Daniel Boone Study Area

Major Transportation Investment Analysis

PURPOSE AND NEED STATEMENT

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TABLE OF CONTENTS

			Page No.
S.0	**EXECUTIVE SUMMARY**		S-1
1.0	**INTRODUCTION**		1-1
	1.1	Major Transportation Investment Analysis	1-1
	1.2	Project Development Process	1-3
	1.3	Role of Purpose and Need	1-3
	1.4	MTIA Decision-Making and Approval Process	1-5
2.0	**CORRIDOR STUDY AREA**		2-1
	2.1	Study Area Description	2-1
		2.1.1 Study Area Boundaries	2-1
		2.1.2 Transportation System	2-1
	2.2	Demographic Trends	2-3
	2.3	Growth and Development Patterns	2-3
	2.4	Activity Centers	2-3
	2.5	Travel Markets	2-4
		2.5.1 Commute Trips	2-4
		2.5.2 Local Trips	2-4
		2.5.3 Tourist Trips/Special Events	2-4
		2.5.4 Transit Dependent	2-5
		2.5.5 Freight	2-5
3.0	**PLANNING CONTEXT**		3-1
	3.1	Planning History/Background Studies	3-1
		3.1.1 Regional Goals and Objectives	3-1
		3.1.2 Local Plans and Policies	3-2
		3.1.3 Related Projects/Studies	3-2
4.0	**PROBLEMS AND OPPORTUNITIES**		4-1
	4.1	Congestion Management	4-1
		4.1.1 Deficient Roadway Capacity	4-1
		4.1.2 Reliance on Automobiles	4-3
		4.1.3 Accessibility	4-4
	4.2	Safety and Security in Travel	4-4
	4.3	Access to Opportunity	4-5
	4.4	Funding Constraints	4-5

5.0 NEED FOR ACTION 5-1

5.1 Congestion Mitigation 5-1
5.2 Safety and Security in Travel 5-2
5.3 Access to Opportunity 5-2
5.4 Funding Constraints 5-2

6.0 REFERENCES 6-1

LIST OF FIGURES

		Page No.
Figure 1.1-1	MTIA Process	1-2
Figure 1.2-1	Project Development Process	1-4
Figure 2.1-1	Study Area Map	2-2
Figure 4.1-1	Peak Period Level of Service (2020)	4-2

LIST OF TABLES

		Page No.
4.1-1	Traffic Volume Data	4-3
4.2-1	1996 Accident Rates	4-5

S.0 EXECUTIVE SUMMARY

This document presents the purpose and need for surface transportation improvements in the Daniel Boone Study Area. It is a component of a Major Transportation Investment Analysis (MTIA), the planning process used by local decision-makers to identify major transportation projects in the region.

The Daniel Boone Study Area (Figure 2-1) is in west St. Louis County and covers approximately 85 square miles. It has 20 municipalities partially or wholly within the limits. Total 1996 population in the Study Area was almost 156,000, and employment for 1996 was 177,000.

The first step in this process was the compilation of information about the Study Area and the metropolitan region. This was done through the community engagement process which included open houses, focus groups, community forums, small group meetings, and individual interviews. Available technical data on demographics and the surface transportation system was obtained and summarized in the Daniel Boone Existing and Future Conditions Report (1999).

This information led to the identification of the transportation issues within the Study Area. These issues are presented in this document as the purpose and need for transportation improvements within the Daniel Boone Study Area. More specific goals and objectives have been identified and will be used in the development and evaluation of potential multi-modal transportation alternatives.

These alternatives will be evaluated in their effectiveness in addressing the purpose and need identified in this document and with respect to a detailed set of evaluation criteria. This process will follow the framework identified in Transportation Redefined (1995) and Transportation Redefined II (1999) adopted by the East-West Gateway Coordinating Council's Board of Directors.

The following transportation-related problems have been identified in the Daniel Boone Study Area:

- Lack of capacity of the existing and planned roadway system to handle current and projected travel demand and high percentage of trips made by single occupancy vehicles.
- Higher accident rates than statewide averages on major Study Area roadways.
- Need to reinforce existing employment concentration through provision of transportation services and provide improved transit (reverse commute) for entry-level workers.
- High travel demands along limited capacity arterial roadway system.

The following goals and related objectives have been developed to address the above problems.

Congestion Mitigation

Goal: Relieve traffic congestion and improve mobility within the Study Area

Objectives:

- Improve the capacity and connectivity of the transportation system within the Daniel Boone Study Area.
- Improve the capacity and connectivity of the transportation system between the Daniel Boone Study Area and major attractors of Study Area travel outside of the Study Area including the rest of St. Louis County and Downtown St. Louis.
- Increase the usage of alternative modes to the auto by improving the competitiveness of alternative modes relative to the auto.

- Concentrate future commercial and office activity growth within the Study Area at existing concentrations of commercial (office) and retail land use to allow more effective service by modes other than auto.

Safety and Security in Travel

Goal: Improve the safety of the transportation system within the Daniel Boone Study Area.

Objectives:

- Reduce the existing accident rate on Daniel Boone Study Area roadways, particularly those whose rates are above the statewide average for that type of roadway.
- Provide safer roadways, including pedestrian and bicycle opportunities.

Access to Opportunity

Goal: Reinforce existing employment concentrations through improved transit (reverse commute) for entry level workers.

Objectives:

- Improve transit services to employment centers located along Ballas Road near I-64 and in Chesterfield Valley.
- Decrease transit travel times.
- Increase frequency of transit service.

Funding Constraints

Goal: Provide transportation system improvements that maximize attainment of the above goals within the financial constraints of the transportation-providing agencies within the region.

Objectives:

- Maximize the cost-effectiveness of transportation system improvements within the Daniel Boone Study Area.

1.0 INTRODUCTION

This report provides information about existing conditions in the Daniel Boone Study Area for both the recent past as well as projections to the year 2020. This information is organized into sections covering land use, demographics, travel patterns, the environment and characteristics of the surface transportation system in the Study Area. This information will be used to assist the study team in developing a detailed understanding of transportation related issues in the Study Area through the year 2020, the planning horizon for the Major Transportation Investment Analysis (MTIA) being conducted for this Study Area.

The Daniel Boone Study Area lies in west central St. Louis County (see Figure 1.0-1) and is roughly bounded by the Missouri River on the West, Page Avenue and Olive Boulevard on the North, slightly east of I-170 on the East and just north of Manchester Road and Clayton Road on the South (see Figure 1.0-2), comprising an area of approximately 85 square miles. Twenty two municipalities lie wholly, or in part, within the Study Area as well as a portion of the unincorporated area of St. Louis County.

FIGURE 1.0-1
STUDY AREA REGION

FIGURE 1.0-2
STUDY AREA

2.0 CORRIDOR STUDY AREA

2.1 STUDY AREA DESCRIPTION

2.1.1 Study Area Boundaries

The Daniel Boone Study Area lies in west central St. Louis County and is roughly bounded by the Missouri River on the west, Page Avenue and Olive Boulevard on the north, a line slightly east of Interstate 170 (I-170) on the east, and a line north of Manchester Road and Clayton Road on the south (see Figure 2.1-1 for Study Area Map). This area comprises approximately 85 square miles and has 20 municipalities partially or wholly within the limits, including portions of unincorporated St. Louis County.

2.1.2 Transportation System

The area's transportation system is predominantly a roadway network of highways, arterials and collector roads. This area is primarily served by Interstate 64 (Highway 40/61)in the east-west direction and Interstate 270 (I-270) in the north-south direction. Interstate 170 also provides north-south travel for the eastern portion of the Study Area. In addition, the primary arterials of Route 141, Clarkson Road/Olive Boulevard, Lindbergh Boulevard and Clayton Road all provide significant access throughout the Study Area. This system is supported by numerous local roads maintained by the municipalities in the Study Area.

Several major roadway improvements are underway or anticipated in the Study Area and are included as part of the 2020 No Build alternative of this study. Some of the more significant projects include the Page Avenue Extension into St. Charles County, capacity improvements and expansion along Route 141 south of Clayton Road, the upgrade of I-64 to interstate standards west of Clarkson Road, the widening of Olive Boulevard west of Route 141 and various interchange improvements along I-64 east of Spoede Road and along I-170 from Galleria Parkway to Page Avenue. In addition to these significant improvements, numerous minor roadway improvements and enhancements are anticipated in the Study Area and also included in no build scenarios.

The roadway system is supplemented with limited local and express bus service. Overall, 19 bus routes serve various portions of the Study Area. The bus service currently available in the western portion of the Study Area, however, is limited to service along three major east-west arterials; Manchester Road, Clayton Road and Olive Boulevard. The eastern portion of the Study Area includes these east-west routes, provides several additional east-west routes, such as along Page Avenue, and is supplemented by several north-south routes, including routes along Lindbergh Boulevard, Brentwood Boulevard and Hanley Road. Existing express route service in the Study Area is along the east-west arterials of Page Avenue, as well as Manchester Road and I-64. Bi-State has a Transit Center planned for the area between Olive and I-64 along Ballas Road. In this Study Area, transit has generally not been competitive with the automobile due to lack of convenience, delays in travel time, and high number of transfers required.

FIGURE 2-1
STUDY AREA MAP

2.2 DEMOGRAPHIC TRENDS

The Study Area's population has historically experienced an average yearly growth of approximately one percent, but is anticipated to peak around the year 2000. The Study Area as a whole is forecast to decline slightly in population between this peak and the year 2020. It should also be noted that a general shift in population is expected to continue towards the west, with the western portion of the Study Area continuing to increase in population offset by a general decline in the denser eastern portion. Overall, population densities are forecast to remain higher in the eastern portion, moderate in the western portion and low in the central portion of the Study Area, as expected by the residential lot size found in these areas. Within the Daniel Boone Study Area, lot size of residential parcels also generally reflect the median household income of a particular area, with the less dense western and central portions of the Study Area having the highest median incomes in the region. Over two-thirds (67.9 percent) of the Study Area households owned two or more vehicles in 1990. In summary, the Study Area is forecast to have slightly declining population, slightly increasing employment, higher than regional average household income and car ownership, and low to moderate population and employment densities.

2.3 GROWTH AND DEVELOPMENT PATTERNS

Several portions of the Study Area are currently experiencing residential and commercial growth. These development areas include the I-64 corridor, including Chesterfield Valley, the Westport area and the eastern portion of the Study Area bordering the City of Clayton. While most of these areas have new or planned commercial growth, the western portion of the Study Area in general is one of the few areas in the Study Area experiencing recent new residential development. The general development pattern in this primarily suburban Study Area is commercial and industrial uses following I-64 and I-270 and major arterials such as Olive Boulevard, Page Avenue and Lindbergh Boulevard. Residential development in the area is predominantly single family detached housing with small pockets of multi-family dwellings found in the areas of Clayton/Richmond Heights, Westport area south to Olive Boulevard and east to Lindbergh Boulevard and portions of the City of Chesterfield along Chesterfield Parkway. Residential growth is limited in the Study Area due to limited available land. Areas west of Clarkson Road have the most opportunity for growth, with new and planned residential developments occurring near Chesterfield Valley along Olive Boulevard and Wildhorse Creek Road.

The core of this Study Area contains mainly single-family residential land use with multi-family uses clustered along the Study Area boundary and at activity centers and major roadway intersections. The eastern and northern boundaries contain what little industrial land use is in the Study Area and some of these locations are being redeveloped into newer light industrial uses due to changing market needs. Office and hotel land use is concentrated along the I-64/U.S. 40/61 alignment, especially west of I-270. Another concentration of office land use is part of the Clayton Central Business District (CBD) located in the eastern part of the Study Area. Retail land use is concentrated in the superregional, regional, and community shopping centers scattered throughout the Study Area.

2.4 ACTIVITY CENTERS

The Daniel Boone Study Area is characterized by several scattered concentrations of activity centers, most revolving around a cluster of mixed and commercial type land uses and located at the junction of major arterials or interstates. Four major regional shopping malls and ten shopping centers are located within the Daniel Boone Study Area. This comparatively affluent Study Area provides a strong market for higher-end and specialty retail establishments. Also, large regional malls (Galleria, Chesterfield Mall, Plaza Frontenac) represent major employment centers. Other employers and/or employment centers within the Daniel Boone Study Area include Monsanto World Headquarters, major medical centers (St. Luke's Hospital, Missouri Baptist Medical Center, St. John's Medical Center); and an area comprised of retail, office, and service activities (Clayton CBD). Several of the region's prominent educational institutions are either located within the Daniel Boone Study Area, or they are located along the Study

Area's travel shed to the east. Included among these are public and private high schools and several prominent colleges and universities.

In terms of traffic generation, the larger of these areas include the Clayton/Galleria commercial and business district, Westport Plaza, the conglomerate of hospital and health care facilities at the interchange of I-64 and I-270 and the commercial/retail area surrounding the interchange of I-64 and Clarkson Road/Olive Boulevard. High-density employment areas also include areas surrounding the interchanges of I-270 at Olive Boulevard and Manchester Road and the currently developing Chesterfield Valley along I-64. Manchester Road south of the Study Area is also a primary destination for residents of the Study Area due to high concentrations of commercial and retail development.

2.5 TRAVEL MARKETS

2.5.1 Commute Trips

The potential employment centers primarily served from the Study Area occur linearly in an east-west direction. These employment destinations include the Chesterfield Valley/I-64 corridor that is scattered along I-64 between Clarkson Road and New Ballas Road and in Chesterfield Valley, the Clayton CBD and the City of St. Louis CBD. This is reflected in the primary peak trip occurring in the east-west direction with I-64 serving as the primary east-west route. Interstate 64 is also a major carrier of commute trips that originate west of the Study Area (St. Charles County) with these same destinations. Trips originating north and south of the Study Area with these primary destinations primarily use I-270 and I-170 for north-south movements with Lindbergh Boulevard, Route 141 and Clarkson Road serving as major north-south arterials. Interstate 270 also serves commuters from the Study Area to other destinations which are not along I-64.

Commute trips are forecast to be approximately 20 percent of total daily trips produced in the Study Area in the year 2020. The majority of work trips produced in the Study Area are attracted to work locations within the Study Area. The second largest attractor of Study Area work trips is the rest of St. Louis County. Only six percent of estimated 2020 work trips produced in the Study Area are attracted to the St. Louis CBD. Looking at work trips attracted to the Study Area, it can be seen that the majority are estimated to be produced by the rest of St. Louis County, while the second largest producer of work trips attracted to the Study Area in 2020 is the Study Area itself.

2.5.2 Local Trips

Local trips within the Study Area vary widely in length and direction. A large portion of local trips revolve around the heavy concentrations of commercial retail development found along major arterials including Manchester Road, Olive Boulevard, Brentwood Boulevard, Chesterfield Parkway, Lindbergh Boulevard and eastern portions of Clayton Road. "Big-Box" type developments are relatively scarce in most portions of the Study Area with the exception of those along Manchester Road. Manchester Road, which lies just south of the Study Area, contains high concentrations of retail and commercial development, forcing many local trips into a north-south directionality, particularly west of I-270. This causes high travel demand for the few arterials serving that need, in particular Clarkson Road and Route 141. This is evidenced by delayed travel times on these facilities during a.m. and p.m. peak periods as well as mid-day periods and weekends. Traffic along the arterials is also increased due to the high number of cul-de-sac local roads, especially in the western portion of the Study Area, which prevent through travel and divert traffic onto the arterials.

2.5.3 Tourist Trips/Special Events

Cultural destinations and attractions are relatively scarce in the Daniel Boone Study Area. In addition, those that do exist, including Faust Park/Butterfly House, Queeny Park and the U.S. Ice Sports Complex are along major arterials and interstates, and are generally not significant traffic generators causing adverse effects on surrounding traffic circulation, especially during peak traffic periods.

2.5.4 Transit Dependent

Automobile ownership within the Study Area is the highest in the region, averaging nearly two vehicles per household. Only approximately four percent of the households in the Study Area in 1990 were households with zero vehicles (households that don't have access to an automobile). Supplemented with paratransit programs such as Call-A-Ride and Call-A-Ride Plus, few residents within the Study Area could be considered mobility deficient. However, due to the strong and expanding job market within the Study Area, in particular entry-level positions, persons living outside of the Study Area are needed to fill many of these jobs. Coupled with the fact that some areas of the metropolitan region have over 20 percent of households with no vehicles available and that limited public transit service to the Study Area exists, the greatest deficiency is the home to work trip for residents living outside the Study Area commuting to work inside the Study Area.

2.5.5 Freight

Movement of goods through the region is primarily accomplished with the interstate system. A general lack of industrial land uses in most areas of the Daniel Boone Study Area reflects the small amounts of heavy truck traffic along Interstate 64. Currently, the only active freight rail line in the Study Area is the portion of the former Rock Island line (now owned and operated by Union Pacific) between Chesterfield Valley and the Riverport Area north of the Study Area. This line has approximately one train per day serving shippers along the line. There are no major rail freight yards, truck terminals, or ports located within the Study Area.

3.0 PLANNING CONTEXT

3.1 PLANNING HISTORY/BACKGROUND STUDIES

The Daniel Boone Study Area was originally identified in the St. Louis Systems Analysis for Major Transit Capital Investments (1991) to provide improved transit access to Clayton and the St. Louis CBD from west and central St. Louis County. The development occurring in the Chesterfield Valley area also provides opportunities for reverse commute.

Transportation Redefined (1995) and Transportation Redefined II (1999), serve as the region's planning guideline for transportation improvements. These long-range transportation plans have been adopted by the East-West Gateway Coordinating Council's (EWGCC) Board of Directors. Transportation Redefined identified this Study Area as needing a Major Transportation Investment Analysis to address transportation problems and issues that were surfaced by the regional transportation planning process. Transportation Redefined II affirmed that need.

The area encompassed by the study boundary has also fallen within several recent regional studies, including the Bi-State Transit Center Hub Restructuring Study (1998) and Industry Perspectives and Recommendations for a Regional Freight Planning Process (1997). These reports individually focused on one particular aspect of infrastructure-related improvements, bus transit and freight respectively.

3.1.1 Regional Goals and Objectives

Transportation Redefined and Transportation Redefined II describe the region's goals and objectives in transportation planning. The regional goals identified in Transportation Redefined II are generally related to improving the quality of life in the region. These regional goals provide the framework for the transportation goals and objectives which relate to planning and financing, mobility, and physical design. This transportation planning framework will be used in the decision making process for major transportation investments. The planning process has the following six major integrated components:

- Regional Transportation Plan
- Transportation Project Planning
- Regional Project Selection
- Project Implementation
- Project Monitoring and Evaluation
- Community Engagement

Transportation Redefined II continues the seven focus areas for transportation problem solving that were originally identified in Transportation Redefined. The following focus areas ensure that priority regional needs will be addressed by any planned projects.

- Preservation of the existing infrastructure, managing and maintaining current road, bridge, transit, and intermodal assets.
- Safety and security in travel, decreasing the risk of personal injury and property damage on, in, and around transportation facilities.
- Congestion management, ensuring that congestion on the region's roadways does not reach levels which compromise economic competitiveness.
- Access to opportunity, addressing the complex mobility needs of persons living in low-income communities and persons with mobility needs.
- Sustainable development, coordinating land use, transportation, economic development, environmental quality, and community aesthetics.

- Efficient movement of goods, improving the movement of freight within and through the region by rail, water, air, and surface transportation modes.
- Resource conservation, ensure that the operation of the region's transportation system supports air, water, land, and energy conservation objectives.

The region's short-range transportation plan includes the programming of federally funded transportation projects. Currently, this plan, the Transportation Improvement Program (TIP), contains a three-year schedule of transportation improvement projects for the region. This program allows federal funds to be spent in the region following the framework of Transportation Redefined.

3.1.2 Local Plans and Policies

Interviews have been held as part of the community participation with representatives of many of the municipalities in the Study Area. Discussion at these interviews included future land use and/or transportation changes anticipated. Information obtained has been summarized in the Major Transportation Investment Analysis for Northside, Southside, and Daniel Boone Study Areas Community Engagement Working Preliminary Baseline Paper (1999).

For coordination among local municipalities, a Technical Advisory Committee was formed with applicable representatives of governing agencies. On a level consistent with the planning and conceptual nature of the study, these representatives provide guidelines and oversight of the existing conditions and assumptions forming the baseline of the study. Proposed alternatives are also evaluated and critiqued on a conceptual basis. In addition, an active community engagement process ensures involvement with the public and private interests as well as local municipalities. Focus Group Meetings, Community Workshops and Public Open Houses have all been implemented to ensure a greater understanding and consensus of proposed alternatives.

The St. Louis County Zoning Ordinance (1997) provides guidelines for the unincorporated portion of the County. Several municipalities, such as Chesterfield, have land use or comprehensive plans. Some of these plans cover only a portion of the municipality, and some are not very current.

3.1.3 Related Projects/Studies

In addition to the three concurrent Major Transportation Investment Analyses (MTIA), including the Northside, Southside and Daniel Boone Study Areas, the western portion of St. Louis County has several other infrastructure related studies currently in progress or planned for the near future. These studies include the West County Traffic Study and the Route 100 MTIA.

The West County Traffic Study is a short duration, non-intensive analysis of the current roadway conditions for major roads in the West St. Louis County area. The boundaries of the study area are U. S. 40 on the north, Route 141 on the east, I-44 on the south, and the Franklin County line to the west. The intent of the study is to determine long-range and short-range improvements to handle the projected traffic growth in the area. Traffic volume information and accident data are being used to quantify these problems. The scope of the West County Study does not include providing recommendations for improvements. It will, however, provide a document to aid in developing an action plan to address current and projected problems in the Study Area. Further study will be needed to determine the need for any major improvements.

The Route 100 MTIA is assessing transportation improvements along existing Route 100 from Route T in St. Louis County to Route 47 in Franklin County. The MTIA has been completed and a draft environmental assessment is currently underway evaluating several highway alternatives.

A recently completed study, the Cross-County MTIA, had a study area that borders the Northside, Southside and Daniel Boone Study Areas. This study boundary roughly followed I-64 and I-170, as well as an area extended south from I-170. This boundary followed the Northside and Southside Study Areas on the west and the Daniel Boone Study Area on the east. Portions of the Cross-County MTIA overlap into the Daniel Boone Study Area, including the areas surrounding I-170 and I-64. Findings and recommendations of this study have been implemented in the No Build alternative of this report and incorporated into future conditions affecting this study.

The Cross-County MetroLink Extension, Segment 1, Conceptual Design Study was recently completed. A proposed MetroLink extension from Forest Park to Clayton then south to Shrewsbury was included in this study. A decision on this future MetroLink extension alignment was made by the EWGCC Board in June, 1999.

4.0 PROBLEMS AND OPPORTUNITIES

Based upon both an analysis of technical information as presented in the Daniel Boone Existing and Future Conditions Report, as well as input from stakeholders and members of the public as documented in the Major Transportation Investment Analysis for Northside, Southside, and Daniel Boone Study Areas Community Engagement Working Preliminary Baseline Paper, Focus Group Notes (February, 1999) and Community Forum Notes (April, 1999), the following problems and/or opportunities related to surface transportation in the Daniel Boone Study Area have been identified.

4.1 CONGESTION MANAGEMENT

The major concern identified throughout the community engagement process in the Daniel Boone Study Area is traffic congestion, also confirmed by technical analysis. Congestion, especially during peak periods, is occurring along the interstates and arterials within the Study Area. Forecasts for 2020 indicate this congestion will continue to be a problem, even with the planned transportation improvements.

4.1.1 Deficient Roadway Capacity

Congestion data for existing (1996) and forecast (2020) conditions was obtained from the regional traffic model maintained by EWGCC. The data was evaluated for all interstates and arterial roadways within the Study Area and the region as a whole. This model is based on population and employment forecasts, known traffic volumes and patterns, and planning assumptions regarding planned transportation improvements, land use and operational capacities. Among other things, it forecasts operating conditions for the a.m. and p.m. peak periods as well as traffic volumes. It is these conditions that will be used to evaluate conditions and identify deficiencies. Listed in Table 4.1-1 is traffic volume data for some of the major interstate and arterial segments of the Study Area. Also included are the 2020 forecast volumes and the subsequent percent increase in traffic volumes.

Figure 4.1-1 presents the forecast level of service (LOS) for major study area roadways for the peak travel period for the year 2020. LOS is a measure of traffic congestion on roadway segments or intersections. Levels of service D or E represent congestion. Traffic forecasts, which include the planned improvements previously discussed, indicate moderate congestion (levels of service D or E) along all three interstates within the Study Area. Traffic flow breakdown conditions (level of service F) are predicted for a section of I-270 between I-64 and Ladue Road and sections of I-64 west of Route 141. Forecasts indicate a general increase in the number of locations of traffic congestion along all the interstates within the Study Area.

Forecasted conditions also indicate areas of moderate congestion along many of the Study Area's major roadways, including Page Avenue, Olive Boulevard, Ladue Road, Clayton Road, Lindbergh Boulevard, Woods Mill Road, and Clarkson Road. Breakdown conditions are forecast to occur along sections of Page Avenue, Olive Boulevard, Ladue Road, Clayton Road, Clarkson Road, Schulte Road, Craig Road, Ladue Road, Wildhorse Creek Road, Woods Mill Road, and Mason Road, even with currently planned roadway improvements. Breakdown, as described above, occurs along more segments of these same roadways due to the forecasted increase in traffic volumes exceeding planned increases in roadway capacity.

FIGURE 4.1-1
PEAK PERIOD LEVEL OF SERVICE (2020)

TABLE 4.1-1
TRAFFIC VOLUME DATA

Roadway Segment		1996 Average Two-Way Volume	2020 Volume	Forecasted Increase
I-64	Missouri River to Long Road	44,500	70,600	58%
	Long Road to Clarkson Road	56,200	89,000	58%
	Clarkson Road to Route 141	83,000	108,000	30%
	Route 141 to Mason Road	115,900	134,400	16%
	Mason Road to I-270	136,500	152,700	12%
	I-270 to Lindbergh Boulevard	122,100	143,400	17%
	Lindbergh Boulevard to I-170	120,500	149,800	24%
I-270	Page Avenue to Olive Boulevard	144,000	181,400	26%
	Olive Boulevard to I-64	153,200	186,200	21%
	I-64 to Manchester Road	130,600	179,400	37%
Highway 340 (Olive Blvd./ Clarkson Road)	I-64 to Ladue Road	27,400	36,600	33%
	Ladue Road to Route 141	9,100	17,100	88%
	Ross Road to I-270	48,100	54,700	14%
	New Ballas to Lindbergh Boulevard	17,900	19,800	10/%
Route 141 (Woods Mill Road)	I-64 to Ladue Road	18,300	21,900	20%
	Clayton Road to I-64	53,300	65,600	23%
Route 67 (Lindbergh Boulevard)	I-64 to Ladue Road	53,000	62,200	17%
	I-64 to Clayton Road	38,800	45,800	18%

Source: East-West Gateway Coordinating Council, December 1998.

4.1.2 Reliance on Automobiles

As evidenced by the low percentage of zero vehicle households in the Daniel Boone Study Area, and projected low transit ridership, a majority of Study Area residents are reliant on vehicular travel. High average trip lengths, which are projected to increase, result from long commute lengths, low density land uses and dispersed growth. While 19 local and express routes provide transit service to the Study Area,

only three local and three express routes are available in the western half of the Study Area. The three local routes have an average weekday daily ridership of 1,850 passengers, while the average weekday daily ridership for express routes is only 105 passengers, which is lower than the Bi-State system average. Factors that contribute to low ridership include travel times longer than by auto, lack of convenience and the number of transfers required. It should be noted that the local route statistics don't take into consideration reverse commuters and riders of the route outside the Study Area. This low transit ridership and high automobile usage translates into greater vehicle demand on the Study Area's roadways, as described above, and contributes to higher traffic congestion.

According to ridership statistics, transit options currently available in the Study Area are not being utilized to their fullest potential, whether as an express commuter route or for more local trips. In addition to non-competitive in-vehicle travel times, another factor is the fact that a majority, if not all, of the bus stops in the western half of the Study Area do not have park and ride facilities. In fact, many stops near commercial land uses have signs indicating customer-only parking while other stops are located on arterial roadways on which parking is prohibited. Coupled with the fact that land uses are widely scattered and housing is low-density, walk access to transit services is limited in significant portions of the Study Area, particularly west of I-270.

4.1.3 Accessibility

Many of the travel trips within the Daniel Boone Study Area use the existing arterial roadway system. Some of this demand on the arterial system is a result of congestion along the interstates, but much of the demand results from the high number of commute and local trips which begin and end within the Study Area. The congestion along the arterials is also increased by the limited management of access points, or control of entrances, along major arterials. The high number of commercial entry points along arterials, such as Olive Boulevard, Page Avenue, Ballas Road, and Lindbergh Boulevard, reduce the capacity of the arterial system. Traffic along arterials is also increased due to the high number of cul-de-sac local roads, which prevent through travel and divert traffic onto the arterials.

Identified Problems: *Lack of capacity of the existing and planned roadway system to handle current and projected travel demand and high percentage of trips made by single occupancy vehicles.*

4.2 SAFETY AND SECURITY IN TRAVEL

"Injuries from motor vehicle crashes are the leading cause of death and disability for individuals between the ages of 1 and 34 in seven of the eight counties in the St. Louis Region" Transportation Redefined, 1995). Existing congestion levels have a direct impact on accident rates, with highly congested areas known to create higher accident potential. The accident rates on a large percentage of the roadway segments found in the Study Area are higher than statewide percentages. Accident rates for the segments of roadways within the Study Area that are higher than the statewide average for similar facilities are shown in Table 4.2-1.

Note that major portions of these same facilities are the same segments that are listed as having significant forecast increases in traffic volume into the future.

In addition to the high accident rate, automobile accidents have a direct impact on levels of congestion, in particular during peak travel periods. Interstate highways, in general, are not conducive to efficient accident management and congestion is a major impediment to accident response time. Interstates within the Study Area, in particular I-64, do not have adequate refuge islands (areas where stranded pedestrians or individuals involved in accidents can safely avoid traffic or move in order to avoid causing congestion).

TABLE 4.2-1
1996 ACCIDENT RATES

Roadway Segment	Percent Higher than Statewide Rate
I-64 Eastbound	7%
I-64 Westbound	32%
I-270 Southbound	38%
I-270 Northbound	7%
Route 340 (Clarkson Road/Olive Boulevard)	8%
Route 67 (Lindbergh Boulevard)	29%
Highway HH (Clayton Road)	46%
Page Avenue	13%

Source: Missouri Department of Transportation, January 1999.

Automobile accidents not only create congestion problems as previously discussed, but they are also a personal safety hazard. In 1996, seven fatal accidents occurred on roadway segments within the study boundaries. Response time to accidents, while not specified as a direct cause of death in fatal accidents, is critical in emergency situations. Response time is also critical for ambulance and fire-rescue operations, both of which are based from numerous locations throughout the Study Area.

Identified Problem: *Higher accident rates than statewide averages on major Study Area roadways.*

4.3 ACCESS TO OPPORTUNITY

The Daniel Boone Study Area has developed and is expanding a strong employment base, currently providing over 175,000 jobs within the study boundary with forecasts of over 190,000 jobs available by 2020. This growth in the number of jobs combined with a slight decline in total population creates an even greater demand for commuters with a destination within the Study Area, in particular the Chesterfield Valley and I-64 corridor. In addition, surrounding areas north, south and east of the Study Area are forecast to experience a decline in employment opportunities. These same areas are also found to have higher percentages of zero-vehicle households and therefore a greater reliance on public transit. Transit service in the Study Area, as discussed previously, is somewhat limited within the study boundaries, in particular in the western portions where a majority of the employment growth is expected to occur, making access to current and future job opportunities difficult for transit dependent employees. This need for entry-level employee accessibility also was identified through the community engagement process.

Identified Problem: *Need to reinforce existing employment concentrations through provision of transportation services and provide improved transit (reverse commute) for entry-level workers.*

4.4 FUNDING CONSTRAINTS

The East-West Gateway Coordinating Council currently evaluates and prioritizes projects based on a 3-year plan, currently know as the Transportation Improvement Program (TIP). These projects are

prioritized based on areas of greatest need and limited to available funding. Under the overall process, the preferred alternative identified by the study team for the Daniel Boone Study Area will be presented to the EWGCC Board of Directors for approval and possible incorporation into the long-range transportation plan.

The plan identifies reasonably anticipated revenues available for both highway and transit improvements through 2020 and then compares the costs of proposed improvements against that revenue stream. Only projects that fit within that revenue stream are considered "committed" for the purposes of the financially constrained plan. The three corridors now under study in MTIAs (Daniel Boone, Northside and Southside) are considered "illustrative" in the current version of the plan. This indicates that the funding available through 2020 is not considered sufficient, without revenue enhancements, to cover the cost of all major improvements that might emerge from these MTIAs. As these MTIAs are completed, a new round of revenue estimates will be developed, the region's financial constraint will be reevaluated, and prospects for moving Study Area improvements into the plan will be judged. There are three possible outcomes of this analysis: growth in revenues will be sufficient to produce a surplus over the 20 year horizon of the plan that can be used to fund the improvements; projects currently in the plan will be adjusted to make room for the improvements; or the improvements will be identified as illustrative, with their implementation dependent on revenue enhancements. Regardless, funding for transportation improvements in the region is competitive and the Locally Preferred Alternative (LPA) for the Daniel Boone Study Area will be competing for funding with the LPA recommendations from the Northside and Southside MTIAs as well as with other regional projects.

The various sources of funding for these projects include federal, state and local taxes. Special federal funding sources are also available and include the following:

- Interstate Maintenance Program (I-M)
- National Highway System Program (NHS)
- Surface Transportation Program (STP)
- Highway Bridge Replacement and Rehabilitation Program (HBRRP)
- Congestion Mitigation and Air Quality Program (CMAQ)

Individual municipalities collect and allocate their own funds as well as prioritize projects for facilities that they maintain. Projects funded through these sources are generally smaller in nature and have less impact to regional transportation infrastructure. Some municipalities and other local agencies, however, have been successful in attracting federal funds for larger scale projects.

Identified Problem: *Limited regional funding for major transportation improvements.*

5.0 NEED FOR ACTION

The problems and opportunities described in Section 4.0 of this document translate into a set of inter-related issues and goals related to surface transportation in the Daniel Boone Study Area. Each of these issues/goals are further delineated into a corresponding set of specific objectives that proposed transportation projects and services should attempt to meet in the Study Area. These objectives guide the development and selection of transportation alternatives. For clarification, specific goals and objectives for the Daniel Boone Study Area are grouped into the following categories consistent with the broad-based, regional objectives outlined in Transportation Redefined:

- Congestion Mitigation
- Safety and Security in Travel
- Access to Opportunity
- Funding Constraints

5.1 CONGESTION MITIGATION

As discussed in the previous section, a number of the Study Area's roadways are currently and are forecasted to be operating at level of service D or worse. These traffic conditions are a consequence of several factors which contribute to vehicular travel demand forecast to exceed available roadway capacity during peak travel periods. In order to address this issue, traffic congestion must be mitigated. The causes of this congestion in the Study Area are a result of a set of related issues as described in Section 4.0 These include the following:

- inadequate roadway capacity
- reliance on autos for meeting the mobility needs of Study Area residents and employees leading to vehicle demand in excess of available roadway capacity at several locations during peak travel periods
- dispersed, low density development patterns which are difficult to serve effectively with transit and which promote greater reliance on autos to meet travel needs
- relatively poor transit service which does not offer a viable alternative to the automobile for most trips
- limited management of the high number of entry points along the major arterials
- large number of cul-de-sac roads, especially in the western portion of the Study Area

Hence the following goal and associated objectives can be formulated to address traffic congestion in the Daniel Boone Study Area:

Goal: Relieve traffic congestion and improve mobility within the Study Area

Objectives:

- Improve the capacity and connectivity of the transportation system within the Daniel Boone Study Area
- Improve the capacity and connectivity of the transportation system between the Daniel Boone Study Area and major attractors of Study Area travel outside of the Study Area including the rest of St. Louis County and Downtown St. Louis
- Increase the usage of alternative modes to the auto by improving the competitiveness of alternative modes relative to the auto to reduce vehicular travel demand

- Concentrate future commercial and office activity growth within the Study Area at existing concentrations of commercial (office) and retail land use to allow more effective service by modes other than auto
- Provide opportunities for bicycle and pedestrian trips

5.2 SAFETY AND SECURITY IN TRAVEL

The number of accidents along some of the roadway segments in the Daniel Boone Study Area exceed statewide averages. Increased safety and security in traveling is a priority for the region and in this Study Area. Transportation safety and security focuses on:

- Human Behavior
- Vehicle Safety
- Physical Environs
- Social Environs

Therefore, the following goal and associated objectives can be formulated to address safety and security in travel in the Daniel Boone Study Area.

Goal: Improve the safety of the transportation system within the Daniel Boone Study Area

Objectives:

- Reduce the existing accident rate on Daniel Boone Study Area roadways, particularly those whose rates are above the statewide average for that type of roadway
- Provide safer roadways, including pedestrian and bicycle opportunities

5.3 ACCESS TO OPPORTUNITY

The employment base in the Daniel Boone Study Area, especially along Interstates 64 and 270, has grown significantly and further growth is anticipated. Even though a majority of these employees come from residences within the Study Area, there is a demand for entry-level positions which is not being served from within the Study Area. The primary locations for this employment demand is in Chesterfield Valley and near I-64 and Ballas Road.

To address this problem, the following goal and objectives have been developed.

Goal: Reinforce existing employment concentrations through provision of transportation services and provide improved transit (reverse commute) for entry-level workers.

Objectives:

- Improve transit services to employment centers located along Ballas Road near I-64 and in Chesterfield Valley
- Decrease transit travel times
- Increase frequency of transit service

5.4 FUNDING CONSTRAINTS

As described in the previous section, since funding for major transportation improvements is limited in the region, recommended improvements for this Study Area will be evaluated along with other recommended projects in the region.

Goal: Provide transportation system improvements that maximize attainment of the above goals within the financial constraints of the transportation-providing agencies within the region.

Objectives:

- Maximize the cost-effectiveness of transportation system improvements within the Daniel Boone Study Area.

6.0 REFERENCES

Bi-State Development Agency. Service Planning and Scheduling. Service Plans and Route Maps, 1996, 1997 and 1998.

Department of Commerce, Washington, D.C. 1980 and 1990 Census of Population and Housing.

East-West Gateway Coordinating Council. Demographic and Census Data Source, Electronic File, l, November 1998.

East-West Gateway Coordinating Council. Industry Perspectives and Recommendations for a Regional Freight Planning Process. September 1997.

East-West Gateway Coordinating Council. St. Louis Systems Analysis for Major Transit Capital Investments. March 1991. Amended June 1991.

East-West Gateway Coordinating Council. Transportation Improvement Program, Fiscal Years 1999 through 2001. 26 August 1998.

East-West Gateway Coordinating Council. Transportation Redefined. May 1995.

East-West Gateway Coordinating Council. Transportation Redefined II. March 1999.

East-West Gateway Coordinating Council. Travel Patterns and Projection Source, Electronic File, December 1998.

East-West Gateway Coordinating Council. "Unpublished, Preliminary Working Document - Purpose and Need Statement for the Northside Corridor." 1998.

Howard Stein Hudson. "Community Forum Notes: Preliminary Working Document". April 1999.

Howard Stein Hudson. "Focus Group Notes: Preliminary Working Document". February 1999.

Howard Stein Hudson. Major Transportation Investment Analysis for Northside, Southside, and Daniel Boone Study Areas Community Engagement Working Preliminary Baseline Paper, 1999.

Missouri Department of Transportation. Roadway, Accident and Traffic Volumes (1995) Data Source, Electronic File. December 1998.

MultiSystems with Catalyst Public Relations, Inc. Bi-State Transit Center Hub Restructuring Study, Final Report. February 12, 1998.

Parsons Brinckerhoff Quade & Douglas, Inc. Existing and Future Conditions Report. May 1999.

St. Louis County Department of Planning. St. Louis County, Missouri 1998 Fact Book. 1998.

"St. Louis Downtown Development Action Plan". 1999.

Sverdrup Civil, Inc. Cross-County Corridor Major Transportation Investment Analysis, Final MTIA Report, September 1997, Revised March 1998.