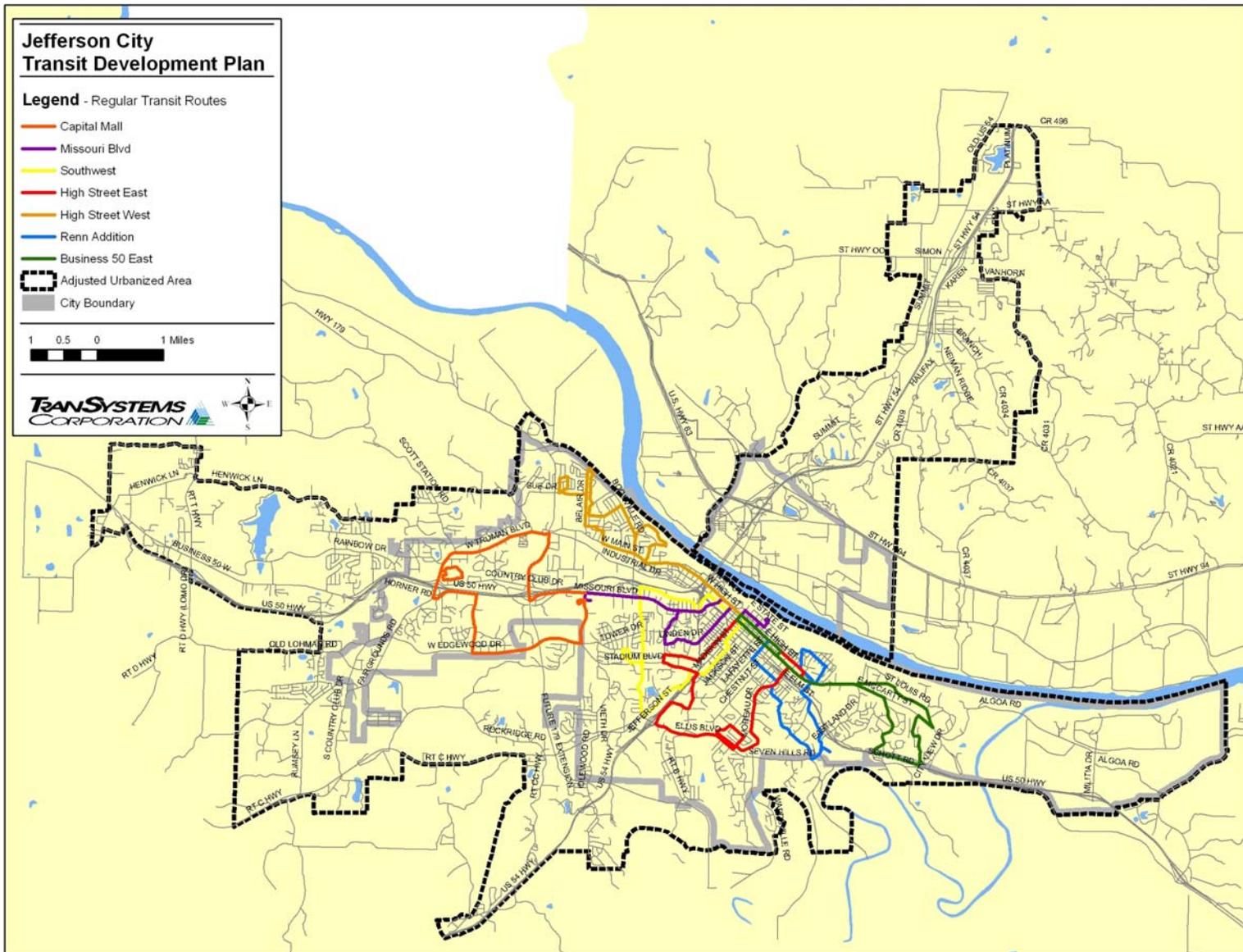
2.2 Existing Fixed Route Service

JEFFTRAN currently operates seven regular fixed routes, four commuter school tripper routes and two state shuttle routes that provide transportation for state employees from state parking lots.

2.2.1 Current Fixed Route Structure

The seven fixed routes are shown in Figure 1. An existing transfer site is centrally located within the downtown area. Six of the seven fixed routes converge at the transfer location at the same time, as the routes operate on a "pulse scheduling system." A "pulse" operation has all routes "meeting" at a common point at the same time. Most of the routes operate in a "loop" pattern, with vehicles traversing a route in either a clockwise or counterclockwise direction. The Missouri Boulevard and Capital Mall routes actually operate as a single route. The current route structure has been in place for approximately ten years.

Figure 1: Regular Transit Routes



2.2.2 Schedules

Fixed route service is available from 6:45 AM to 5:45 PM Monday through Friday except holidays. The JEFFTRAN fixed routes operate on a “pulse” system with all routes except the Capital Mall route converging at the downtown transfer location at the same time on either 30 or 60 minute intervals. During peak periods all routes operate every 30 minutes. During the midday, only the Southwest route continues to operate every 30 minutes. Other routes operate every 60 minutes during the midday. A bus operating along the High Street East and High Street West routes alternates between routes during the midday. Similarly a bus operating on the Renn Addition and Business 50 East routes alternates between these two routes during the midday.

The commuter school tripper routes operate one trip per day on school days. The Southside Morning Route is the only commuter school tripper route that operates in the morning. The other three commuter school tripper routes operate in the afternoon. The shuttle routes operate from state parking lots to state office buildings. The shuttles operate between 7:00 a.m. and 5:30 p.m. The Truman shuttle has a frequency of every 7 ½ minutes and the East Side Shuttle’s frequency is every 10 minutes.

2.2.3 Running Time Check

A running time check was conducted on June 6, 2005 at the Jefferson & High transfer location to assess tight running times. The time check showed that buses arrive up to 6 minutes late resulting in up to 11 minute late departures.

Due to the operation of JEFFTRAN regular routes on the pulse system, the late arrival of a single bus or several buses may require some of the other buses that may have arrived on time (or at least earlier) to wait for the buses that have transfers for them. A maximum wait time of 5 minutes has been set. The result, however, can be a ripple effect that may worsen throughout the shift depending on the circumstances. The Missouri Boulevard/Capital Mall route has the worst departure time record from 5 to 6 minutes late on average, which occurs twice daily. However, this bus route makes two passes by the transfer location inbound and passengers transferring from the route (except those boarding at the Dulle & Hamilton Towers) are able to catch transfers to other routes by alighting at the transfer location at the first pass.

2.2.4 Transfers

A transfer count was conducted to assess transfer activity between the routes. Transfer information is important in the development of service alternatives to ensure that existing riders are not inconvenienced by a recommended change. Table 4 shows the transfer count summary.

Table 4: Transfer Count Summary

Receiving Route	Issuing Route											
	High Street W	High Street E	MO Blvd Mall	Ellis S.W.	Renn Addition	Business 50 E	Tripper		High Street W/E	Multiple	Unknown	Total Rcvd
High Street W	2	-	3	-	1	3	-		-	-	-	9
High Street E	5	-	24	4	2	-	-		2	1	1	39
MO Blvd Mall	9	-	-	3	17	5	-		4	4	-	42
Ellis S.W.	7	-	17	-	3	7	-		3	-	-	37
Renn Addition	2	-	4	11	-	5	-		7	-	-	29
Business 50 E	-	-	7	1	5	-	-		-	3	-	16
Tripper												-
Total Issues	25	-	55	19	28	20	-		16	8	1	172

Source: Transfer data as compiled by TranSystems.

The data show a lot of transfer activity between all the routes with the most activity on the Missouri Boulevard and the least transfers to or from the High Street West route.

2.3 Existing Paratransit Service

In addition to fixed route service, JEFFTRAN also provides a complementary curb-to-curb paratransit service called “Handi Wheels.” Complementary paratransit is a transportation service required by the Americans with Disabilities Act (ADA) of 1990 for individuals with disabilities who are unable to use fixed-route transportation systems.

Handi Wheels services operate within the boundaries of Jefferson City, and all eligible residents can use the service. Handi Wheels provides service beyond that which is required by ADA because the service area is larger than required. Trips can be scheduled Monday through Friday by contacting the Handi Wheels office. The service operates from 6:45 AM to 5:45 PM weekdays, the same hours as JEFFTRAN fixed route service.

Handi Wheels currently has eight vehicles, six operating vehicles and two spares, and six drivers dedicated to the Handi Wheels service. The service uses modified Ford E-450 chassis mini-buses. All vehicles are equipped with wheelchair lifts and are ADA compliant.

Handi Wheels carries about 200 to 220 passenger trips per day. Passengers rate the service very high in all performance areas.

Handi Wheels is funded by a mix of sources, including passenger fares, local funding and FTA funding.

2.4 Passenger Count

A complete passenger count was conducted on every route in the system for a typical weekday. A bus stop list was prepared from data provided by JEFFTRAN. The study team trained checkers and organized the passenger count. The objective of the count was to understand how bus riders use the current system and to determine where boardings and alightings occur.

Using the passenger count, areas with no activity or with minimal activity were identified to determine if the optimal route is being used.

2.4.1 Data and Maps

Maps were developed from the passenger count to show the outbound and inbound portion of each route to identify those areas with limited activity. The individual route passenger count maps are shown in the Study Area Data Inventory technical memorandum.

Overall, the fixed routes have daily ridership of approximately 800. Individual route ridership is shown in Table 5. The Missouri Boulevard route has the highest ridership.

Table 5: Fixed Route Daily Ridership

Route	Ridership
Capital Mall	90
Missouri Blvd	220
Southwest	120
High Street East	120
High Street West	80
Renn Addition	120
Business 50	60
Total	810

The Truman Shuttle averages about 160 passengers per day and the Eastside Shuttle averages more than 400 passengers per day.

2.4.2 Ridership Trends

Data shows a growth in ridership on most routes for the past five years except the Business 50 East route and most of the commuter school tripper routes which show a slight decline. The largest ridership increases were on the Missouri Blvd/Capital Mall route and the Truman Shuttle. The Eastside Shuttle was put into operation in March of 2005 and has been getting more than 400 riders per day. Table 6 shows the ridership history. The data is also represented in Figure 2.

Table 6: Daily Ridership History

	2000	2001	2002	2003	2004	2005
Missouri Blvd/Capital Mall*	288	301	325	306	336	429
Southwest	123	130	120	119	127	128
High Street East	110	113	110	116	113	122
High Street West	89	92	100	99	84	97
Renn Addition	76	76	73	86	97	106
Business 50 East	87	76	69	63	57	53
Handi-Wheels	177	181	181	196	201	206
Hutton Lane Commuter	27	21	20	19	16	17
Tanner Bridge Commuter	12	8	2	0.1	---	---
Southside Commuter	35	36	31	27	25	19
High Street East Commuter	30	40	34	31	30	33
High Street West Commuter**	---	---	---	2	---	---
Truman Shuttle	188	137	145	176	174	218
Eastside Shuttle	---	---	---	---	---	400
System Total	1,241	1,212	1,208	1,242	1,259	1,829

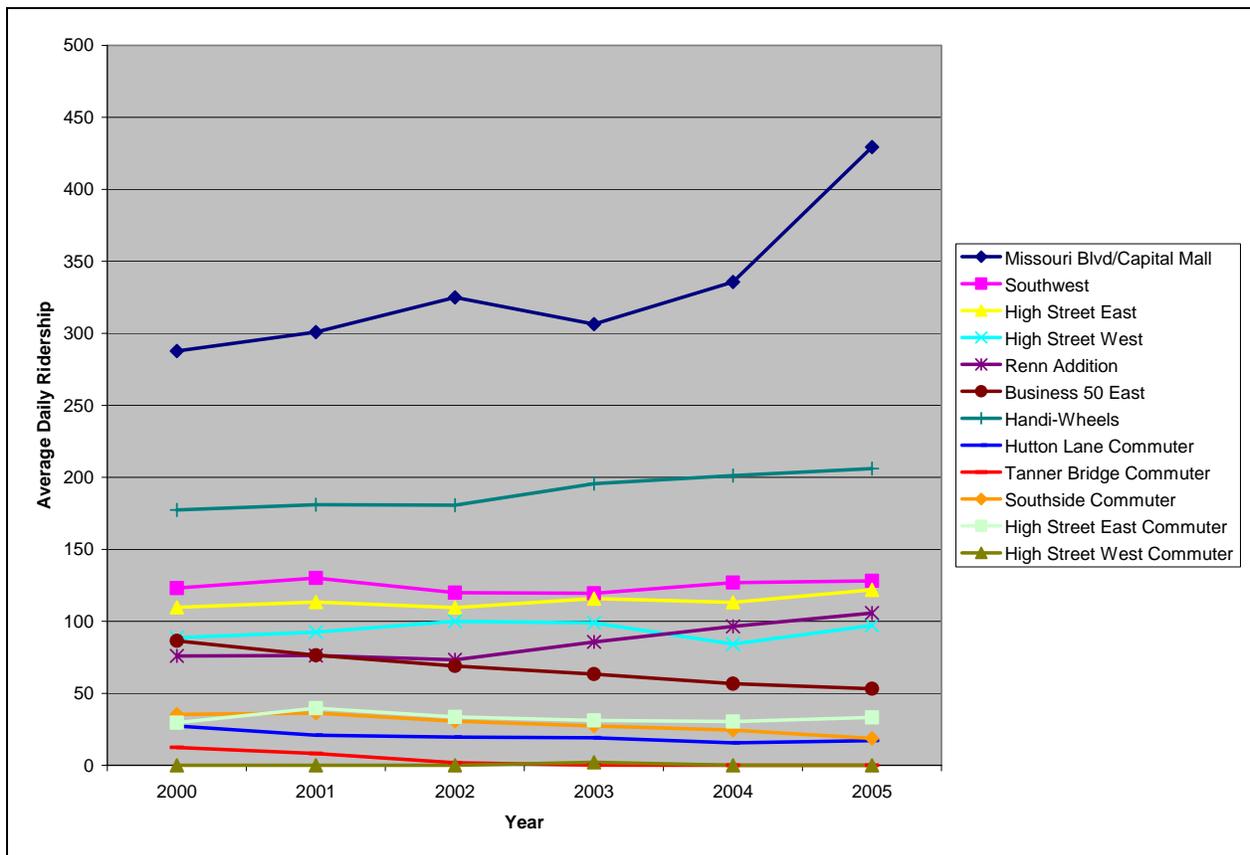
Source: JEFFTRAN ridership data as compiled by TranSystems.

Note: Year is from November 1 through October 31 except for 2005 which is from November 1 to May 31.

*JEFFTRAN ridership records combine Missouri Boulevard and Capital Mall routes.

**High Street West Commuter Route was incorporated into High Street West regular route.

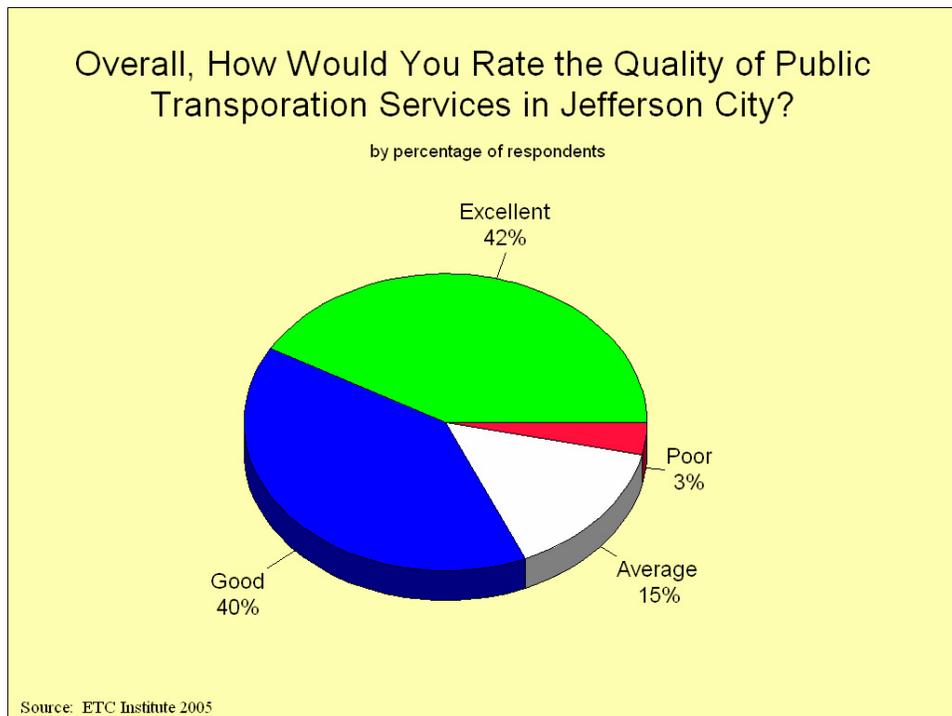
Figure 2: Daily Ridership Trends



2.5 Passenger Survey Findings

Perceptions of the Overall Quality of Public Transportation in Jefferson City. The overall quality of public transportation services in Jefferson City was rated highly by persons currently using the service. More than three-fourths (82%) of those surveyed rated the overall quality of public transportation service in Jefferson City as either “excellent” or “good”; only three percent (3%) of the respondents rated the quality of public transportation services as “poor” (see Figure 3).

Figure 3: Transit Survey System Rating



Service Characteristics Rated Best. The service characteristics that were rated best (based on the percentage of respondents who were “very satisfied” or “satisfied”) were:

- Courtesy of drivers
- Feeling of safety using bus
- Bus fees

Service Characteristics Rated Worst. The service characteristics that received the lowest ratings (based on the percentage of respondents who were “very satisfied” or “satisfied”) were:

- The hours bus service is offered
- Availability of bus shelters
- Availability of bus service on weekdays

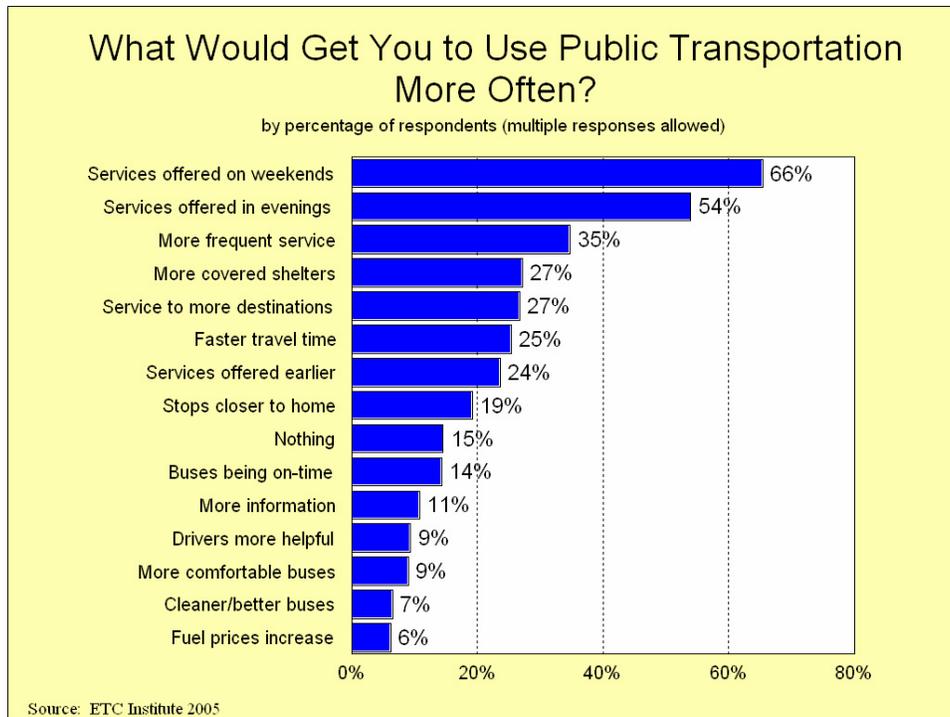
Other Findings

- The top three reasons respondents were using public transportation services in Jefferson City were: to get to/from work (51%), to conduct personal business (27%), and to go shopping (26%).
- The top three items that would encourage current riders to use public transportation services more often were: having more service offered on weekends (66%), having

service offered later in the evening (54%), and providing more frequent service (35%). Figure 4 shows the suggested improvements.

- 84% of those surveyed thought they would still be using public transportation services in Jefferson City in 12 months.
- Bus drivers were the top source of information about public transportation services for current users.
- 62% of those surveyed indicated that a bus stop was located within one block of their home.

Figure 4: Transit Survey Suggested Improvements



The study team was also noted that approximately 51% of those surveyed were using transit to get to work. In addition, approximately twenty-five percent of the transit riders ride by choice.

2.6 Peer Agency Review

A peer review was conducted to see how the level of transit service in Jefferson City compares to the level of transit service in similar cities within the region and across the country. JEFFTRAN was compared to peer agencies in terms of urban area population, size of transit system, operating cost, service and productivity. The peer review was conducted to establish a benchmark to determine if services in Jefferson City compare favorably to other transit operations. The agencies included as peers were selected in part based on the level of service provided. Table 7 shows both sets of peer groups.

Table 7: Peer Agency System Comparison

	City	Population of Urbanized Area (2000)	Service Level (Annual Vehicle Revenue Miles)	Annual Unlinked Trips	Peak Vehicles	Operating Expenses ¹	Revenue Miles per Capita	Ridership per Capita
REGION	Columbia, MO	98,779	420,508	1,850	9	\$1,841,087	4.3	4.8
	Springfield, MO	215,004	1,062,195	5,400	20	\$5,417,941	4.9	6.4
	St. Joseph, MO	77,231	771,824	1,300	18	\$3,033,091	10.0	4.3
	Topeka, KS	142,411	833,922	4,800	23	\$3,107,037	5.9	8.6
NATION	Dubuque, IA	65,251	341,980	1,800	8	\$1,363,770	5.2	7.0
	Jackson, TN	65,086	557,541	1,800	8	\$1,478,594	8.6	7.1
	Middletown, OH	94,355	212,650	700	4	\$648,356	2.3	1.9
	Oshkosh, WI	71,070	575,478	3,500	13	\$2,277,064	8.1	12.6
	Pocatello, ID	62,498	259,913	1,700	8	\$674,151	4.2	6.9
	Port Arthur, TX	114,656	246,067	500	6	\$1,097,757	2.1	1.1
	Rapid City, SD	66,780	162,397	600	4	\$475,752	2.4	2.3
	Jefferson City	53,714	382,983	1,200	11	\$1,600,000	7.1	5.7

¹Peer agencies statistics only includes fixed route bus costs.

Compared to transit systems in other similar cities in Missouri and Kansas, JEFFTRAN ranks high in terms of service miles per capita, an indication that the level of service provided in Jefferson City is reasonable from the perspective of other similar cities. The per capita ridership statistic is about average for systems within the peer group. In comparing Jefferson City with a broader peer group, the conclusions are about the same as for the Regional peer group comparison. Transit service level per capita in Jefferson City is higher than the levels in this peer group, and the riders per capita statistic in Jefferson City is in the middle of the peer group.

2.7 Inventory of Facilities & Equipment

JEFFTRAN's facilities and fleet were evaluated as part of this study. A description of the operation and maintenance facilities and the fleet is included in this section.

2.7.1 Operating and Maintenance Facilities

The buildings located at the Charles E. Robinson Transit Maintenance Facility consist of several functional divisions and include the site, administration area, operations area, maintenance area, fueling facility, vehicle wash building and bus garage.

The combination of buildings at the Charles E. Robinson Transit Maintenance Facility is generally well organized on the site. The buildings are pre-engineered structures with metal wall and roof panels. The administration wing is clad in brick veneer.

The buildings are approximately 20 years old, a significant milestone in the life of pre-finished roof and wall panels which typically have 20 year finish warranties. The buildings appear to have been well maintained and with proper maintenance should be able to serve the transit needs for years to come.

2.7.2 Fleet Inventory

JEFFTRAN has a revenue fleet of 26 vehicles as shown in Table 8.

Table 8: JEFFTRAN Revenue Vehicle Fleet Summary

	Operating	Spares	Total
Fixed Route	7	2	9
Trippers	3	1	4
Shuttles	4	1	5
Total	14	4	18
Paratransit	6	2	8
TOTAL	20	6	26

Currently JEFFTRAN has a mixed fleet with several different manufacturers and models. The fixed route fleet (including commuter school trippers and shuttles) includes new transit coaches purchased in 2005 and medium-duty buses purchased in 1999, 2003 and 2004.

In 2005 JEFFTRAN acquired five new heavy-duty transit coaches manufactured by the Gillig Corporation. These new buses are the first heavy-duty buses purchased in Jefferson City in decades, and feature low floor technology. Low floor buses are popular with the public because of the one-step entry into the bus interior and the wheelchair access via a ramp rather than a lift device. The new buses have been well received in Jefferson City.

2.8 Public Involvement

Public involvement was very important in the development of the Transit Development Plan. Public input into identification of future transit and mobility needs was an important element for developing the plan. In addition, it was critical to solicit public comment and review of alternatives and recommendations developed through the plan process.

2.8.1 Public Involvement Components

In accordance with the Public Involvement Plan, the following public involvement activities have been completed:

Table 9: Public Involvement

Public Involvement Component	Date Completed
Passenger Survey	27-Apr-05
Stakeholder Meeting	10-May-05
Transit Riders Focus Group	10-May-05
Employees Focus Group	10-May-05
Public Meeting	14-Jun-05
Public Meeting Survey	14-Jun-05
Public Comments (via phone, email or mail)	Through March 9, 2006
Community Survey	Aug-05
Final Public Meeting	20-Sep-05

2.8.2 Summary of Input

The findings from each of the public involvement components are summarized on the matrix that follows. Complete meeting summaries were developed, but are not included in this report.

Table 10: Summary of Public Input

	General Comments	Expanded Service Hours	Schedules & Service Levels	Expanded Coverage and More Bus Stops	Central Transfer Center	Fares	Funding Ideas
Stakeholder Focus Group Summary	<ul style="list-style-type: none"> Be sure routes are designed to meet the needs of the people. Marketing is a big, big, issue. Need for diverse, all inclusive options for public transportation. Need to make it easier for citizens to walk to work or to walk to a bus stop. 				<ul style="list-style-type: none"> The Greyhound station is too isolated. Assuming that it would be manned, air conditioned and have rest rooms it would be a vast improvement. As long as space could be opened up with a big enough turn area. Inter-city buses could use it – we could sell tickets for them. Concern about the impact on downtown. 		<ul style="list-style-type: none"> Move from purchasing buses on an 80-20 to a 50-50 basis. Dedicated transportation tax. Use property tax for those with developmental disabilities as do 85 out of 140 Missouri counties. Need an overview of what kinds of dedicated taxes are available. Illinois uses general revenue and spends 20 times per capita what Missouri does. That would take the pressure off of localities trying to match funds.
Transit Rider Focus Group	<ul style="list-style-type: none"> Keep service the same but add weekends. Obtain information from this study and then, most importantly, move into implementation. Public transportation is very important. Don't let this issue die – keep up the dialogue. 				<ul style="list-style-type: none"> Concern about the buses not having room to turn around at Greyhound. If the transfer location is moved the opportunity for shopping between buses would be eliminated. Air conditioning at Greyhound would be good. Traffic from state parking lots may interfere with buses Concern about drainage from heavy rains around the building "Wherever it is, we will get used to it." 	<ul style="list-style-type: none"> Everyone believes excellent value is received for the fare. 7 out of 8 participants indicated that they would be willing to pay up to \$1. None of the participants indicated that they would be willing to pay more than \$2. 	<ul style="list-style-type: none"> Suggested that the age of children who ride free should be changed from 7 to 5.
Employee Focus Group	<ul style="list-style-type: none"> Rest Facilities need to be provided along the routes. Vehicle storage facilities are needed. New buses are generally larger than the current buses. Install bike racks. 	<ul style="list-style-type: none"> Generally not in favor of extending service hours. Ridership would be limited, particularly late in the month. Extend hours into the evening one or two days a week. Extend service by 30 minutes in morning and in the evening. Drivers are already working 40 hours with considerable overtime. Security issues associated with handling change and passes during evening hours. 	<ul style="list-style-type: none"> Route schedules have too little time resulting in drivers rushing to maintain schedules. Missed transfer connections due to buses being late. Renn Addition (very tight schedule – suggestion to eliminate one pass by Lincoln University) 	<ul style="list-style-type: none"> The Scholastic area (Algoa) Service to the prisons (Algoa) Service to DNR Elm Street facility by an extended state route shuttle Large apartment complex being built by the Jefferson City Medical Group at Edgewood and Stadium. New St. Mary's Hospital New Wal-Mart on the east side next to Gerbes Superstore Extending High Street West Route further out to area with low-income housing Area north of river along Summit Dr. Lewis & Clark Middle School 	<ul style="list-style-type: none"> Relocating transfer location to old Greyhound station would be a positive move. Current location in downtown is too tight for buses and some turns can't easily be made, resulting in delays. Concerns about the adequacy of the Greyhound site to accommodate all of the buses. The move would generally be positive for riders, although some may be inconvenienced. Downtown location allows shopping. Intersection of Bolivar and McCarty should be made into a four-way stop to avoid possible conflicts at the railroad crossing. Potential conflict from vehicles at state parking lots adjacent to the Greyhound facility. 		
Community Survey	<ul style="list-style-type: none"> 36% of those surveyed indicated that they would be very or somewhat likely to use public transportation if their employer provided incentives to use public transportation. 		<ul style="list-style-type: none"> 35% of those surveyed indicated that they would be very or somewhat likely to use public transportation if buses arrived at stops more frequently. 20% of those surveyed indicated that they would use public transportation at least four days per week if the service were convenient to use. 				<ul style="list-style-type: none"> 92% of those surveyed thought it was very or somewhat important for the City of Jefferson City to fund public transportation; only 2% did not think it was important, and 6% did not have an opinion. 70% of those surveyed indicated that they would be very or somewhat supportive of a slight tax increase to fund improved public transportation services in Jefferson City.

Table Continues/

/Table Continued

	General Comments	Expanded Service Hours	Schedules & Service Levels	Expanded Coverage and More Bus Stops	Central Transfer Center	Fares	Funding Ideas
Public Meetings	<ul style="list-style-type: none"> ▪ The overwhelming opinion expressed that JEFFTRAN's services are very good but limited. ▪ Negative comments were mostly directed at the limits of the service. ▪ One individual stated that she often felt harassed due to her disability. ▪ One individual noted that she did not ride the bus because the routes and schedules are confusing. 	<ul style="list-style-type: none"> ▪ Expand service hours to include evenings and weekends for both fixed route service and Handi Wheels. ▪ Extension to 8 – 9 p.m. would be sufficient. ▪ Service could be extended later on select days to reduce costs. ▪ Most attendees said they did not travel when bus service was unavailable. ▪ Between expanded service hours, Saturday service and evening service, Saturday service was rated highest, with expansion of the base service hours a close second. 	<ul style="list-style-type: none"> ▪ Service frequency is adequate. ▪ Change service frequency to 40-minute intervals if transfers are made and routes are timed to arrive and depart based on work schedules. ▪ Concern that the change to 40-minute headways would make it more difficult to remember bus schedules. ▪ Posting schedules at key stops and making printed schedules available would offset the inconvenience. ▪ Use of the radio system helps passengers make transfer connections. 	<ul style="list-style-type: none"> ▪ Request to extend service on the Capital Mall route to better service Thomas Jefferson Middle School. Lack of transit service makes attendance at after-school activities difficult. ▪ Extension of the Missouri Blvd. route was requested. ▪ Concern expressed about the length and circuitry of some of the routes. ▪ Create secondary transfer centers. ▪ A Shuttle from Amtrak to the prison. 	<ul style="list-style-type: none"> ▪ Prevailing opinion was that it doesn't matter where the transfer connections are made as long as they are convenient. ▪ Support for the former Greyhound station that would afford interior air conditioned and heated waiting area and restroom facilities. ▪ Overwhelmingly in favor of the move to the bus station, with 18 individuals responding yes, no one responding no and seven responding "not sure." 	<ul style="list-style-type: none"> ▪ Most would be willing to pay more \$1-\$1.50 per trip, particularly if there were service improvements. ▪ It was noted that many people paid \$.25 per trip under JEFFTRAN's reduced fare program. ▪ Issue unlimited monthly ride pass. ▪ Support a fare increase to 75 cents, but are not supportive of an increase to \$1.00. 	<ul style="list-style-type: none"> ▪ Advertising on the buses. ▪ Allow businesses to purchase audible advertisements. ▪ Partnerships with businesses. ▪ Private businesses help fund service on at least one Saturday a month. ▪ Cooperative agreement with University to allow student ID use to access transit. ▪ Fundraisers ▪ State subsidies for bus passes. ▪ Solicit participation by key businesses to help pay for shelters and amenities. ▪ Survey major employers to assess interest and support

Section 3: Transfer Center

JEFFTRAN's current transfer location is downtown at the intersection of Jefferson Street and High Street, adjacent to the southeast corner of the State Capitol grounds. The transfer location is the focal point for JEFFTRAN's fixed route services. Six of the seven regular fixed routes, all but the Capital Mall route, converge at this location. Jefferson and High is the primary location for patrons to transfer between bus routes. Bus stops are located on three of the four legs of the intersection including the northbound near side, eastbound far side and westbound far side. Buses arrive and depart at the same time, as the routes operate on a "pulse scheduling system."

The Transit Development Plan (TDP) project for Jefferson City included an evaluation of JEFFTRAN's transfer location. The evaluation was initiated in part due to interest in possibly moving the transfer activity to another location. There are operational problems for some bus maneuvers at the existing downtown site, and there are conflicts between JEFFTRAN passengers and some nearby businesses. There is also interest in providing an indoor waiting area for passengers to wait for transfers. One candidate being considered is the former Greyhound or intercity bus station located at 620 West McCarty Street (see Figure 5). Other possible locations include other off-street areas within the downtown or another on-street facility in another location within the downtown.

Figure 5: Bus Station at 620 West McCarty



Land uses in the immediate vicinity of the old intercity bus station include state parking lots to the south and east on McCarty Street; retail, industry and retail and apartment converted homes to the west on McCarty Street and a fire station northwest of the site. Retail establishments, the State Capitol and other state government offices would be less accessible from the bus station, as compared to access to these land uses from the existing Jefferson and High transfer location.

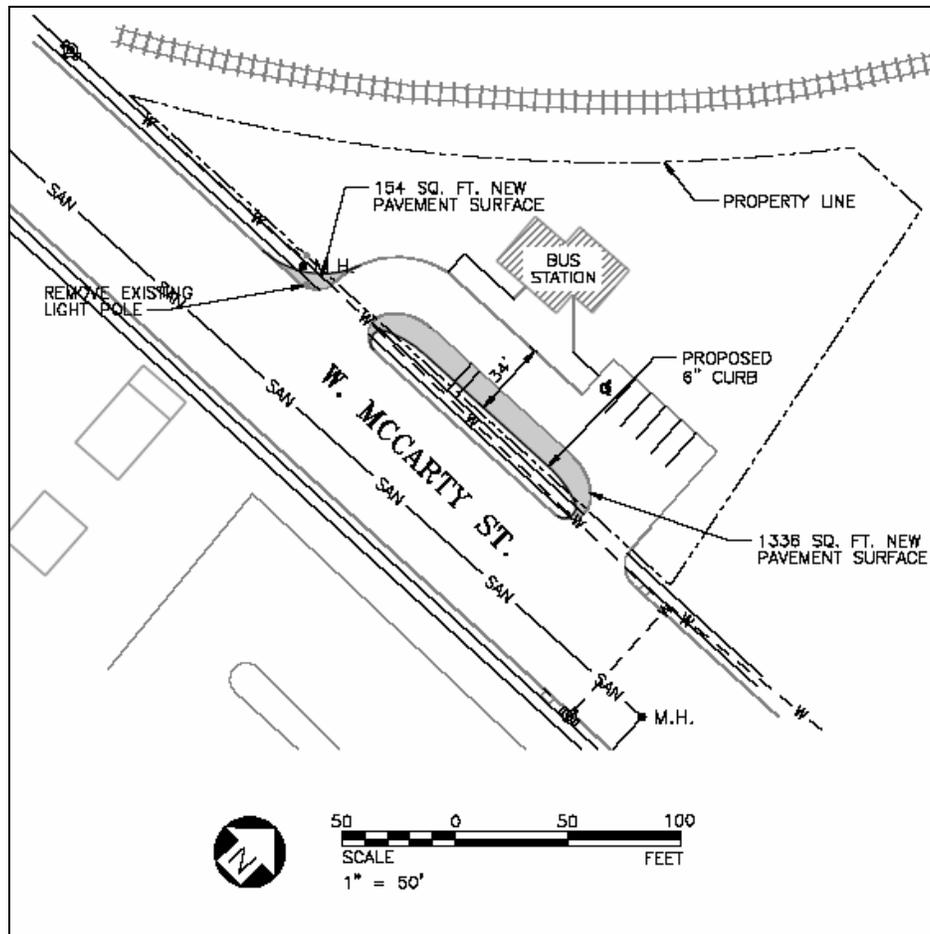
The sites were both assessed based on twelve factors pertaining to safety, convenience, cost, operational functionality and flexibility/expandability. Several qualities of the existing facility at

Jefferson & High are advantageous for transit in Jefferson City, namely the location in the core of downtown and the adjacency to key employment and civic destinations. Also, the presence of transit operations in the core of downtown provides the appearance of transit as having a key role in the community.

The assessment of both sites was presented to the project Steering Committee on July 19, 2005. In discussion it was concluded that moving from the current location was preferable due to the constraints and conflicts. It was concluded that a move to the intercity bus station would resolve the current operating problems, but would represent only a fair solution for the transfer center relocation. As such, it was concluded that the city should pursue a different location for the ultimate long term solution.

The site changes required to make the bus station work as a transfer center are shown in Figure 6.

Figure 6: Bus Station Concept Design



A new transit center would require about an acre of land, cost in the range of \$700,000 (not including land) to develop and require at least 4-5 years for total project development. This amount of time is needed to secure funding, select a site design, and do other work that would be required. Additional details regarding a new transit center including a conceptual layout are included in the Transfer Center technical memorandum.

The Steering Committee concluded that the preferred approach was to move to the intercity bus station location as soon as practical as an interim measure. The city should concurrently begin the initial work on developing a transfer center at a different location in the downtown area.

Section 4: Transit Service Review

As part of the Transit Development Plan, creative, innovative, and more cost-efficient means of providing transit services to the Jefferson City community were evaluated. The process considered alternative approaches including downtown circulator routes, cross-town routes, employer express routes, University routes, additional connector routes, and general public demand-response routes. The study also looked at the possibility of secondary transfer locations. The study considered unserved areas where there is potential demand for public transportation and opportunities for possible expansion of service in the urbanized area surrounding the City. Preliminary cost estimates were also developed as part of the service plan.

This section summarizes the development of various potential transit service modifications including associated assumptions and service characteristics. The full details are provided in the Service Alternatives technical memorandum dated September 21, 2005.

4.1 Transit Service Evaluation

The fixed route services were evaluated both quantitatively and qualitatively.

Perhaps the most important indication of the JEFFTRAN routes' effectiveness is the overwhelming satisfaction expressed by users. The on-board survey found that 83% of respondents rated the service as 'excellent' or 'good'.

Table 11 shows the performance of the routes expressed in terms of passengers per hour, a common productivity measure used in the transit industry.

Table 11: Fixed Route Productivity

Route	Passengers per Hour
Capital Mall	12.0
Missouri Blvd	29.3
Southwest	11.4
High Street East	16.0
High Street West	10.7
Renn Addition	16.0
Business 50	8.0
Total	14.6

The Business 50 route is significantly below the system average in passengers per hour. A route serving lower density suburban areas will typically have reduced productivity. Much of the Business Route 50's service area is in the eastern suburban part of the City.

The Business 50 route also has much of its service area in the area east of the higher density core. Ridership on this part of the route is low. The portion of the route along High Street and McCarty is partly shared with two other routes.

The productivity statistics are characteristic of small urban transit systems like JEFFTRAN.

The JEFFTRAN system does provide service in all portions of the City that have characteristics that indicate a need for transit service, areas with high population density, low incomes and low auto ownership and high senior concentrations. JEFFTRAN routes also serve the majority of the key destinations and traffic generators in the community. The Study Area Data Inventory technical report documents these conclusions.

The routes employ loops as a means of providing greater coverage than would be possible with more conventional two way routes. Transit routes using loop configuration can be deceptively ineffective because they require transit passengers to travel out of direction around the loop resulting in increased travel times and increased inconvenience. However, the JEFFTRAN system does a good job of mitigating the negative effects of loop routing.

- Missouri Boulevard actually is a two way route for most of its length and the loop is fairly tight and close to the downtown terminus.
- Southwest is a large clockwise loop, but shares service areas with both High Street East and Missouri Boulevard which provide complementary service in the opposite direction.
- High Street East is another large clockwise loop, but shares service areas with Southwest and Business 50 East.
- High Street West and Business 50 East are two way routes with a loop on the outer suburban ends.

The two other routes, Capital Mall and Renn Addition, have loop configurations that introduce significant out of direction travel, and therefore may be ineffective.

However, the routes are all short enough that the out of direction travel time is minimal.

Operationally, JEFFTRAN appears sound based on observations throughout the project with one exception. Buses are often late arriving at (and leaving from) the transfer point at Jefferson and High. This is a result of inadequate scheduled running time on several of the routes. This is an unacceptable condition for a transit system that relies on central pulse-type scheduling.

Currently JEFFTRAN does not operate service on ten City holidays, New Year's Day, Martin Luther King Day, Truman's Birthday, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day and Christmas.

It is common for transit systems to operate reduced service on holidays because of the reduced demand for work related trips. However, some of these holidays are regular working days for most individuals (e.g., Truman's Birthday) and most of these days are important retail shopping days.

It would inconvenience significantly fewer transit users if JEFFTRAN did not operate service on only the following six "major" holidays, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas.

It must be noted that there is an increased cost to operate service on days that employees are allowed off for the holiday.

4.1.1 Service Evaluation Conclusions

Based on the evaluation of JEFFTRAN services and the objectives of the project the following conclusions have been developed relative to potential service modifications:

1. Expand transit service hours. With service ending at 5:30 PM on weekdays many potential users are precluded from using transit if their trip purpose requires later travel. Several options will be considered:
 - Extending service further into the evening.
 - Establishing evening service on one or two days per week.
 - Establishing weekend service.
 - Establish a practice of operating service on all but the six major holidays.
2. Modify routes and schedules as necessary to relocate the transfer location from Jefferson and High to the intercity bus station at 620 West McCarty Street.
3. Modify current fixed routes to resolve the running time deficit, which results in late operation.
4. Modify current routes to achieve efficiencies and improve effectiveness. This will include consideration of alternative service delivery methods.
5. Evaluate new or expanded services to provide service in areas presently unserved.

4.2 Transit Needs Analysis

A Needs Analysis was performed to determine transit need in the portions of the Jefferson City metro area not presently served by transit. The study team developed a method to estimate demand in the portion of the study area without existing transit service, based on an analysis of actual transit demand (i.e., ridership) in the portion of the area now served by transit. The analysis focused on five areas: Holts Summit, Jefferson City north of the Missouri River, the Algoa area, the portion of the city west of Capital Mall called the West Area, and the portion of the city south of the Capital Mall route and west of the Southwest route called the Southwest Area.

Based on the analysis, Holts Summit and the West area exhibited some potential for transit, while the Algoa area, Jefferson City north of the River, and the Southwest area do not exhibit much potential for transit at the present time.

4.3 Flexible Route Transit Services

A family of transit services, generally referred to as flexible route services, has been used successfully in many cities to serve lower density markets. Flexible services include route deviation, point deviation, and general population demand response services. Unlike fixed route services that continuously operate over a designated route with a designated time schedule, these demand response services only go to a location at a time when an individual has scheduled a trip.

Fixed route services operate most efficiently in areas with population densities of more than 3,000 persons per square mile, whereas, flexible services can efficiently serve areas with lower densities and areas with incomplete street systems. Generally, when the demand falls below ten passengers per hour demand based services are likely to offer a more effective service than fixed route service.

The advantage of demand based services is that they can offer transit service that is more tailored to individual needs. These services can provide curb to curb service for many users, rather than requiring the individual to walk to a bus stop. The ability to operate in this manner allows flexible route service to provide more coverage in lower density areas. Unlike fixed route

service, flexible routes do not require the provision of complementary paratransit service under ADA regulations.

The disadvantage of demand based services are that they are more difficult to operate, requiring dispatchers to take trip requests and schedule drivers and vehicles for the demand pattern that may change from day to day. Thus, the total costs can be higher when the cost of the dispatcher is considered. Also, these services require transit passengers to become more proactive. In many cases a daily call to dispatch is required.

Flexible route services were evaluated for application in the Jefferson City area as described in later sections of this report.

4.4 Potential Transit Service Modifications

Various service modifications were developed to address the objectives and considerations identified for the study area.

4.4.1 Extend Transit Service Hours

Extending transit service hours was the most frequently heard suggestion from the public involvement program activities. Currently, service starts at about 7 AM and ends by 5:30 PM. This limits use of the transit system for employment purposes. Shifts that start before 7:30 AM or end after 5 PM are not served well. Transit users are therefore limited to a fairly tight timeframe.

Evening and weekend service is also an option that many people requested through the public involvement process.

Several different options were evaluated for extending service hours:

1. Expansion of the baseline service period by 1.5 hours, from 6:30 AM to 6:30 PM.
2. Establishment of evening service to 9 PM using several different approaches:
 - Extending the service period for all seven routes using the base period service pattern (60/30 minute service intervals) five days per week.
 - Extending the service period for select routes using the base period service pattern (60/30 minute service intervals) five days per week.
 - Extending the service period for all seven routes using the base period service pattern (60/30 minute service intervals) one day per week.
 - Establish evening service using demand response service five days per week.
3. Establish Saturday service from 7 AM to 5:30 PM using several different approaches:
 - Establishing Saturday service on all seven routes using the base period service pattern (60/30 minute service intervals).
 - Establishing Saturday service on select routes using the base period service pattern (60/30 minute service intervals).
 - Establish Saturday service using demand response service.

Each alternative was evaluated to determine its effect on ridership.

Any of these service expansion alternatives has significant implications for JEFFTRAN's operations and cost. JEFFTRAN is essentially a one-shift operation. Operations later in the day, or on weekends, will require realignment of employee shifts and likely the addition of manpower. The expansion affects not only drivers, but supervisory/dispatch personnel and maintenance personnel.

4.4.2 Modifications to Existing Routes

Three service alternatives were developed to address the travel time problems and other aspects of the current fixed routes. The alternatives were based on several planning inputs, including passenger counts, field work, discussions with the Steering Committee and established transfer patterns. All three of the alternatives assume the transfer point will be located at the intercity bus station on West McCarty Street. Two of the three alternatives maintain the current 30 minute headway. Only one alternative adds resources (vehicles – capital costs, and operating costs) to existing operations. Specific details regarding each alternative are documented in the Service Alternatives technical memorandum.

All of the alternatives have the transfer location at the intercity bus station and each addresses the running time problems. Each alternative offers different advantages and disadvantages. Alternative A uses existing resources and maintains a 30 minute headway, but unproductive segments of routes have to be eliminated to address running time problems and to allow routes on the east side of town to get to the relocated transfer center on time. Alternative B uses existing resources and utilizes a 40 minute headway which addresses running time issues and allows service to expanded areas. Under 40 minute headways there would be less service during the peak period but more service during the midday compared to existing conditions. Alternative C uses additional resources and operates on a 30 minute headway. The added resources allow service to expanded areas.

4.4.3 New Service Areas

The needs analysis discussed in Section 3 of this report evaluated the potential for transit in portions of the study area not presently served. The needs analysis looked at five areas:

- West along Route 50
- Jefferson City North of the Missouri River
- Holts Summit
- The Algoa area in the eastern part of the City
- Southwest generally along US 54 and Route 179

Of the five areas the West area and Holts Summit appear to have the most potential, however even these areas have characteristics that make for a difficult transit market. Population densities are well below the level that makes fixed route services viable, and, as expected income and auto ownership do not favor transit usage as per the Study Area Data Inventory technical memorandum. The state corrections facilities at Algoa and the airport just north of the Missouri River do not appear to offer much of a transit market and neither appears to have a need for transit. The Southwest area is expected to develop, but currently does not appear to have a need for transit.

There are generally three types of services that can serve these types of areas:

1. Flexible Route service anchored by a significant traffic generator and tied into the larger system
2. Express service designed for central area employment trips
3. Paratransit service for individuals with mobility limitations

Alternatives were developed for serving each of the potential areas.

4.4.4 Other Potential Service Modifications

A number of other service improvement possibilities were evaluated including providing increased service levels on existing routes, substituting fixed route service with flexible routes, and implementation of a downtown area circulator route (Downtown Circulator #2). Since riders are generally satisfied with existing service levels and increased frequency to 15 minute intervals would nearly double the cost, increased frequency was not considered a practical option. Since fixed routes do not perform well in areas with population densities lower than about 3,000 persons per square mile, a flexible route was developed to replace the Capital Mall route which serves in an area that fits this demographic characteristic. Capital Mall would be served by an extension of the Missouri Boulevard fixed route and the new flex route would operate in the general area, with connections to the fixed route at Capital Mall and Wal-Mart on West Stadium Boulevard. This type of service is estimated to increase operating costs by \$133,000 annually and attract an additional 40 daily passengers. Some interest has been expressed in a shuttle or circulator route that would connect various attractions and destinations in the downtown area including a new downtown development referred to as the Missouri State Prison (MSP) Redevelopment area. An intra downtown shuttle (Downtown Circulator #2) could link these areas potentially using distinctive vehicles, such as rubber-tired vintage trolleys. The service would increase operating costs by \$267,000 annually and attract 450 daily riders.

Table 12 summarizes all of the service expansion options.

Table 12: Summary of Alternatives

Potential Transit Service Modifications	Annual Operating Cost	Capital Cost	Estimated Ridership	Funding Requirement	Cost per New Rider	Priority	Comment
Service Period Extension Options							
Extend service by 1.5 hours/day	\$141,000	\$0	80	\$134,000	\$6.57	High	Highly recommended because the extension will make the service more attractive to choice riders.
Evening service (5 days to 9 PM)	\$155,000	\$0	80	\$148,000	\$7.25	Low	
Evening service (5 days to 9 PM) Select routes	\$128,000	\$0	70	\$122,000	\$6.83	Medium	Evening service should be an important priority for the near future because transit dependants have no transportation after 5:30 PM. The method used to provide the service should minimize cost.
Evening service (1 day to 9 PM)	\$30,000	\$0	40	\$29,000	\$14.22	Low	
Evening service (5 days to 9 PM) Demand response	\$66,000	\$0	60	\$61,000	\$3.99	Medium	
Saturday service - 7 routes/base service plan	\$112,000	\$0	400	\$105,000	\$5.15	Low	Saturday service should be an important priority for the near future because transit dependants have no transportation on weekends. The method used to provide the service should minimize cost.
Saturday service -select routes/base service plan	\$94,000	\$0	360	\$88,000	\$4.79	Medium	
Saturday service - demand response	\$73,000	\$0	280	\$68,000	\$4.76	Medium	
Modifications to Existing Routes							
Alternative A - 30 Minute Service	\$0	\$0	n/a	\$0	\$0.00	N/A	One of these options must be selected because of the impending move to the Greyhound station and to resolve the running time problem. Alternative A is recommended.
Alternative B - 40 Minute Service	\$0	\$0	n/a	\$0	\$0.00	N/A	
Alternative C - 30 Minute Service with Downtown Circulator #1	\$103,000	\$300,000	50	\$99,000	\$7.76	High	
Service Expansion - New Services							
West Area Flex Route	\$133,000	\$80,000	50	\$129,000	\$10.12	Low	Transit service in this low density area is not a priority at this time. An intergovernmental agreement would be required for funding.
West Area Express	\$56,000	\$150,000	40	\$53,000	\$5.20	Low	Not recommended unless there is a cooperative effort with the state to reduce auto commuting to the central part of the City. An intergovernmental agreement for funding would be required.
Holts Summit Flex Route	\$133,000	\$80,000	60	\$128,000	\$8.37	Low	Transit service in this low density area is not a priority at this time. An intergovernmental agreement would be required for funding.
Holts Summit Express	\$56,000	\$150,000	60	\$51,000	\$3.33	Low	Not recommended unless there is a cooperative effort with the state to reduce auto commuting to the central part of the City. An intergovernmental agreement for funding would be required.
Algoa Area Shuttle	\$133,000	\$150,000	30	\$130,000	\$16.99	Low	Not recommended unless there is a cooperative effort with the state to reduce auto commuting to the central part of the City. An intergovernmental agreement for funding would be required.
Southwest Area Flex Route	\$133,000	\$150,000	30	\$130,000	\$16.99	Low	Transit service in this low density area is not a priority at this time. Future growth, including the development of St. Mary's Hospital, would make transit service viable.
Other Service Modifications							
Improve Frequency to 15 min. Peak and 30 min. base	\$933,000	\$2,400,000	320	\$906,000	\$11.10	Low	Not recommended.
Downtown Circulator #2	\$267,000	\$750,000	480	\$267,000	\$2.18	Low	Viable as a future enhancement if it is part of downtown redevelopment.
Capital Mall Flex Route	\$133,000	\$150,000	40	\$130,000	\$12.75	Low	Should be considered as a future option to serve portions of the City currently unserved.

4.5 Paratransit Evaluation

Handi Wheels, JEFFTRAN's curb-to-curb paratransit service was evaluated as part of the study.

4.5.1 ADA Eligibility

A key part of the paratransit evaluation was to check for compliance with the ADA requirements. Although a complete ADA compliance evaluation is beyond the scope of the project and was not conducted, a cursory review of procedures was conducted. The review looked for compliance to requirements pertaining to service area, response time, fares, service levels, trip purpose, capacity constraints and eligibility determination. Based on the review, Handi Wheels is compliant with the pertinent provisions of the ADA complementary paratransit service requirements.

4.5.2 Driver Training and Certifications

Driver training is conducted on a regular basis; however Handi Wheels needs to be more consistent in documenting completion dates for their training modules, and placing verification in the working files of all employees.

4.5.3 Vehicle Inventory

The Handi Wheels fleet is in excellent condition. There are a total of eight vehicles in the Handi Wheels fleet. Vehicles are not older than seven years of age and have less than 160,000 miles. All vehicles are Ford model mini-buses with a modified chassis and wheelchair lift equipped with a standard seating capacity of 20 passengers. Table 13 is the Handi Wheels vehicle roster. JEFFTRAN conducts all maintenance services and has a preventative maintenance schedule for all vehicles.

Table 13: Handi Wheels Vehicle Roster

Manufacture	Model	Year
Ford-Eldorado	Aerotech - E Series	1998
Ford-Diamond	E-450	1999
Ford-Goshen	E-450	2005
Ford-Goshen	E-450	2004
Ford-Diamond	E-450	2001
Ford-Glaval	E-450	2002
Ford-Diamond	E-406	1999
Ford-Goshen	E-450	2005

A cursory safety check of each Handi Wheels vehicle was conducted. All vehicles were found to meet the safety guidelines.

Although the modified mini-buses allow grouping of clients and are well maintained it may be prudent to investigate the addition of sedans to the vehicle fleet for Handi Wheels. Sedans are more energy efficient, more personal and more maneuverable in some residential areas.

4.5.4 Handi Wheels User Information

Information on Handi Wheels services is very limited. There are two small paragraphs in the JEFFTRAN schedule book. Other forms include an application, request for verification of

disability, ADA determination form and an eligibility rejection letter. Although the available forms meet the existing need they are short of providing a clear picture of the services available. The Handi Wheels information in the schedule book should be revised, given greater emphasis and separated from the fixed route service data.

4.5.5 Trip Scheduling

A review of passenger pickup assignments was conducted to seek possible service efficiencies. Trip reservation hours are from 6:45 a.m. to 5:45 p.m., Monday through Friday. There is a telephone recording for trip requests to be made over the weekend. It can also be used to cancel trips. Handi Wheels is currently using a Data Base program that was designed by Richard Turner (Transit Division Director) in 1996 and has been adjusted periodically to serve the changing requirements in various paratransit programs and contracts. The program allows for relatively easy trip matching and verification.

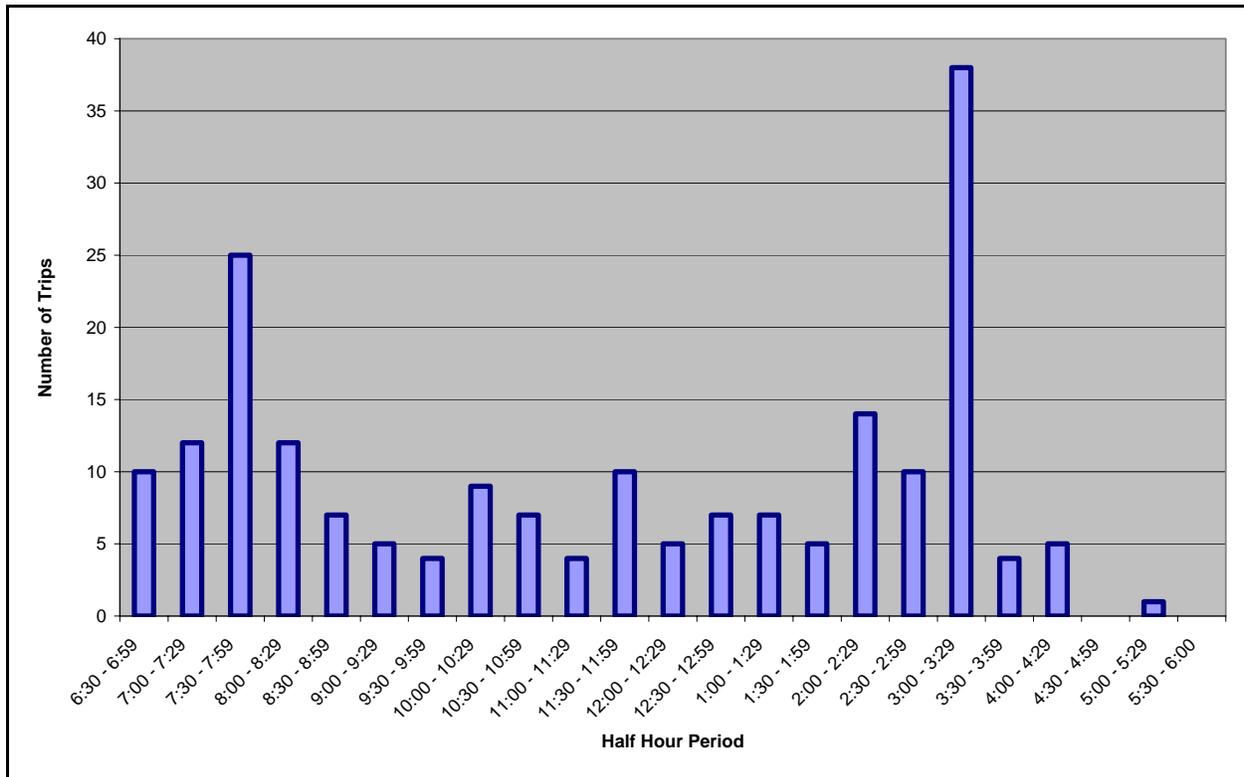
While monitoring the trip matching process it was quite evident that Handi Wheels dispatchers need to be using a hands free phone system. Dispatcher's productivity was slowed because they could not utilize the entire keyboard with both hands, because they were holding the phone with their off hand. Most difficulties occur when clients are making will call returns, because they stretch the system at inopportune times. At busy times several calls had to be put on hold longer than necessary. Additionally the dispatch office appears under staffed at times.

4.5.6 Demand Analysis

Handi Wheels currently carries about 200 to 220 passenger trips per day. Ridership has been increasing at about four percent annually, a rate greater than the overall rate for the JEFFTRAN system. If this trend continues Handi Wheels ridership will reach 270 daily trips within five years.

As with other forms of transportation, the demand for paratransit services among persons with disabilities varies during the course of the day. Figure 7 is a graph of Handi Wheels passenger pickups by 30-minute periods taken from a trip manifest for one day. Because Handi Wheels ridership patterns are repetitive, a summary for this one day is presumed to be reflective of the overall demand for Handi Wheels.

Figure 7: Daily Demand for Handi Wheels Trips



Handi Wheels operates six vehicles each day, with about 45.5 daily service hours. Thus, the paratransit system’s productivity is between 4.4 and 4.8 trips per hour. At times JEFFTRAN must deploy more than the scheduled service to meet the demand. Handi Wheels has a very high productivity rate compared with other similar paratransit services. The relatively compact service area, and the resultant short trips, are undoubtedly factors in this high productivity rate. However, it is also the case that Handi Wheels is operated in an efficient manner and demand exceeds the system capacity at times.

4.5.7 Other Paratransit Providers

Other paratransit providers operate in the Jefferson City area. Most are funded under the Non-Emergency Medical Transportation (NEMT) program contract with the Department of Social Services (Medicaid).

One of the provisions of the New Freedom program from the recently passed SAFETEA LU transportation bill is a requirement for a coordinated public transit – human services transportation plan. JEFFTRAN will be expected to work with these other paratransit providers in developing this coordinated transportation plan, probably through the aegis of the MPO. Guidance for this activity is not yet available.

Conclusions from the paratransit analysis are included in the final section of this report.

Section 5: Future Transit Demand and Mobility Needs

5.1 Future Transit Demand

JEFFTRAN Ridership Projections

As shown in Table 6 and Figure 2 in Section 2.3.2, JEFFTRAN ridership has been increasing over the past several years. This trend is expected to continue as the population of Jefferson City continues to grow, and as JEFFTRAN continues its current program of services at current levels.

Population projections for Jefferson City, JEFFTRAN's primary market, show an increase of about 1.2 percent annually through 2010. Based on these factors the Baseline Ridership projections are as shown in Table 14. Again, the Baseline Projections assume the continuation of current service levels.

Table 14: Baseline Projections of JEFFTRAN Ridership

Service Type	2006	2007	2008	2009	2010	2011
Fixed Route	820	830	840	850	860	870
Trippers	70	70	70	70	70	70
Shuttles	640	660	680	700	720	740
Subtotal	1,530	1,560	1,590	1,620	1,650	1,680
Handi Wheels	220	230	240	250	260	270
Total	1,750	1,790	1,830	1,870	1,910	1,950

Projections developed by TranSystems based on growth rates between 2000 and 2005.

These projections are based on a continuation of past trends along with consideration of population and demographic trends in the region.

5.2 Financial Analysis

5.2.1 Revenue Sources

It is common in the transit industry to separate operating and capital expenses. FTA has distinctly different programs and guidelines for capital and operating grant programs. Jefferson City funds operating and capital expenditures separately.

Operating Funding

The primary sources of revenue for JEFFTRAN operations, both fixed route and paratransit, are local funds from city general revenue and federal funding from FTA's 5307 formula program. Operating expenses for transit are funded from the City's general fund whereas capital projects are typically funded from the city's Capital Improvement Fund. FTA's 5307 program includes an apportionment amount based on a formula that takes into account the population and characteristics of the metropolitan area, as well as other factors.

JEFFTRAN receives operating funding for paratransit services through Medicaid reimbursements and the NEMT program that are used for local match. Payments from the State for the operation of the parking shuttles also represent a significant source of revenue for JEFFTRAN's operations.

Fares from passengers represent a relatively small portion of the total revenue compared with these external funding programs. Table 15 shows the total operating revenue from each of these sources from the 2006 JEFFTRAN budget.

Table 15: JEFFTRAN 2006 Budget Operating Revenue Sources

Funding Source	Amount	% of Total
<i>Grants & Revenues</i>		
FTA 5307	\$591,381	33%
State Operating	\$68,377	4%
Passenger Revenue	\$91,378	5%
State-Shuttle Route Fee	\$270,408	15%
<i>Total Grants & Revenue</i>	<i>\$1,021,544</i>	
<i>Local Match</i>		
City of Jefferson	\$514,421	29%
Medicaid	\$164,000	9%
Non Emergency Medical	\$29,000	2%
Cole County Special Servis	\$30,000	2%
Other operating revenues	<u>\$19,000</u>	1%
<i>Total Local Match</i>	<i>\$756,421</i>	
TOTAL	\$1,777,965	

Capital Funding

As mentioned previously, capital improvements are typically funded from the city's Capital Improvement Fund. These funds are used as local match for federal capital grants. Capital projects, such as bus acquisition and construction, can be funded through the FTA Section 5309 capital program. The 5309 program is discretionary; Jefferson City must compete for funding with other areas through a process referred to as congressional earmarking.

5.2.2 Future FTA Funding

With the recent passage of the new Federal Transportation Bill, known as SAFETEA-LU, the level of federal funding available to the city, through FY2009 is part of the legislation. Although the apportionments do not represent guaranteed amounts, there is a reasonable certainty that the level of funding will be made available.

Based on information provided by FTA, the total Section 5307 funds available to Jefferson City will increase each year of the program. In addition, the new transportation bill includes two new categories of formula funding, Job Access Reverse Commute (JARC) and New Freedom. Although the funding for these two programs is not great, these programs do represent additional funding for JEFFTRAN. JEFFTRAN does provide services that are eligible to be funded by these programs.

Table 16 shows the total federal funding available under FTA formula programs. The amounts for 2010 and 2011 are estimated based on the assumption that the FTA program will continue with a 4% annual increase.

Table 16: Apportionments and Estimates of FTA Formula Funding

Program	2006	2007	2008	2009	2010	2011
5307	\$520,146	\$541,111	\$586,814	\$624,170	\$649,137	\$675,102
JARC	\$34,381	\$35,876	\$38,865	\$40,983	\$42,622	\$44,327
New Freedom	<u>\$22,278</u>	<u>\$23,135</u>	<u>\$24,992</u>	<u>\$26,420</u>	<u>\$27,477</u>	<u>\$28,576</u>
Total	\$576,805	\$600,122	\$650,671	\$691,573	\$719,236	\$748,005

Note: The amounts shown for years 2010 and 2011 are estimated based on the assumption that these funding programs will increase at 4% annually.

Projections of FTA capital funding from the 5309 Bus and Bus Facilities program were not developed because this funding is allocated on a discretionary basis. For purposes of projecting future funding levels it is assumed that 5309 funds will be available at the levels needed for the JEFFTRAN capital program. It will be the responsibility of JEFFTRAN to request earmarks and make application for these funds.

5.2.3 Financial Projections - Operating Costs and Revenues

Baseline projections were prepared to provide information on the likely financial requirements to support JEFFTRAN operations. The projections are termed "Baseline" because they assume the continuation of JEFFTRAN services as they are currently. Procedures for developing the projections are detailed in the Financial Analysis technical report.

Table 17 shows the baseline financial projections for JEFFTRAN operations.

Table 17: Baseline Projections of JEFFTRAN Operating Costs and Revenues

	2006	2007	2008	2009	2010	2011
Operating Cost	\$1,778,179	\$1,832,000	\$1,887,000	\$1,944,000	\$2,002,000	\$2,062,000
Operating Revenue	<u>\$110,592</u>	<u>\$113,000</u>	<u>\$114,000</u>	<u>\$116,000</u>	<u>\$118,000</u>	<u>\$120,000</u>
Operating Deficit	\$1,667,587	\$1,719,000	\$1,773,000	\$1,828,000	\$1,884,000	\$1,942,000
Funding						
Federal Operating	\$591,381	\$713,000	\$740,000	\$773,000	\$822,000	\$745,000
State Operating	\$68,377	\$68,000	\$68,000	\$68,000	\$68,000	\$68,000
State Shuttle Contract	\$270,408	\$270,000	\$270,000	\$270,000	\$270,000	\$270,000
Paratransit Funding	\$223,000	\$223,000	\$223,000	\$223,000	\$223,000	\$223,000
City Funding	<u>\$514,421</u>	<u>\$445,000</u>	<u>\$472,000</u>	<u>\$494,000</u>	<u>\$501,000</u>	<u>\$636,000</u>
Total Funding	\$1,667,587	\$1,719,000	\$1,773,000	\$1,828,000	\$1,884,000	\$1,942,000

Key assumptions for the baseline projections are detailed in the Financial Analysis technical report.

5.2.4 Financial Projections for Service Increase Scenarios

An important part of the TDP is to project and evaluate the City's funding requirement to deploy additional services during the next five years. Three different scenarios were developed to illustrate the funding requirement for transit service improvements. These scenarios represent low, medium, and high investment in new transit services and facilities.

The high investment scenario assumes that the City will pursue service improvements identified during the TDP process in each of the next five years representing a 100 percent increase in service by 2011. It assumes that capital improvements will be made, including the development

of a new downtown transit center. It is also assumed that JEFFTRAN's services will be extended into neighboring communities. A base fare increase to 75 cents is assumed in June of 2006 and another increase to \$1.00 in July of 2009.

The medium transit investment scenario assumes service improvements representing a 50 percent increase by 2011 and assumes that JEFFTRAN services will be provided only within the corporate limits of Jefferson City. A somewhat scaled down version of the downtown transit center is assumed. The base fare is assumed to be 75 cents in June of 2006.

The low transit investment scenario assumes only minimal changes to service levels, an increase of 28 percent. Only capital improvements necessary to maintain the current level of service are assumed. It is assumed that the McCarty Street bus station will continue to serve as the transfer center. An increase in the base fare is assumed to 75 cents in June of 2006.

Additional details regarding the service improvements for each scenario are detailed in the Financial Analysis technical report.

Table 18 shows financial projections for the High Investment Scenario, a doubling of service over the five year period.

Table 18: Projections of JEFFTRAN Operating Costs and Revenues – High Investment

	2006	2007	2008	2009	2010	2011
Operating Cost	\$1,863,000	\$2,141,000	\$2,402,000	\$2,696,000	\$3,005,000	\$3,255,000
Operating Revenue	<u>\$138,000</u>	<u>\$163,000</u>	<u>\$171,000</u>	<u>\$191,000</u>	<u>\$204,000</u>	<u>\$209,000</u>
Operating Deficit	\$1,725,000	\$1,978,000	\$2,231,000	\$2,505,000	\$2,801,000	\$3,046,000
Funding						
Federal Operating	\$614,000	\$691,000	\$741,000	\$773,000	\$823,000	\$745,000
State Operating	\$68,000	\$68,000	\$68,000	\$68,000	\$68,000	\$68,000
State Shuttle Contract	\$270,000	\$270,000	\$270,000	\$270,000	\$270,000	\$270,000
Paratransit Funding	\$223,000	\$223,000	\$223,000	\$223,000	\$223,000	\$223,000
City Funding	<u>\$550,000</u>	<u>\$726,000</u>	<u>\$929,000</u>	<u>\$1,171,000</u>	<u>\$1,417,000</u>	<u>\$1,740,000</u>
Total Funding	\$1,725,000	\$1,978,000	\$2,231,000	\$2,505,000	\$2,801,000	\$3,046,000

Because funding from other sources, particularly FTA, is essentially fixed, all of the additional cost would have to be covered by additional local funding from the City. Thus, the City's share of the funding would increase to \$1,740,000 by 2011. This is an increase of over three times the budgeted City funding for 2006.

Table 19 shows the projections for the Medium Investment Scenario, a service increase of 50 percent over five years. In this case the City's share of the funding would increase to just over \$1 million by 2011.

Table 19: Projections of JEFFTRAN Operating Costs and Revenues – Medium Investment

	2006	2007	2008	2009	2010	2011
Operating Cost	\$1,863,000	\$2,091,000	\$2,194,000	\$2,301,000	\$2,447,000	\$2,599,000
Operating Revenue	\$138,000	\$160,000	\$164,000	\$168,000	\$172,000	\$176,000
Operating Deficit	\$1,725,000	\$1,931,000	\$2,030,000	\$2,133,000	\$2,275,000	\$2,423,000
Funding						
Federal Operating	\$614,000	\$691,000	\$741,000	\$773,000	\$823,000	\$745,000
State Operating	\$68,000	\$68,000	\$68,000	\$68,000	\$68,000	\$68,000
State Shuttle Contract	\$270,000	\$270,000	\$270,000	\$270,000	\$270,000	\$270,000
Paratransit Funding	\$223,000	\$223,000	\$223,000	\$223,000	\$223,000	\$223,000
City Funding	\$550,000	\$679,000	\$728,000	\$799,000	\$891,000	\$1,117,000
Total Funding	\$1,725,000	\$1,931,000	\$2,030,000	\$2,133,000	\$2,275,000	\$2,423,000

Table 20 shows the projections for the Low Investment Scenario which would increase service by 28 percent. This scenario would require City funding to increase to \$880,000, an increase of about 40 percent compared with the Baseline projections.

Table 20: Projections of JEFFTRAN Operating Costs and Revenues – Low Investment

	2006	2007	2008	2009	2010	2011
Operating Cost	\$1,925,000	\$2,091,000	\$2,154,000	\$2,219,000	\$2,285,000	\$2,353,000
Operating Revenue	\$138,000	\$160,000	\$161,000	\$163,000	\$165,000	\$167,000
Operating Deficit	\$1,787,000	\$1,931,000	\$1,993,000	\$2,056,000	\$2,120,000	\$2,186,000
Funding						
Federal Operating	\$614,000	\$691,000	\$741,000	\$773,000	\$823,000	\$745,000
State Operating	\$68,000	\$68,000	\$68,000	\$68,000	\$68,000	\$68,000
State Shuttle Contract	\$270,000	\$270,000	\$270,000	\$270,000	\$270,000	\$270,000
Paratransit Funding	\$223,000	\$223,000	\$223,000	\$223,000	\$223,000	\$223,000
City Funding	\$612,000	\$679,000	\$691,000	\$722,000	\$736,000	\$880,000
Total Funding	\$1,787,000	\$1,931,000	\$1,993,000	\$2,056,000	\$2,120,000	\$2,186,000

The conclusion is that an increase in City funding of about 24% by 2011 is necessary to just maintain the current level of service. The three service improvement scenarios require funding increases of between \$244,000 and \$1.1 million in 2011 compared with the Baseline projection.

5.3 Facilities and Equipment Plan

5.3.1 Facilities Evaluation

The buildings located at the Charles E. Robinson Transit Maintenance Facility were evaluated and an opinion of the condition of the facilities and recommendations for improvements were presented.

The evaluation concluded that the combination of buildings at the Charles E. Robinson Transit Maintenance Facility is generally well organized on the site. It was observed that the queue area for vehicles waiting to go through the vehicle wash building is constrained by the adjacent fueling facility. This is a less than ideal condition but was only a rare occurrence and had little impact to the fueling operation. The basic structure is expected to serve well for many years to come if sufficient and ongoing maintenance is provided.

The buildings are approximately 20 years old and appear to have been well maintained. However the buildings are at an age where the exterior envelope should receive a significant program of preventative maintenance and repair to prevent premature building decay including a water tightness check at roof penetrations and transitions, major joints, flashings, louvers, window and door frames. HVAC systems should be inspected and replacement systems planned and budgeted when needed.

As refurbishing plans are made, it should be noted that the addition of modern, energy efficient HVAC, lighting, windows and insulation systems often have quick pay-back periods due to the rise in energy costs. Upgrades in replacement systems should be accelerated where energy efficiencies provide lower operational costs over the life of the system.

The following recommendations for improvement are offered:

- The Transit Facility site is fully developed with limited opportunity for expansion or property acquisition. Long range planning should address how anticipated growth in Transit and City activities can be accommodated.
- The shared use of maintenance, fueling and wash facilities increases traffic through the Transit facility site. Facilities to service and maintain Transit and City Fleets will need to expand as the fleets grow. Options to increase capacity include expanding existing facilities, creating new facilities and separating services of specialized vehicles to specific sites.
- The primary vehicle access into the site is from Cherry Street at the north end of the property. This entrance is remote from the more populated south end of the site where security could be provided more effectively. Site security can be improved by the use of a motor operated gate entry into the site and the addition of surveillance cameras if needed.
- The central paved area between the Maintenance shops, Bus Garage, Wash Bay and Fuel Facility is congested at peak traffic periods because there is no secondary path in and out of the area. Scheduling to reduce peak traffic volumes should be established to reduce the chance of accidents.
- The property has limited area available for yard storage of out of season equipment, bus shelters and bulk material storage. Provision for expansion of yard storage on city property on the east side of Miller Street should be investigated.
- The addition of updated electronic fare box processing may affect how buses are routed through the check-in process at end of shifts. The location of new fare box collection system and check-in process should be studied carefully to maximize driver, hostler and security issues.
- The Maintenance facility has no battery room. The creation of a specialized room for battery maintenance should be considered for improved service and safety.

- Archived records are stored off site due to space constraints. Additional area for record storage can be established on site. The translation of records into electronic form may reduce storage needs.

5.3.2 Bus Replacement Program

The timely replacement of vehicles in the fleet is one of the fundamental programs necessary for a successful transit system. Buses are a transit system's most valuable asset because good customer service is dependant on the condition of the fleet. The total cost of the fleet is usually the most expensive asset, even more so than the facilities that house the operation. A fleet that is aging presents a poor image to the system's customers and the general public. Vehicle maintenance expenses usually increase as the age of a bus advances.

However, the cost of replacing buses is high, and requires large outlays of cash. Most transit systems take advantage of federal funding through FTA's capital grant programs to help finance bus replacement. FTA funding can be used to finance up to 80% of the total purchase price. The use of FTA funding requires advance planning and coordination with other agencies to ensure the project is eligible and the funds are available, and received in a timely manner.

FTA rates vehicles for replacement purposes based on the vehicles expected useful life. These policies are meant to ensure that buses purchased or leased with Federal funds are maintained and remain in transit use for a minimum normal service life. Minimum normal service lives for buses and vans are shown below.

- Large, heavy-duty transit buses (approximately 35'-40', and articulated buses): at least 12 years of service or an accumulation of at least 500,000 miles.
- Medium-size, heavy-duty transit buses (approximately 30'): 10 years or 350,000 miles.
- Medium-size, medium-duty transit buses (approximately 30'): 7 years or 200,000 miles.
- Medium-size, light-duty transit buses (approximately 25- 35'): 5 years or 150,000 miles.
- Other light-duty vehicles such as small buses and regular and specialized vans: 4 years or 100,000 miles.

As stated previously, JEFFTRAN has a revenue fleet of 26 vehicles and in 2005 JEFFTRAN acquired five new heavy-duty transit coaches manufactured by the Gillig Corporation. These new buses are the first heavy-duty buses purchased in Jefferson City in decades. Table 21 shows detail on the JEFFTRAN vehicle fleet.

Table 21: JEFFTRAN Revenue Vehicle Fleet Roster

Year of Vehicle	# of Pass.	Manufacturer	Vehicle Type	Service	Lic #	Purchase Date	Age
1999	29	International	Transit Coach	Fixed Route	607	6/25/1999	8
1999	29	International	Transit Coach	Fixed Route	608	6/25/1999	8
1999	29	International	Transit Coach	Fixed Route	609	7/16/1999	8
2003	29	Freightliner	Transit Coach	Fixed Route	611	7/15/2003	2
2003	29	Freightliner	Transit Coach	Fixed Route	612	7/15/2003	2
2003	29	Freightliner	Transit Coach	Fixed Route	614	7/15/2003	2
2005	32	Gillig	Transit Coach	Fixed Route	630	7/5/2005	0
2005	32	Gillig	Transit Coach	Fixed Route	634	7/6/2005	0
2005	32	Gillig	Transit Coach	Fixed Route	631	7/7/2005	0
2005	32	Gillig	Transit Coach	Fixed Route	632	7/8/2005	0
2005	32	Gillig	Transit Coach	Fixed Route	633	7/8/2005	0
2002	29	International	Transit Coach	Shuttle	610	4/26/2003	3
2002	29	International	Transit Coach	Shuttle	613	4/26/2003	3
2004	23	Freightliner	Transit Coach	Shuttle	619	11/2/2004	1
2004	23	Freightliner	Transit Coach	Shuttle	618	11/2/2004	1
2004	23	Freightliner	Transit Coach	Shuttle	617	11/2/2004	1
2004	23	Freightliner	Transit Coach	Shuttle	616	11/2/2004	1
2004	23	Freightliner	Transit Coach	Shuttle	615	11/2/2004	1
1998	20	Ford Eldorado	Van /Mini Bus	Handi Wheels	620	10/26/1998	7
1999	20	Ford / Diamond	Van /Mini Bus	Handi Wheels	626	9/29/1999	6
1999	20	Ford / Diamond	Van /Mini Bus	Handi Wheels	621	1/21/2004	6
2001	20	Ford / Diamond	Van /Mini Bus	Handi Wheels	624	1/16/2001	4
2002	20	Ford / Glaval	Van /Mini Bus	Handi Wheels	625	7/18/2002	3
2004	20	Ford / Goshen	Van /Mini Bus	Handi Wheels	623	12/30/2004	1
2005	20	Ford / Goshen	Van /Mini Bus	Handi Wheels	622	5/6/2005	0
2005	20	Ford / Goshen	Van /Mini Bus	Handi Wheels	627	5/7/2005	0

JEFFTRAN expects to replace the three 1999 Internationals in 2006. These buses are beyond their rated useful life of seven years. These lighter duty buses will be replaced with heavy duty transit coaches rated as 12 year buses. The JEFFTRAN manager would like to replace the remaining medium-duty fixed route buses with heavy-duty transit coaches when their useful life allows replacement. There are advantages to JEFFTRAN using all heavy-duty coaches for the fixed route, tripper and shuttle operation:

- The heavy-duty buses with low floor technology provide superior customer service.
- Heavy-duty buses usually require less maintenance than lighter duty buses.
- Having a standard fleet of buses reduces parts inventory and simplifies maintenance.
- Having a standard fleet of buses makes it easier to rotate buses to equalize mileage.

The service operated by JEFFTRAN warrants heavy-duty transit coaches from the standpoint of passenger loadings and volumes and operating conditions. The heavy-duty buses have a higher purchase price, thus available funding may be a determining factor.

In 2007, JEFFTRAN will need to add one heavy duty bus for the new downtown shuttle (Downtown Circulator #1) route.

Paratransit vehicles operated for the Handi Wheels service would continue to be light duty buses with a five year rated life.

Table 22 shows the bus replacement schedule assuming that the fixed route and shuttle vehicles are replaced with heavy-duty transit coaches.

Table 22: JEFFTRAN Revenue Vehicle Replacement Program

Year	Units	Type	Total Cost	FTA Share	Local
2006	3	Transit Coaches	\$885,000	\$708,000	\$177,000
	4	Paratransit Vehicle	<u>\$224,000</u>	<u>\$179,200</u>	<u>\$44,800</u>
			\$1,109,000	\$887,200	\$221,800
2007	1	Paratransit Vehicle	\$58,000	\$46,400	\$11,600
	1	Transit Coach	<u>\$307,000</u>	<u>\$245,600</u>	<u>\$61,400</u>
			\$365,000	\$292,000	\$73,000
2009	2	Transit Coach	\$664,000	\$531,200	\$132,800
	1	Paratransit Vehicle	<u>\$64,000</u>	<u>\$51,200</u>	<u>\$12,800</u>
			\$728,000	\$582,400	\$145,600
2010	3	Transit Coaches	\$1,038,000	\$830,400	\$207,600
	2	Paratransit Vehicle	<u>\$132,000</u>	<u>\$105,600</u>	<u>\$26,400</u>
			\$1,170,000	\$936,000	\$234,000
2011	5	Transit Coaches	\$1,770,000	\$1,416,000	\$354,000
	4	Paratransit Vehicle	<u>\$272,000</u>	<u>\$217,600</u>	<u>\$54,400</u>
			\$2,042,000	\$1,633,600	\$408,400

Besides the new bus for the Downtown Circulator #1 route, other buses shown in the table are for replacement of buses used to provide existing service.

5.4 Driver and Supervisory Staffing

As part of the TDP staffing levels at JEFFTRAN were reviewed. Generally the review found that the operation is understaffed and additional positions are justified to meet current levels of service and service hours.

5.4.1 Drivers

Determining the optimal staffing levels for transit drivers is an important factor in controlling labor costs in transit operations. A frequent mistake is to manage based on a total number of drivers. This method does not fully account for all the needs. The result is increased overtime and other premium pay. A transit driver's position must be filled every day, for every trip. The work cannot be deferred. Absences, both scheduled and unscheduled, should be accounted for in the process of manpower planning.

Driver staffing at JEFFTRAN does not account for scheduled absences for vacations and holidays, thus overtime has to be used. In addition, absences for illness and personal leave add to the problem. Overtime, paid at 1.5 times the straight labor rate, is almost always more expensive than filling the position with an extra employee, when the overtime is regular and predictable. In addition, extensive overtime can lead to low employee morale and even more absenteeism.

Current JEFFTRAN service levels require about 26 drivers. This level of staffing will likely result in a need for the equivalent of two additional positions to cover scheduled and unscheduled overtime.

5.4.2 Dispatchers and Supervisors

Like the situation with drivers, the level of supervisory and dispatcher staffing does not account for scheduled absences. Thus when one of the supervisors is on vacation, a driver is temporarily “promoted” into the vacancy. This exacerbates the problem with driver staffing. Moreover, supervisors are frequently required to fill in for open driver shifts, or otherwise drive when demands require. This leaves the operation without any supervision at times. While occasionally having supervisors fill in as drivers in “emergencies” is acceptable, it is extremely poor practice if supervisors are frequently taken away from their primary assignments. JEFFTRAN staffing should be increased by one supervisor and one dispatcher.

5.4.3 Conclusions

Current Service Levels. The conclusion is that JEFFTRAN staffing should be increased by one supervisor, one dispatcher and two drivers to cover current levels of service and hours of operation. This is based on the evaluation of staffing needs. These additions should not result in significantly higher costs because the new positions would reduce overtime in the division, thus offsetting the cost of the new positions.

Service Expansion. Another conclusion is that staffing will have to be increased if the recommendation to increase service and expand service hours is accepted. The addition of the downtown shuttle as part of the reconfiguration of routes for the relocation of the transfer center requires one additional driver position. The expansion of weekday service hours will require the equivalent of at least one additional driver.

5.5 Implementation Plan

This section presents a checklist of major steps in implementing the recommendations from the Transit Development Plan. The TDP recommends several changes to go into effect in or about June 2006. The recommendations include reconfiguring the existing transit routes to move the transfer center to the intercity bus station at 620 West McCarty, extending the span of service by starting service approximately 30 minutes earlier in the morning and ending service approximately one hour later in the evening, and implementing a fare increase from fifty cents to seventy-five cents. It is recommended that all three changes be made simultaneously, so that users will be able to see an increase in service along with the higher cost for using the service. Separate implementation checklists are provided below for the transfer center move, the service modifications and the fare increase. A key factor in the timing is the completion of the McCarty bus station improvements. In addition, FTA requires a public hearing for implementing a fare increase. This needs to be completed beforehand in order to implement the recommendations simultaneously.

The main components of the checklist involve informing passengers, drivers and others about each of the recommended changes. It is best to start that process as soon as the routes, schedules, etc. are verified and finalized. Using the mass media, public forums, stakeholders, and drivers are good communication outlets that are recommended in the checklist. Table 23 shows the major steps and timing for moving the transfer center and implementing the service modifications. Table 24 shows the required steps for implementing the fare increase.

Table 23: Checklist for Transfer Center Move and Transit Service Modifications

Weeks Before Start	Category	Activity
24	<i>Operations</i>	Verify schedule times and time points.
22	<i>Operations</i>	Begin bidding process for bus station improvements.
21	<i>Operations</i>	Test drive modified routes; make sure turns can be made and schedule can be met. Make sure no vehicle clearance issues. Obtain “turn-by-turn” directions.
17	<i>Transit Staff</i>	Inform and educate staff.
16	<i>Operations</i>	Initiate contract for bus station improvements.
16	<i>Operations</i>	Determine how bus stop signs to be installed and by who and when.
16	<i>Transit Staff</i>	Meet with drivers on the routes changes.
14	<i>Operations</i>	Determine total number and location of bus stop signs needed.
11	<i>Operations</i>	Order and install bus stop signs.
10	<i>Public Information</i>	Hold Public Forum before service change and give chance for riders to ask questions about transfer center move, route changes and fare increase. FTA guidelines require a public hearing in advance of a fare increase or a significant service change.
9	<i>Public Information</i>	Develop new public schedules/maps.
8	<i>Public Information</i>	Hold press conference on changes including transfer center move, route changes and fare increase.
8	<i>Transit Staff</i>	Drive groups of drivers on routes with staff.
6	<i>Public Information</i>	Reproduce new schedules/maps.
6	<i>Buses</i>	New designation signage for new downtown shuttle (Downtown Circulator #1) route and new destinations on existing routes.
6	<i>Public Information</i>	Work with key social service agencies and other important destinations to publicize transfer center move, route changes and fare increase. Staff may visit with agencies and clients and hold information session.
4	<i>Operations</i>	Complete site and building improvements at McCarty Street bus station.
4	<i>Transit Staff</i>	Determine which drivers will drive which routes.
3	<i>Public Information</i>	Distribute schedules and maps to Jefferson & High transit center, City Hall, library, social service agencies, key destinations (Wal-Mart, Target and Capital Mall) as well as web site.
3	<i>Transit Staff</i>	Provide driver schedule for assigned route(s).
2	<i>Public Information</i>	Prepare on-board announcements—post on bus and distribute.
3 to 4 days	<i>Public Information</i>	Ask drivers to let riders know about changes.
3 days	<i>Public Information</i>	Prepare press release one-day prior to new service (release on Friday before service starts if service starts on a Monday).
2 days	<i>Transit Staff</i>	Test run modified system on weekend; one or two round trips.
0	<i>Public Information</i>	First day (assume a Monday)—post staff at bus station to provide and distribute information.

Table 24: Checklist of Fare Increase Implementation

Weeks Before Start	Category	Activity
17	<i>Transit Staff</i>	Inform and educate staff.
10	<i>Public Information</i>	Hold Public Hearing required by FTA for fare and/or major route change. This can be in conjunction with Public Forum before service change to give chance for riders to ask questions about transfer center move, route changes and fare increase.
8	<i>Public Information</i>	Hold press conference on changes including transfer center move, route changes and fare increase.
6	<i>Public Information</i>	Work with key social service agencies and other important destinations to publicize transfer center move, route changes and fare increase. Staff may visit with agencies and clients and hold information session.
2	<i>Public Information</i>	Prepare on-board announcements—post on bus and distribute.
3 to 4 days	<i>Public Information</i>	Ask drivers to let riders know about changes.
3 days	<i>Public Information</i>	Prepare press release one-day prior to new service (release on Friday before service starts if service starts on a Monday).
0	<i>Public Information</i>	First day (assume a Monday)—post staff at bus station to provide and distribute information.

5.6 Marketing Plan

Currently, JEFFTRAN has no formal marketing program. Information provided to the public is fairly basic. A rider's guide is available at City offices, JEFFTRAN's offices, major stores, hotels and State office buildings. This information is also available on the City's web site including: bus schedules, paratransit information, hours of operation, fares, transfer point description and map, announcements and phone numbers and times for asking questions. Beyond printed and web based information, little other material is provided to riders. Further, there were no "special event" marketing efforts and no advertising. Implicitly, JEFFTRAN's marketing strategy was to provide basic information on system use.

A marketing plan was developed to provide JEFFTRAN with strategies and tactics to develop a dynamic, yet cost-efficient marketing program. The strategies were associated with the goals or objectives they help to address. The plan stresses the importance and identifies ways to communicate regarding the recommended fare increase to employees, riders, local elected officials and the general public. The plan also presents ways to promote JEFFTRAN to riders, institutions, internal/funding sources and the general public. The JEFFTRAN Marketing Plan technical memorandum contains the complete descriptions of the methods summarized in this section.

Key recommendations from the marketing plan include: revising the public information to provide individual route schedules and one system map; developing an employer subsidy program, a university pass program and a summer youth pass; conducting annual open houses and preparing an annual report; airing public service announcements; developing community partnerships for key community events; and hiring a part time staff person to develop and implement the marketing strategies. The annual cost to implement all of the strategies is approximately \$52,000.

5.7 System Monitoring

Monitoring system performance is crucial to make sure the recommendations of the TDP, once implemented, are on target with expectations. Many of the measures used to evaluate service can also be used for ongoing monitoring of the overall system.

5.7.1 Performance Measures

An important factor in determining which measures to use is the ease in which necessary data is available and can be collected and utilized. Data relating to cost, ridership, revenue, and service levels are typically used by most systems.

There are literally dozens of indicators and standards that transit operators use to measure their performance. Perhaps the most important are the following:

Table 25: Typical Performance Indicators

Indicator	Level of Calculation	Suggested Standard
Riders Per Revenue Hour - <i>measures the productivity of the service.</i>	Route, System	Benchmark against system average. Routes below 10 percent of average should receive attention.
Schedule Adherence - <i>on-time performance.</i>	Route, System	At least 90 percent of trips should be no more than one minute early and no more than five minutes late.
Accidents per 100,000 miles - <i>system safety.</i>	System	Benchmark against JEFFTRAN's historic average.
Customer complaints per 100,000 passengers - <i>system quality.</i>	System, driver	Benchmark against JEFFTRAN's historic average.
Miles Between Service Interruptions (Mechanical related) - <i>measures vehicle maintenance success.</i>	System	Benchmark against JEFFTRAN's historic average.
Farebox Recovery - <i>ratio of fares collected (including pass and ticket sales) and operating costs.</i>	Route, System	Benchmark against JEFFTRAN's historic average.
Subsidy per Rider - <i>measures service efficiency.</i>	Route, System	Benchmark against JEFFTRAN's historic average.

How to Collect and Calculate

The following describes how the above factors can be gathered and reported. All factors should be reported monthly with route level statistics reported quarterly.

Ridership: JEFFTRAN can collect this data in special surveys conducted quarterly. In between surveys, JEFFTRAN can estimate route level ridership using average fares. As the term suggests, average fare is amount of revenue collected divided by the number of riders. If JEFFTRAN collects revenue information by route, the quarterly survey information can be used to calculate a route level average fare. In between surveys, the average fare can be divided into the revenue with the result being ridership. These calculations and reports can be easily set-up on an electronic spreadsheet.

Revenue Hours: can be obtained from operating schedules.

Revenue Miles: can also be derived from operating schedules.

Accidents: should be available from reports maintained by JEFFTRAN.

Complaints: JEFFTRAN now receives these. A logging system can easily be established indicating who called, when, the nature of the complaint, and driver.

Service Interruptions: service interruptions by type of occurrence can be tracked in a maintenance record keeping system.

Farebox Recovery: is the ratio between fares collected and operating costs. JEFFTRAN collects both pieces of information at the system level. Fare revenue is currently tracked by route. A cost allocation formula would be needed to assign costs to individual routes, thus calculating the denominator portion of the recovery ratio. The simplest way to assign route costs would be to determine the system cost per revenue hour. This would be done after each month's financial statement is produced. The monthly operating cost would be divided by the scheduled revenue hours for the month. The results would form the recovery ratio.

Subsidy: is the difference between the cost and the farebox revenue. A cost of \$500 and revenue of \$50 would calculate to a subsidy of \$450. The number of riders is divided into this difference, yielding the average subsidy per rider. Data at the system and route levels exist to support this analysis.

Handi Wheels Service Performance

Handi Wheels service performance can be measured with these factors:

On-time performance: Handi Wheels already collects data for on-time performance. This measure can continue to be monitored to assess Handi Wheels performance.

No Shows and Late Cancellations: are where clients are booked for travel but either cancel their trip at the last minute or simply fail to board the vehicle, effectively canceling the trip when the vehicle arrives. These forms of trip cancellation affect both the quality and productivity of the service. Stopping at a pick-up location that results in a "no show" inconveniences people already on the vehicle or potentially delays picking up the next person. It also affects productivity as a cancellation leaves a gap in time in the vehicle's schedule. During this time the vehicle is unproductive. As discussed above, no shows and late cancellations are a problem. However, reduction in these is a policy enforcement issue and not so much a function of operating the service.

Long Ride Times: typically riders should spend no more than 30 minutes on the bus for their trips. JEFFTRAN can review data on the average ride time for a Handi Wheels passenger, and the percentage of passengers that have a ride time of 30 or less minutes. If long ride times appear to be an issue, JEFFTRAN can consider a maximum ride time policy to improve performance.

Driver/Reservationist Courtesy: another facet of service quality is how the operating staff treats customers. This includes the drivers as well as the people who take trip reservations. Implementing data keeping procedures for complaints recording complaints can allow JEFFTRAN to monitor performance in this area.

Vehicle Breakdowns/Service Interruptions: measures how often the vehicle has a mechanic problem resulting in missed service. By keeping a history of breakdowns JEFFTRAN can track performance.

Accidents/Safety: is an obvious indicator of service quality. By keeping an accident history this performance measure can be monitored.

5.8 Long Range Transit Planning

Most of the work of the TDP was focused on short range matters, and even immediate issues. Financial projections were made for a five-year period, and transit improvement plans also were for the five-year period.

However, the TDP also includes an initial look at transit needs and opportunities over a twenty-five year period.

Although the Jefferson City metropolitan area is expected to grow during the five-year period, it is not likely to change the form of the transit system that is needed to serve the community. It is projected that a bus transit system will be adequate to meet the future needs. How the transit system changes to meet increasing needs of the community is important.

The following is an outline for a vision of improved transit service for the Jefferson City metropolitan area.

5.8.1 Future Transit Service Levels

The TDP concluded that current service levels employing 30-minute peak and 60-minute base headways are sufficient to meet the short-term needs of the community. For the longer term, increased frequencies should be considered. The objective should be to improve service to 15-minute frequency on the transit system's core routes with 30-minute mid day service. The improvements should be made based on each route's performance.

The TDP recommended consideration of Saturday service, and weekday evening service. In the long-term, the goal should be to expand service to seven days per week, with evening service at least until 10:00 PM on core routes. Determination of which routes should be operated on weekends and evenings should be made based on route performance and an assessment of the routes that serve transit dependent populations.

5.8.2 Geographic Expansion and Transit System Structure

During the next twenty-five years significant growth in population is expected to occur outside the core area of Jefferson City, and even outside the City's corporate limits. In response to this trend, the transit system must be prepared to expand outward into these newly developed areas. The TDP recommended that alternative service types, such as flex route services, are better able to serve the kinds of development that is likely to occur in the outskirts of the community.

A change in the institutional structure of the transit system should be considered as the transit system grows beyond city limits. A transit authority structure with a separate and independent governing board may be in a better position to provide services across community boundaries. It should be noted, however, that inter jurisdictional services can be provided by JEFFTRAN with it's current structure although some changes to operating policies and practices, along with

council authority are required. The community should explore the third approach to providing inter jurisdictional transit services. One possibility is to use the Metropolitan Planning Organization (MPO) as a forum for this evaluation. The MPO has been useful in these matters in other metropolitan areas.

5.8.3 Operating Facilities

JEFFTRAN's current operating facilities are adequate for the current operation. However, the facility's capacity is limited and there are no opportunities for expansion at the current site. The storage capacity is literally being used to the fullest extent. Significant expansion in the vehicle fleet, beyond today's fleet size, will require additional facilities. Plus, any plan for significantly expanded transit service must account for the time and the cost of expanding operating facilities. JEFFTRAN should be able to accommodate a very small increase in fleet size, but vehicle storage must be addressed.

5.8.4 Transit Land Use and Development Planning

As the community grows, and as older parts of the city are redeveloped, provisions for transit should be included. The city, and adjacent communities, should consider practices to encourage development in ways that will make the development more conducive to service by transit. There are a number of models to follow for accomplishing these inducements towards "transit friendly" development. Land use and development decisions in the core of Jefferson City should be required to account for transit. For example, the Missouri State Prison development in the downtown area can become an important area for transit service. Factors such as densities, building orientation, development patterns, street patterns, provisions for bus stops and shelters, and transit centers should all be considered in these types of developments. Likewise, organizations that provide services to transit dependent or mobility limited residents should be located along existing transit routes with easy access to bus stops.

5.8.5 Community Partnerships

Successful transit cannot be obtained solely by the transit agency. Rather, organizations that require or use transit services must be prepared to cooperate and even partner to advance the position of transit in the community. JEFFTRAN should pursue partnerships with major employers, particularly the State of Missouri, to develop transit incentive programs such as employer sponsored promotions and employer subsidized bus passes.

5.8.6 Transit Funding

JEFFTRAN's operations are funded from the city's general revenue. Capital expenditures are funded by a ½ cent sales tax. It is generally accepted that a dedicated funding source for transit is an important ingredient to a successful expanded transit system. The potential for a dedicated revenue source for transit in Jefferson City should be explored.

Section 6: Conclusion and Recommendations

This section presents a summary of conclusions and recommendations from the Transit Development Plan Project. The recommendations are grouped by category.

6.1 Transit Organizational Structure and Governance

JEFFTRAN is a division under the Planning and Transportation Section of the City's Department of Community Development and is accountable to the City Council.

There was some discussion of revising the organizational structure to a transit authority, however the current structure works well and should be able to meet projected needs well into the future.

Recommendations are:

1. **Maintain the current organizational structure but have JEFFTRAN report to the City Council through the Council's Public Works and Planning Committee.** This is a more logical reporting assignment than the current assignment to the Transportation and Traffic Committee. The Transportation and Traffic Committee is not a City Council committee.
2. **Involve User Groups.** Involving User Groups is accepted as an important part of the decision making process for transit. It is recommended that JEFFTRAN utilize ad hoc user group participation, as was done for the Transit Development Plan. There does not appear to be a need for a standing committee or working group for this purpose.

6.2 Fixed Route Transit Service Improvements

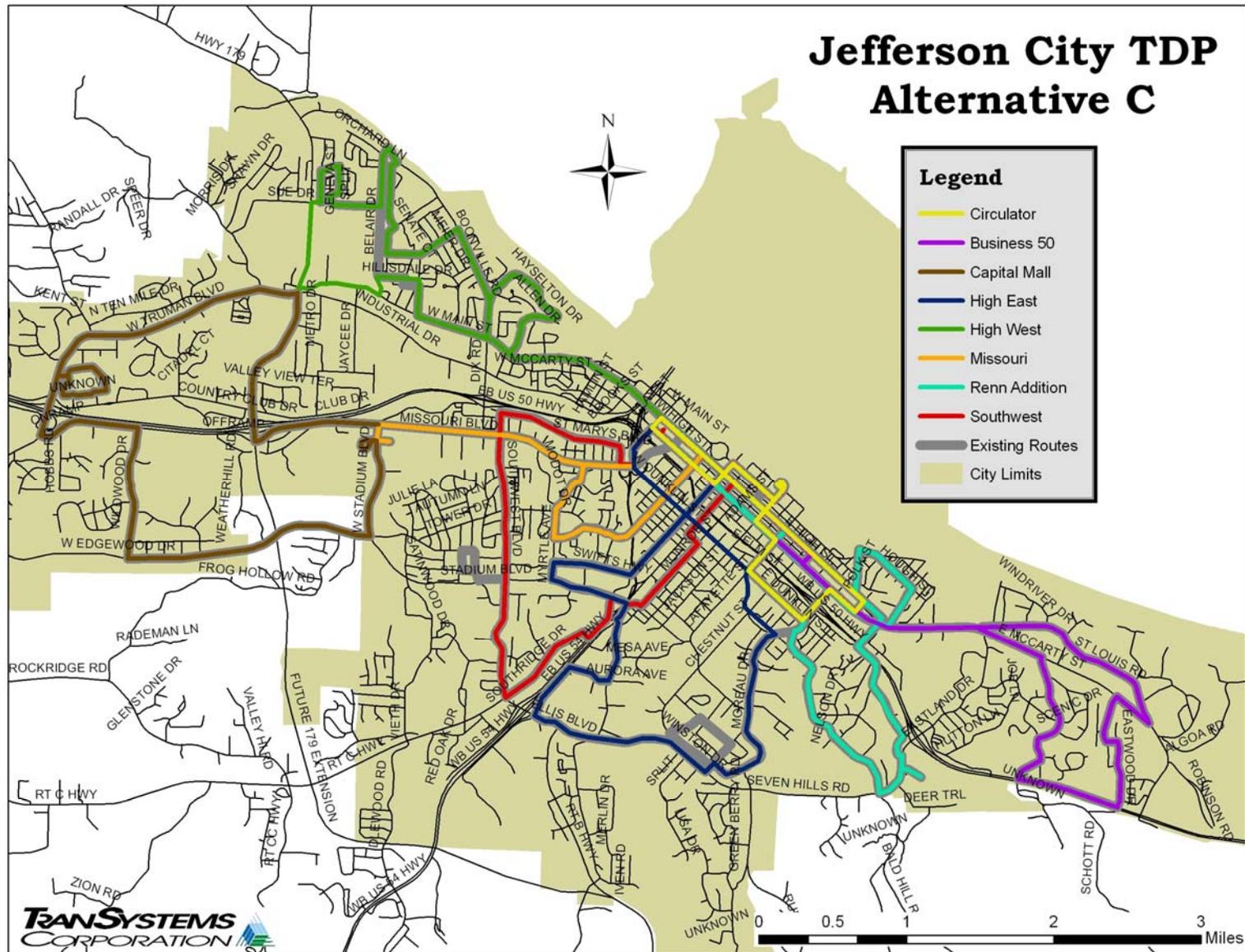
Generally, the existing fixed route services were found to be adequate for the intended purpose, and are found to be satisfactory to the majority of existing transit riders. This high level of satisfaction, along with the realization that funding for additional transit services is limited, leads to the general conclusion that wholesale changes in the JEFFTRAN route network are not required.

The recommendations are:

1. **Reconfigure the existing fixed routes to operate with the hub at 620 West McCarty Street, the intercity bus station.** This includes the creation of a new downtown shuttle (Downtown Circulator #1) route connecting the bus station with key points in the downtown area. This new route also allows adjustments to be made to the other routes to correct the running time deficiency noted with the current schedules. The running time adjustments are a critical service improvement. Service frequencies on all routes will be the same as current frequencies. Figure 8 shows the recommended transit routes.

Cost: The net operating cost for this recommendation is estimated at \$99,000 per year. The change also requires an additional bus with an initial cost of about \$300,000. However, the City's transit manager believes that the service modifications can be made in 2006 without an increase in the operating budget or the capital budget. Operating costs will be increased beginning the second year, 2007. The JEFFTRAN fixed route bus fleet will have to be increased by one bus at the time one of the current medium-duty buses is retired.

Figure 8: Recommended Transit Routes



Timing: Spring or summer 2006, at the time the McCarty Intercity Bus Station is renovated and available for service.

2. **Extend the span of service by starting service approximately 30 minutes earlier in the morning and continuing with service approximately one hour later until about 6:30 PM.** This service improvement is important because the current span of service is not of sufficient length to serve many work trips. With service ending at 5:30 PM employees who either work a slightly later dayshift, or cannot predict when they have to work later, cannot rely on using transit to get to work. In addition, this change is important for individuals who work outside the downtown area. Employees in the service sector are more likely to work a later shift and therefore will benefit from the extension of service hours.

Cost: This service improvement is estimated to result in a net increase in operating costs of \$134,000 per year. There is no increase in capital costs because additional buses are not required.

Timing: Because of the importance of this service improvement, it is recommended that this change be made with the reconfiguration of the routes and the opening of the McCarty Street bus station in the first half of 2006. If this service improvement is implemented during 2006, a budget modification will be required.

3. **Other Service Improvements.** A number of other transit service improvements were studied during the course of the TDP. The service improvements are dissimilar in that some of them would benefit existing riders and some would be expected to attract new riders to the JEFFTRAN system. Prioritizing possible transit service improvements that have benefits that accrue to different population groups is sometimes difficult and depends on the objectives of the community. The availability of additional funding is also an important consideration.

The following table shows the service improvements within Jefferson City based on the TDP's stated objectives, an interpretation of public input, and input from city staff and the TDP Steering Committee. The list is in priority order as developed during the TDP and the timing is a suggestion for the purpose of creating a 5-year program. It is important to note that these are priorities developed by the consultant team based on an interpretation by the consultant of the various inputs.

Table 26: Service Improvement Program

Service Modification	Timing	Net Cost
Move Transfer Center and Add Downtown Circulator #1	Spring 2006	\$99,000
Extend Service to 6:30 PM	Spring 2007	\$134,000
Establish Evening Service	Fall 2008	\$61,000
Establish Saturday Service	Fall 2008	\$68,000
Establish New Capital Mall Rt.	Spring 2009	\$130,000
Establish Downtown Circulator #2	Spring 2010	\$267,000
Establish Express Routes	Spring 2011	\$104,000

Currently JEFFTRAN does not operate service on ten City holidays. It would inconvenience significantly fewer transit users if JEFTRAN did not operate service on only the following six "major" holidays, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas.

It is recommended that the city move forward with steps to improve transit service during the next five years. The recommendations in Table 26 can serve as a starting point for these future deliberations.

- 4. Consider transit service improvements beyond current service area.** Although the demand analysis concluded that there is not a large need for transit service currently in parts of the metropolitan area outside Jefferson City, increases in population will add to the need in coming years.

Other communities may approach Jefferson City for inclusion in the transit system. As such, the City should evaluate the feasibility of creating a transit authority, although this is recommended as a longer term consideration.

The following are services that were evaluated serving areas outside Jefferson City. The West Area, Holts Summit, Algoa, and the Southwest Area were all evaluated for transit service and several potential service concepts were designed to serve each of these areas. Holts Summit and portions of the West Area and the Southwest Area are outside the Jefferson City Corporate Limits.

Two basic service types were evaluated, fixed route service designed for commuters and flexible route services intended to serve a broader transportation function. Table 27 shows the services that would serve areas outside Jefferson City, entirely or in part, along with estimated costs.

Table 27: Service Expansion Program

Service Expansion - New	
Services	Net Cost
West Area Flex Route	\$129,000
West Area Express	\$53,000
Holts Summit Flex Route	\$128,000
Holts Summit Express	\$51,000
Algoa Area Shuttle	\$130,000
Southwest Area Flex Route	\$130,000

At the time the City decides to extend transit service beyond the areas now served by the fixed route system, it is recommended that flexible route service be used rather than fixed route service. During the TDP, flexible services were evaluated for application in lower density suburban areas. None of the areas other than those currently served by fixed routes have a population density or other characteristics typically required to support fixed route services. Flexible route services have been shown to be an effective way to serve lower density areas based on the experience in other metropolitan areas.

6.3 Paratransit Service

Overall Handi Wheels is a well run operation that provides good service to the mobility limited residents of Jefferson City. The following are conclusions and recommendations based on the evaluation of JEFFTRAN Handi Wheels paratransit service.

1. **ADA Compliance and Procedures.** Based on a cursory review, Handi Wheels is compliant with the pertinent provisions of the ADA complementary paratransit service requirements. JEFFTRAN should continue to monitor compliance matters, and be alert to comments and inquiries from the public and passengers that may indicate a developing problem in this regard.
2. **Paratransit Service Expansion and Funding.** Proposed service expansion in the fixed route service will require parallel increases in Handi Wheels service, particularly regarding the length of the service day. JEFFTRAN needs to be able to respond to these changes, particularly as the changes affect the scheduling of drivers and dispatch personnel. JEFFTRAN will change from a one shift weekday operation to a two shift operation, potentially with weekend service. This will require JEFFTRAN to modify work practices related to driver assignments as necessary to cover the longer service day.

As demand for Handi Wheels service continues to grow there will be increased pressure on JEFFTRAN to deliver timely service. Handi Wheels' passenger per hour statistic is already high and scheduling is difficult during the peak times. Currently Handi Wheels is operating at nearly five passengers per hour with an increase to nearly six passengers per hour by 2011. Several changes in practice are suggested:

- JEFFTRAN should institute a practice to negotiate trip times to move trips away from the peak time. This is allowable under ADA regulations and can be used as a tool to better balance supply and demand in transit operations.
- JEFFTRAN should work with agencies and organizations that serve mobility limited individuals to schedule services in a manner that reduces the peaking that is currently present.
- JEFFTRAN should begin a program to encourage individuals to use the fixed route service instead of Handi Wheels. The new Gillig low floor buses are much easier for persons in wheelchairs to use. Improved fixed route schedule information, travel training and fare incentives are among the methods that can be used to move some trips to fixed route.
- JEFFTRAN must consider additional service if demand for Handi Wheels continues to grow. Additional service will add to both capital and operating expenses.

These procedural changes may reduce the increase in demand. An increase in Handi Wheels service should be expected by 2010 if the increase in demand is not reversed.

In recent years Handi Wheels has benefited from a significant increase in funding from the Non-Emergency Medical Transportation and Medicaid Waiver programs. This has reduced the need for City funding and has helped fund an increase in paratransit ridership. With the possibility of funding reductions in these programs, Handi Wheels is vulnerable to reduced funding which would trigger a need for service reductions or increased City funding. The City Council and JEFFTRAN should be aware of this situation and be prepared to respond in an appropriate manner, if necessary.

3. **Regional Paratransit Service Planning.** JEFFTRAN should take the lead and begin to prepare for work on the Coordinated Human Services – Public Transit Transportation Plan. This will be required in 2007 to access the New Freedom funding program. In addition, this work will give the City an opportunity to assess the need for paratransit services in other parts of the metropolitan area.

6.4 *Passenger Fares*

It is recommended that the city move forward to increase the base fare to \$.75 effective in 2006. The increase in fare will generate some additional revenue to help cover the cost of the recommended service improvements. It is recommended that the fare increase be made effective at the same time the service improvements are made to emphasize the point that transit users are realizing a benefit for the higher fares.

It is also recommended that the city consider an additional fare increase within three years to increase the base fare to \$1.00. This additional fare increase will generate additional revenue to help cover the cost of other service improvements. The evaluation should look carefully at the effect the fare increase to \$.75 has on ridership.

6.5 *Capital Improvements*

Jefferson City has a history of investing in capital improvements required to keep the transit system functioning efficiently. This practice should continue with the following recommendations.

1. ***Bus Replacement.*** JEFFTRAN's revenue vehicle fleet is relatively new and well-maintained, a requisite for maintaining ridership. JEFFTRAN should continue to replace revenue vehicles on a schedule of replacing them on or near their expected life. During 2005 JEFFTRAN received five new low floor buses. JEFFTRAN will receive three more new low floor buses in 2006. These new vehicles are rated as heavy duty transit buses with a 12 year life. The purchase of heavy duty buses is a departure from the recent practice of purchasing medium duty buses. It is recommended that JEFFTRAN continue the practice of using heavy duty low floor transit buses on all fixed route services, including the state shuttles.

Cost and Timing: Table 22, shown earlier in section 5.3.2 of this report, shows the bus replacement schedule and estimated costs as documented in the bus replacement program technical memorandum.

The table shows that, in 2007, JEFFTRAN will need to add one heavy duty bus for the new downtown shuttle (Downtown Circulator #1) route. Other buses shown in the table are for replacement of buses used to provide existing service.

Bus replacement is eligible for 80 percent federal funding.

2. ***Passenger Facilities.*** The transfer location at Jefferson Street and High Street is an important feature of the JEFFTRAN Fixed Route System. Due to physical constraints this location is posing increasing operating problems for JEFFTRAN. It is recommended that in the near term the transfer location be moved to the city bus station at 620 West McCarty Street. This facility, currently owned by the city, will require some upgrading and modifications to make it suitable for use as the downtown transit center.

Cost: It is estimated that the necessary site and building improvements can be accomplished for \$62,000. This type of project is eligible for 80 percent federal funding. The City will incur some increase in operating costs resulting from operating and maintaining the building. These costs have not been estimated, but are expected to be minimal. Additional staffing costs are not anticipated.

Timing: If the City moves quickly to have the site modifications completed, the Transfer Center at 620 West McCarty Street could be available for service in 2006.

Although it was concluded that a move to the bus station would resolve current operating problems and also provide an indoor waiting area for passengers, this does not represent the best solution for the transfer center relocation. For the longer term it is recommended that a new transit center be constructed in the downtown core. The location in the core of downtown is critical to being able to serve key employment and civic destinations, provide access to downtown businesses and maintain transit's central role in the community.

Cost: A new transit center would require about an acre of land and cost an estimated \$700,000 to develop. The cost of land is not included in the cost estimate. This type of project is eligible for 80 percent federal funding.

Timing: Development of a new transit center would require at least four to five years for total project development. This amount of time is needed to secure funding, select a site, design, and do other work that would be required.

3. **Passenger Shelters.** JEFFTRAN has a number of bus passenger shelters located at key bus stops around the system. Bus shelters are popular with bus passengers and are a relatively inexpensive improvement. It is recommended that the City continue the program of locating bus passenger shelters at key bus stops. Four passenger shelters were programmed for the Fiscal Year 2005 capital program.

Cost: The type of shelters used by JEFFTRAN cost approximately \$6,500 apiece.

Timing: A reasonable program is to purchase and install four passenger shelters every other year. JEFFTRAN should include the identification of key stops based on boardings in its planning program.

4. **Operating and Maintenance Facilities.** The Charles E. Robinson Transit Maintenance Facility was found to be in good physical condition, although the site is constrained. The combination of buildings is generally well organized on the site. The five-year program for transit service improvements requires an increase in the fleet size of one bus. The City has considered moving central maintenance from the transit facility. This would relieve congestion at the complex, and provide some space for expansion. Because the facility is of an age that major structural elements require attention, the short range program should include these improvements. The basic structure is expected to serve well for many years to come if sufficient and ongoing maintenance is provided.

- The buildings are approximately 20 years old, a significant milestone in the life of pre-finished roof and wall panels which typically have 20 year finish warranties. The buildings appear to have been well maintained however they are at an age where the exterior envelop should receive a significant program of preventative maintenance and repair to prevent premature building decay including a water tightness check at roof penetrations and transitions, major joints, flashings, louvers, window and door frames. HVAC systems should be inspected and replacement systems planned and budgeted when needed.

Cost: The cost of a full inspection and renovation is estimated at \$300,000. The results of the inspection will provide a more detailed estimate of the renovation cost.

Timing: This action should be pursued during the next 5-year program. For programming purposes this is assumed to be 2008.

The following additional recommendations for improvement are offered:

- The Transit Facility site is fully developed with limited opportunity for expansion or property acquisition. Long range planning should address how anticipated growth in transit and City activities can be accommodated.
- The shared use of maintenance, fueling and wash facilities increases traffic through the transit facility site. Facilities to service and maintain Transit and City Fleets will need to expand as the fleets grow. Options to increase capacity include expanding existing facilities, creating new facilities and separating services of specialized vehicles to specific sites.
- The property has limited area available for yard storage of out of season equipment, bus shelters and bulk material storage. Short term provisions for expansion should be pursued such as the feasibility of yard storage on city property on the north side of Miller Street and relocation of central maintenance.

Other recommendations are included in the Operating and Maintenance Facility Evaluation report.

6.6 Driver and Supervisory Staffing

Based on a review of driver, dispatcher and supervisory staffing levels, the following recommendations were made:

Current Service Levels. The conclusion is that JEFFTRAN staffing should be increased by one supervisor, one dispatcher and two drivers to cover current levels of service and hours of operation. This is based on the evaluation of staffing needs. These additions should not result in significantly higher costs because the new positions would reduce overtime in the division, thus offsetting the cost of the new positions.

Service Expansion. Another conclusion is that staffing will have to be increased if the recommendation to increase service and expand service hours is accepted. The addition of the downtown shuttle as part of the reconfiguration of routes for the relocation of the transfer center requires one additional driver position. The expansion of weekday service hours will require the equivalent of at least one additional driver.

6.7 Marketing

Currently, JEFFTRAN has no formal marketing program. Information provided to the public is basic and somewhat limited. A rider's guide is available and rider information is available on the City's web site. The route maps and schedules in the rider's guide should be redesigned to be clearer. Beyond printed and web based information, little other material is provided to riders. Further, there is no "special event" marketing efforts and no advertising.

A marketing plan was developed and includes the following recommendations:

1. **Improved Rider Information.** Revise the public information to provide individual route schedules and one system map.
2. **Institutional Partnerships.** Develop an employer pass subsidy program, a university pass program and a summer youth pass.
3. **Marketing Program Implementation.** Hire a part time staff person to develop and implement the marketing strategies.

The Marketing Plan provides additional recommendations for JEFFTRAN's consideration.

Cost: The annual cost to implement all of the strategies is approximately \$52,000.

Timing: The rider's guide should be revised as soon as practical. A target should be to have the information materials redesigned for the service modifications planned for June or July 2006. The other recommendations should be implemented as time and budget allows. A part time marketing coordinator should be retained beginning 2007.

6.8 Long Range Planning

The TDP focused primarily on the short term with the objective of developing a five year transit improvement program. However, consideration was also given to longer term actions and strategies. Because of the uncertainty of how the transit system will develop over the next five years these long range considerations are not offered as recommendations. Rather these are ideas that should be considered by JEFFTRAN and others at the City during the next several years.

1. **Further Service Improvements and Expansion.** The TDP evaluated a number of transit service expansion projects that could be considered for the longer term. These include:
 - Expansion of service to seven days per week, with evening service at least until 10:00 PM on core routes
 - Improved service to 15-minute frequencies and 30-minute midday service on higher ridership core routes
 - Implementation of commuter related services (e.g., express routes)
 - Service to future growth areas using flexible type routes.

Even though anticipated population growth in the outlying parts of the metropolitan area does not appear to change the conclusion that these areas will not have significant transit need, the region should consider service policies that set standards for transit service availability.

An important consideration for future service expansion is the success of service expansion made during the upcoming 5-year period. These service improvements should be monitored closely to see how the community responds. The experience with these initial service modifications will provide valuable insight in designing the next program of improvements.

2. ***Operating and Maintenance Facility Expansion.*** As previously stated the current facilities were found to be adequate for the current operation and the service expansion that is likely to occur during the next five years. However, if JEFFTRAN grows significantly, the existing facility will be inadequate in terms of vehicle storage, maintenance and servicing and accommodations for staff. At this time the current facility would have to be expanded, or a new facility would have to be developed.

Space on site is limited thus expansion would have to occur at a different location.

A new facility would likely cost in the range of \$5 million to \$7 million and require four to five acres.

If JEFFTRAN grows to a point that the bus fleet exceeds 30 vehicles facility expansion plans need to be prepared. A detailed facility feasibility would be required at that time to determine the specific needs and preferred approach to providing more capacity.

3. ***Modifications to the structure, governance and funding of the transit system.*** JEFFTRAN functions very well as a City division and this structure should allow the flexibility to accomplish virtually all of the changes and improvements discussed during the course of the TDP. However, communities usually consider changing from a city department to a transit authority when transit services expand significantly beyond the core city's boundaries. Transit authorities typically have an independent governing body and are empowered to provide service and develop transit-related improvements throughout a designated metropolitan area irrespective of municipal boundaries.

As the scope of JEFFTRAN's business expands beyond Jefferson City this step should be considered.

Transit agencies in larger metropolitan areas may have a dedicated source of funding specifically for transit. A dedicated funding source usually allows more predictability and stability, thus making planning for future improvements easier. This important step also should be considered in the future as transit grows in the metropolitan area.