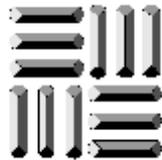


LOCALLY PREFERRED ALTERNATIVES

MAJOR TRANSPORTATION INVESTMENT ANALYSES

Daniel Boone, Northside and Southside Study Areas

**Staff Recommendation
to the Board of Directors**



**East-West Gateway
Coordinating Council**

May 31, 2000

TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION	1
II. DANIEL BOONE STUDY AREA	
A. Purpose and Need	3
B. The Alternatives	3
C. Discussion	4
III. NORTHSIDE STUDY AREA	
A. Purpose and Need	13
B. The Alternatives	13
C. Discussion	19
IV. SOUTHSIDE STUDY AREA	
A. Purpose and Need	22
B. The Alternatives	22
C. Discussion	28
V. STAFF RECOMMENDATION	
A. Daniel Boone Study Area	32
B. Northside Study Area	33
C. Southside Study Area	33
D. Total Cost of the LPA Recommendation	34

I. INTRODUCTION

In the fall of 1998, the Council began three Major Transportation Investment Analyses (MTIA) in the Northside, Southside, and Daniel Boone study areas. These studies, which covered an area taking in most of the City of St. Louis and over half of St. Louis County, were designed to tap into the concerns and aspirations of the affected communities and to create a better understanding among the study team of the role of transportation in addressing those community goals. That understanding was then employed to develop transportation solutions that would best fit the needs of each study area. The MTIAs were conducted under the policy framework of *Transportation Redefined*, the region's long-range transportation plan, which, it is worth repeating, places transportation decision-making in the context of the region's larger social and economic goals.

Transportation Redefined outlines seven focus areas to guide transportation planning and decisions: preservation of existing infrastructure, safety and security in travel, congestion management, access to opportunity, sustainable development, efficient movement of goods, and resource conservation. These focus areas served as a starting point for the MTIAs. Working with residents, civic organizations, and elected officials in the communities, problem statements were developed early in the study process for each area. These problem statements were benchmarks for developing and evaluating transportation options and for ensuring that those options were relevant to the needs of the areas.

Consistent with the emphasis on finding transportation solutions rather than merely developing projects, the MTIAs examined both highway and transit alternatives in each study area. Six major alternatives were identified in each area: The first was a No-Build Alternative, which consists of transportation improvements that are already planned and committed to by the Board. The No-Build represents the base condition in the planning horizon year -- the year 2020 for these studies -- against which the performance of the various transportation options are evaluated. The second was a Transportation System Management (TSM) Alternative, which represents a system of low- to moderate-cost improvements designed to increase the efficiency and effectiveness of the existing transportation system. The roadway element of the TSM generally contains signal, intersection, access control, and other minor improvements ; the transit element generally contains expanded bus service, reserved bus lanes, and transit transfer centers. In addition to the No-Build and TSM, there were four major Build Alternatives created for each corridor. The Build Alternatives included either a major transit improvement (light rail or bus rapid transit) or a package of roadway improvements. The performance of the projects contained in each alternative were thoroughly evaluated with regard to costs, impacts, and benefits.

These studies took place within an extensive community engagement process, involving scoping meetings, open houses, workshops, opinion surveys, a web site, hotline and newsletters, and numerous meetings with elected officials, civic groups, neighborhood organizations, and other interested parties. Community input has guided the planning process. Since a series of open houses in late March when the evaluation data were presented to the public, the study team has received several thousand comments. While the technical data forms the foundation of the evaluation, our recommendation is a blending of the technical evaluation and the public reaction to it.

The MTIAs were carried out under the direction of the Transportation Corridor Improvement Group, a planning group housed at the Council that includes staff from the Council, the Bi-State Development Agency, and the Missouri Department of Transportation. Three consultant teams were engaged to conduct the technical work and to lead the community engagement process. Parsons Brinckerhoff was responsible for the technical planning, engineering, and evaluation; KPMG was responsible for transit operation plans and travel demand forecasting; and Howard/ Stein-Hudson, supported by Vector Communications, was responsible for the community engagement process.

The remainder of this report contains staff's recommendation to the Board of Directors, setting forth the projects that should advance from the MTIAs to the long-range plan and, ultimately, implementation. For each study area, staff has included a Purpose and Need statement, which shaped the development and evaluation of projects; a brief description and evaluation of the transit and highway projects studied; and a recommendation for each project. At the end of the report is a unified summary of the staff's recommendation, including costs. It is important that the Board, in acting on this recommendation, consider that the projects have emerged from a planning study, not an engineering/design study. *The alternatives are planning concepts, with just enough engineering detail to allow for a reasonable assessment of project costs and impacts. As these projects advance to construction, there may be, and probably will be, changes in scope, alignment, or design details.*

II. DANIEL BOONE STUDY AREA

A. Purpose and Need

- T **Relieve Congestion:** Improve mobility on I-64, I-270, and major arterials.
- T **Safety:** Improve the safety of the transportation system within the study area
- T **Access to Opportunity:** Reinforce existing employment concentrations through provision of transportation services and provide improved transit (reverse commute) for entry-level workers.
- T **Accessibility:** Improve circulation within the study area.

B. The Alternatives

- < **Light Rail Transit - Rock Island/Page Avenue Alignment (LRT Alternative 3)**
Build alternative: *new light rail extension from Cross-County LRT Segment 3 to Chesterfield Valley, using rights-of-way along the Rock Island RR, Page Ave., Fee Fee Rd./AmerenUE easement or the Page Ave. Extension, and Chesterfield Airport Rd.*¹*
- < **Light Rail Transit - I-64 Alignment (LRT Alternative 4)**
Build alternative: *new light rail extension from Cross-County LRT Segment I to Chesterfield Valley, using rights-of-way along I-64*
- < **Eatherton Road**
Build alternative: *realign two-lane roadway from Wildhorse Creek Rd. to Chesterfield Airport Rd. with redesigned I-64 interchange (cost: \$68.7 million)*²*
- < **Spirit of St. Louis Blvd. Interchange**
Build alternative: *new interchange with I-64 at Spirit of St. Louis Blvd. (cost: \$33.5 million)**
- < **Long Road Interchange**
Build alternative: *reconfigure interchange with I-64 at Long Rd. (cost: \$37.2 million)**
- < **Long Road/Kehrs Mill Road/Wildhorse Creek Road**
Build alternative: *reconfigure alignment of Long Rd. and Kehrs Mill Rd. intersection with Wildhorse Creek Rd. to eliminate one intersection and connect Long Rd. and Kehrs Mill Rd. (cost: \$8.8 million)**
- < **Clarkson Road**
Build alternative: *add lanes, landscaped median and u-turn loops from Kehrs Mill Rd. to I-64; build new interchange at Baxter Rd. (cost: \$25.7 million)*¹*
- < **MO 141**
Build alternative: *relocated six-lane roadway with grade separated interchanges from north of Conway Rd. to Olive Street Rd. (cost: \$72.4 million)**

B. The Alternatives *(continued)*

< **Earth City Extension**

Build alternative: *new six-lane roadway from Olive Street Rd. to the Page Ave. Extension (cost: \$63.8 million)**

< **River Valley Connector**

Build alternative: *new two lane roadway from N. Outer Rd. to proposed Earth City Extension (cost: \$32.0 million)*

< **I-64 HOV**

Build alternative: *add new high-occupancy vehicle lanes from Missouri River Bridge to I-270 (cost: \$63.8 million)*

< **I-64**

Build alternative: *add collector-distributor lanes from east of Missouri River to Clarkson Rd.; add through traffic lanes from Clarkson Rd. to I-270 (cost: \$80.7 million)*

TSM alternative: *implement Intelligent Transportation System (ITS) improvements, including ramp meters, surveillance cameras, and variable message signs (cost: \$10.4 million)**

< **I-270**

Build alternative: *add collector-distributor lanes from Page Ave. to Manchester Rd. (cost: \$43.9 million)*

TSM alternative: *implement Intelligent Transportation System (ITS) improvements, including surveillance cameras and variable message signs (cost: \$3.8 million)**

C. Discussion

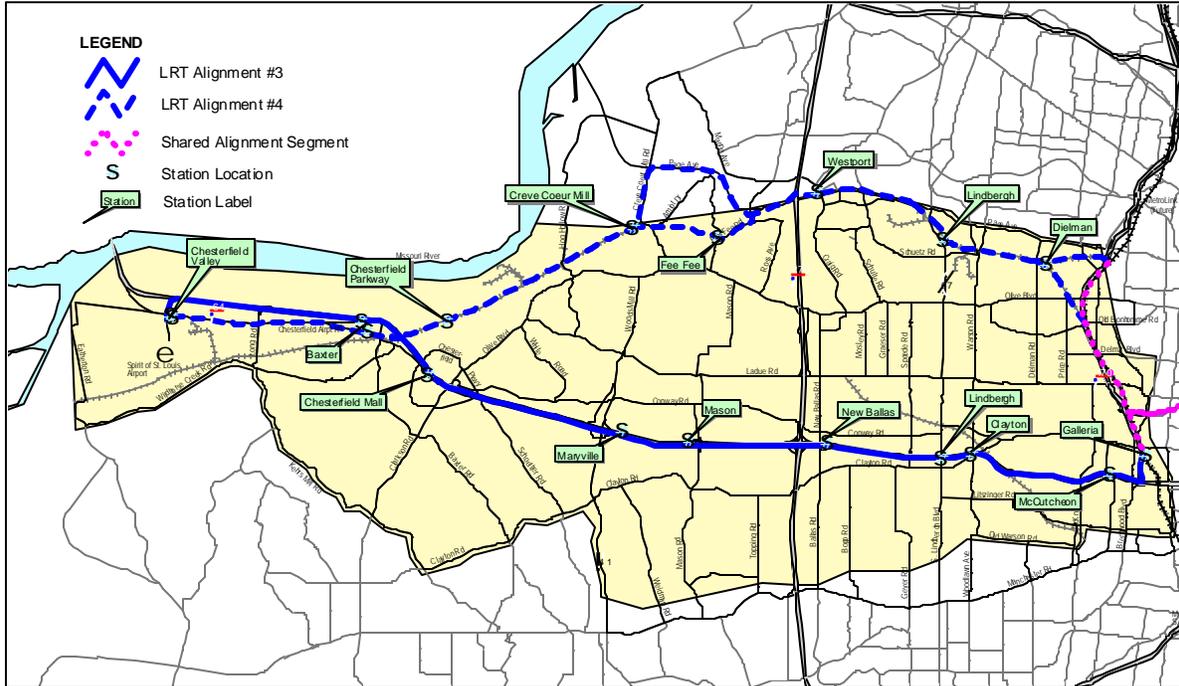
Light Rail Transit - Rock Island/Page Ave. Alignment (LRT Alternative 3)

Light Rail Transit - I-64 Alignment (LRT Alternative 4)

The table on the following page shows comparative data for the two light rail alternatives in the study area. Largely because of the differences in adjacent land uses and development densities along the two lines, LRT Alternative 3 outperforms LRT Alternative 4. Compared to LRT 4, LRT 3 has lower capital and operating costs (although if the third segment of the Cross-County light rail extension along I-170 is not built, the additional expense of connecting this alternative to Clayton would have to be borne by the project); it produces a higher number of rail and total transit trips; it provides more households with a faster transit trip to downtown St. Louis and intervening stations along the existing MetroLink line; and it serves more low-income households, for which transit is not an option but a necessity.

Daniel Boone Study Area

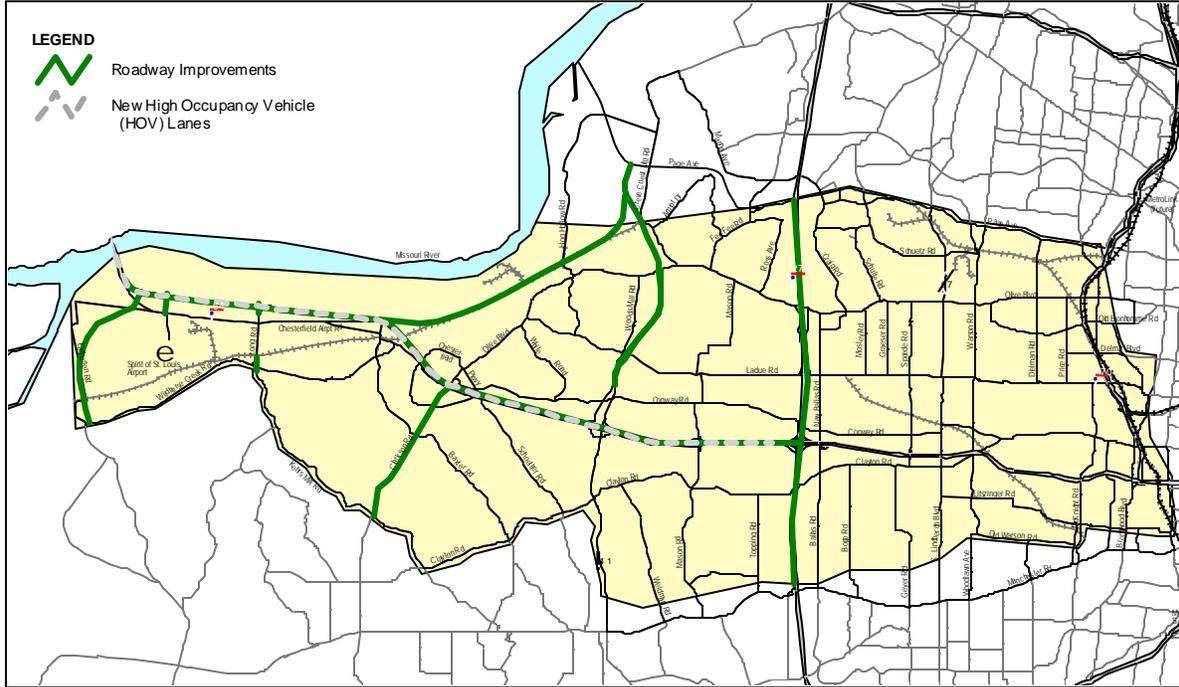
Light Rail Transit Alternatives Studied



Source: Parsons Brinckerhoff Quade & Douglas, Inc., March 2000.

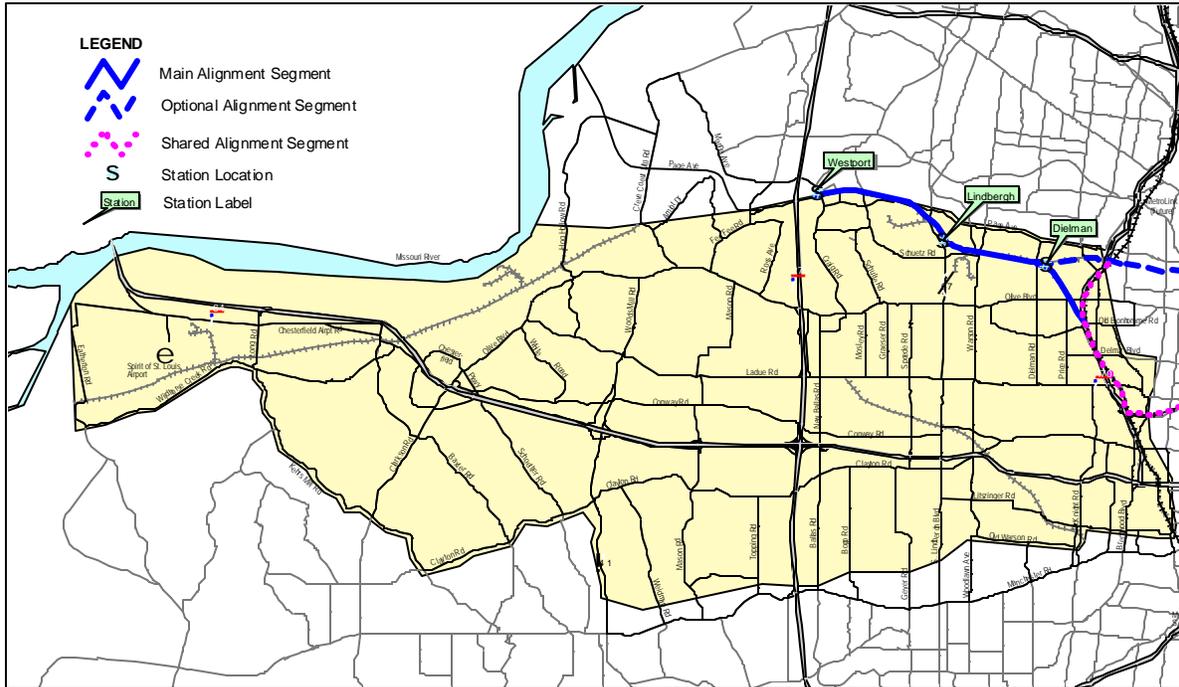
Daniel Boone Study Area

Roadway Alternatives Studied



Daniel Boone Study Area

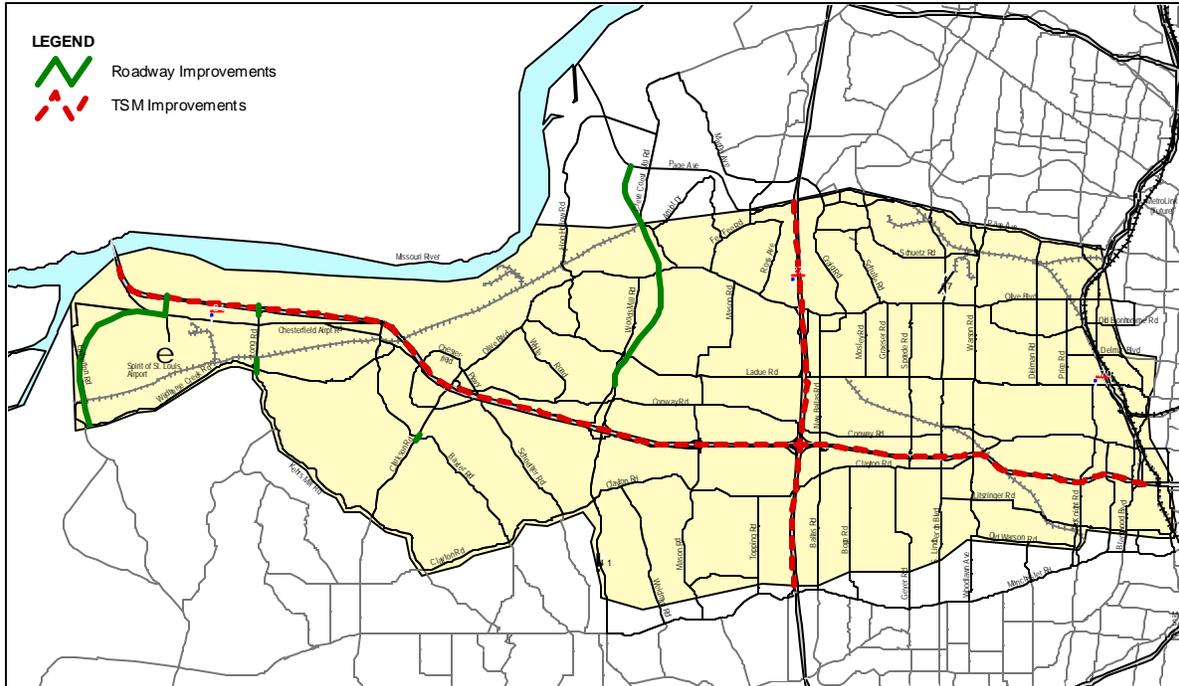
Light Rail Transit Alternatives Recommended



Source: Parsons Brinckerhoff Quade & Douglas, Inc., May 2000.

Daniel Boone Study Area

Roadway Alternatives Recommended



Source: Parsons Brinckerhoff Quade & Douglas, Inc., May 2000.

Transit Performance Data

PERFORMANCE CATEGORY	LRT ALT. 3	LRT ALT. 4
Capital cost (millions)	\$573.5	\$623.5
Annual operating cost (millions)	\$31.2	\$32.1
Increase in daily rail boardings	11,700	10,600
Increase in total daily transit boardings	13,200	13,000
Increase in daily rail trips	8,800	8,200
Increase in daily total transit trips	6,800	6,500
% Transit share of work trips	4.2	4.0
% Households with transit travel times to St. Louis CBD <45 minutes	25.7	21.4
% Households with transit travel times to St. Louis CBD <60 minutes	97.9	88.1
Low income households within ½ mile of transit stop	872	734

Annual operating cost is the difference between the no-build and the build alternatives, including bus costs. Change in daily boardings and trips is the difference between the TSM and build alternatives.

Both alternatives will provide good access to employment concentrations inside of I-270 (i.e., the medical complexes along Ballas in the I-64 corridor, and the Westport/Page Industrial areas along the Rock Island/Page corridor) for job seekers from the urban core, but neither alternative will offer urban core residents good access to jobs in the Chesterfield Valley or other destinations in the western reaches of the study area because of extreme transit travel times. Nor will either alternative reduce traffic congestion on major east-west road corridors.

Ridership for both alternatives declines dramatically west of I-270, although extending the rail lines beyond I-270 accounts for more than half of the capital costs. Eighty percent of the boardings for Alternative 3 and two-thirds of the boardings for Alternative 4 come from east of I-270. Because of lower land use densities and the physical distance of the rail alternatives from the major activity centers in the western sections of the study area, extending light rail beyond I-270 is not justified at this time.

Given the relative performance of the two alternatives – whether they are extended to Chesterfield Valley or kept within I-270 – LRT 3 is the preferred alignment. An additional advantage of LRT 3 is the possibility of extending it east from I-170 along the Terminal RR to connect with existing MetroLink and a Northside light rail extension, creating better access for residents in the core communities to employment opportunities in near west St. Louis County. Staff recommends the Alternative 3 (Rock Island/Page Ave.) MetroLink extension from I-170 to Westport at a capital cost of \$249.5 million, with the option of extending the line eastward to a connection with the Northside light rail extension, if studies prove the viability of that connection.

Eatherton Rd. Spirit of St. Louis Blvd. Interchange

Although these two projects were considered separately in the MTIA, the close proximity of the proposed interchanges (less than one mile apart in an area with low density land uses) argues for a joining of the projects. Eatherton Rd. currently is a substandard two-lane roadway with a number of tight curves and grade problems. The purpose of the alternative is to correct those alignment deficiencies and enhance safety.

When improved, Eatherton experiences a modest increase in vehicle-miles of travel (VMT) – meaning that the improvement draws more traffic to the roadway – with overall travel speeds declining slightly. There is, however, no increase in congestion along the roadway, and the improvement does not provide traffic relief to other north-south arterials in the west county area. While traffic flow improvements associated with the improvement are minimal, the project will significantly improve the roadway's safety.

The new I-64 interchange at Spirit of St. Louis Blvd. is intended to provide better access to the developing Chesterfield Valley and relieve some of the traffic burden on Chesterfield Airport Rd. The improvement accomplishes both. As to the I-64 interchange included as part of the Eatherton project, there is no need for two I-64 interchanges so close together in this part of the Valley, and the Spirit interchange offers the greater benefit. Traffic from the improved Eatherton Rd. will access the new interchange using Chesterfield Airport Rd. Staff recommends the Eatherton Rd. improvement from Wildhorse Creek Rd. to Chesterfield Airport Rd., excluding the redesigned I-64 ramps, at a cost of \$36 million, and the new I-64 interchange at Spirit of St. Louis Blvd. at a cost of \$33.5 million.

Long Rd. Interchange

This project will accommodate traffic more efficiently in the interchange area by moving the N. Outer Rd. to the north, extending Long Rd. north of I-64 to the relocated outer road, and building a fully directional interchange between I-64 and the extended Long Rd. The reconfigured interchange enhances traffic flow between I-64, Long Rd, the N. Outer Rd., and Chesterfield Airport Rd., improves overall traffic circulation in the Valley, and provides better access to Valley development. Staff recommends the reconfigured I-64 interchange at Long Rd. at a cost of \$37.2 million.

Long Rd./Kehrs Mill Rd./Wildhorse Creek Rd.

The realignment of Long Rd. and Kehrs Mill Rd. at Wildhorse Creek Rd. is intended to eliminate a safety concern in an area of increasing development and traffic. While the improvement does combine two intersections into one, it has little overall traffic benefit. It will, nevertheless, reduce the potential for traffic conflicts and improve roadway safety. Staff recommends the Long Rd., Kehrs Mill Rd., and Wildhorse Creek Rd. improvement at a cost of \$8.8 million.

Clarkson Rd.

The project is designed to alleviate traffic congestion and improve safety on Clarkson Rd. by providing additional roadway and intersection capacity and using access management techniques to minimize traffic conflicts. The improvement performs well, with Clarkson experiencing a significant increase in VMT and speeds and a notable decrease in vehicle delay. Public reaction to the proposed widening of Clarkson, however, has been vigorously negative. Of the comments received on roadway improvements in the study area since the open houses in March, nearly three-quarters have opposed adding lanes to Clarkson, with no comments expressly supporting the widening. Despite the benefits of the improvement, the negative community reaction diminishes prospects for implementing the full project. Staff recommends only the interchange at Baxter Rd. and access management improvements along Clarkson Rd. at a cost of \$ 9.5 million.

MO 141

This project will complete the long-anticipated upgrading of MO 141 from I-55 in Jefferson County to MO 340 in St. Louis County. Providing a high-speed travel option for north-south traffic between I-64 and MO 340, the improvement dramatically improves travel conditions on existing Woods Mill Rd. (which currently carries the MO 141 designation) north of Conway Rd., as well as enhancing traffic circulation throughout the northwest part of the study area. Staff recommends the MO 141 improvement at a cost of \$72.4 million.

Earth City Extension

This project essentially extends the improved MO 141 north from MO 340 to the Page Ave. Extension, which is now under construction. Extending the roadway north to Page has little independent utility unless there is a similar connection north from Page to the existing terminus of the Earth City Extension south of Riverport. In the absence of that northern extension, the project fails to attract sufficient traffic to relieve other north-south roadways in the study area or to justify its cost. Maryland Heights, however, is planning to build the northern link (calling it the Creve Coeur Mill Rd. Reliever) from Page Ave. to the Earth City Expressway. Once that link is in place, the Earth City Extension considered here would become one segment of a continuous north-south route from MO 370 to MO 141. The Extension would then be a vital link in a larger improvement, carrying much higher traffic volumes and providing some relief to other north-south roadways, including I-270. The agency responsible for constructing the Extension has not been determined. Staff recommends the Earth City Extension improvement at a cost of \$63.8 million, contingent on the northern link of the expressway being first completed by the City of Maryland Heights.

River Valley Connector

This improvement creates a new north-south connector between the Chesterfield Valley and the Page Ave. Extension, via the proposed Earth City Extension. Traversing an environmentally sensitive area, which could create obstacles to the improvement's construction, the project attracts little traffic and produces few travel benefits. The relative ease by which a comparable trip can be made using either MO 340 or I-64 and the improved MO 141 negates the principal value of the Connector. Staff does not recommend the River Valley Connector improvement.

I-64 HOV

I-64

The purpose of these projects is to improve traffic flow and alleviate future congestion along this major east-west roadway. Both improvements will lead to modest increases in VMT and speeds and a corresponding decrease in delay. Although the decrease in delay associated with the HOV option is less than half that of the full I-64 improvement, the HOV option costs three-quarters as much. While creating travel benefits, the improvements do not appreciably change congestion levels in the corridor. Less extensive and more site-specific operational improvements might prove just as beneficial. There is also the issue of how the Page Ave. Extension, which opens in several years, will affect travel in the I-64 corridor. It is probably prudent to await the opening of Page and observe its impact before recommending another major investment along I-64. Staff recommends the I-64 TSM improvement at a cost of \$10.4 million.

I-270

As with the I-64 projects, the intent of this improvement is to improve traffic flow and alleviate congestion on the through lanes of the highway. Improving I-270 allows this heavily traveled corridor to accommodate more traffic, but the improvement has no impact on overall traffic quality in the study area and provides only minor congestion relief on I-270. Staff recommends the I-270 TSM improvement at a cost of \$3.8 million.

III. NORTHSIDE STUDY AREA

A. Purpose and Need

- T **Access to Opportunity:** Improve access for travel within the study area as well as travel to other areas within the region. Opportunity includes but is not limited to jobs, medical care, shopping, and education. Access means getting to opportunities in a reasonable amount of time.
- T **Safety:** Use transportation improvements on roadways to reduce the existing accident rate. Also direct transportation improvements to enhance neighborhood vitality, thereby improving personal safety.
- T **Neighborhood Revitalization/Sustainable Development:** Use new transportation infrastructure to maintain and enhance quality of life in neighborhoods, with a focus on areas of declining population and employment.
- T **Connectivity of the Transportation System:** Build on the existing transportation system by seeking opportunities to improve connections between within and between transportation modes.

B. The Alternatives

T **Light Rail Transit - Riverview Alignment (LRT Alternative 3)**

Build alternative: *new light rail extension from downtown St. Louis to Florissant Valley Community College, using rights-of-way within 14th St., N. Florissant St., Natural Bridge Ave., Riverview Blvd., the Norfolk Southern RR, and W. Florissant Ave. Downtown St. Louis connection would involve a single-track loop using 14th St., Market St., 7th St., and Washington Ave.**

T **Light Rail Transit - Terminal RR Alignment (LRT Alternative 4)**

Build alternative: *new light rail extension from downtown St. Louis to Florissant Valley Community College, using rights-of-way within or along 14th St., N. Florissant St., Natural Bridge Ave., the Terminal RR, existing MetroLink, Ferguson Ave., and W. Florissant Ave. Downtown St. Louis connection would involve a single-track loop using 14th St., Market St., 7th St., and Washington Ave.*

B. The Alternatives *(continued)*

< **MO 367, Lewis and Clark Blvd., Jennings Station Road (367 Alternative 5)**

Build alternative: *upgrade MO 367 to freeway standards, with grade separated interchanges and one-way outer roads, from Lindbergh Blvd. to I-270; upgrade Lewis and Clark Blvd. to an urban parkway with a landscaped median, signal and intersection improvements, and sidewalks from I-270 to Jennings Station Rd.; upgrade Jennings Station Rd. to an urban parkway with a landscaped median, signal and intersection improvements, and sidewalks from Lewis and Clark Blvd. to W. Florissant Ave.*
(cost: \$135.4 million)

TSM alternative: *access control/management and signal/intersection improvements, convert MO 367 outer roads to one-way pairs* (cost: \$5.0 million)

< **MO 367, Lewis and Clark Blvd., Riverview Blvd., West Florissant Avenue (367 Alternative 6)**

Upgrade MO 367 to freeway standards, with grade separated interchanges and one-way outer roads, from Lindbergh Blvd. to I-270; upgrade Lewis and Clark Blvd. to an urban parkway with a landscaped median, signal and intersection improvements, and sidewalks from I-270 to the Halls Ferry Circle; upgrade lanes, signals, and intersections along Riverview Blvd. from the Halls Ferry Circle to W. Florissant Ave.; upgrade W. Florissant Ave. to an urban parkway with a landscaped median and signal and intersection improvements (cost: \$130.5 million)*

TSM alternative: *access control/management and signal/intersection improvements, convert MO 367 outer roads to one-way pairs, median improvements on Riverview Blvd.* (cost: \$8.8 million)*¹

< **Riverview Drive, Hall Street, East Grand Avenue**

Build alternative: *upgrade Riverview Dr. to an urban parkway with a landscaped median from I-270 to Hall St.; upgrade Hall St. to an urban parkway with parallel collector roadways, intersection improvements, and a landscaped median from Riverview Dr. to E. Grand Ave.; add lanes to E. Grand Ave. from Hall St. to Broadway* (cost: \$72.1 million)*

TSM alternative: *median improvements and access control on Hall St.* (cost: \$1.8 million)*²

* Alternative Recommended

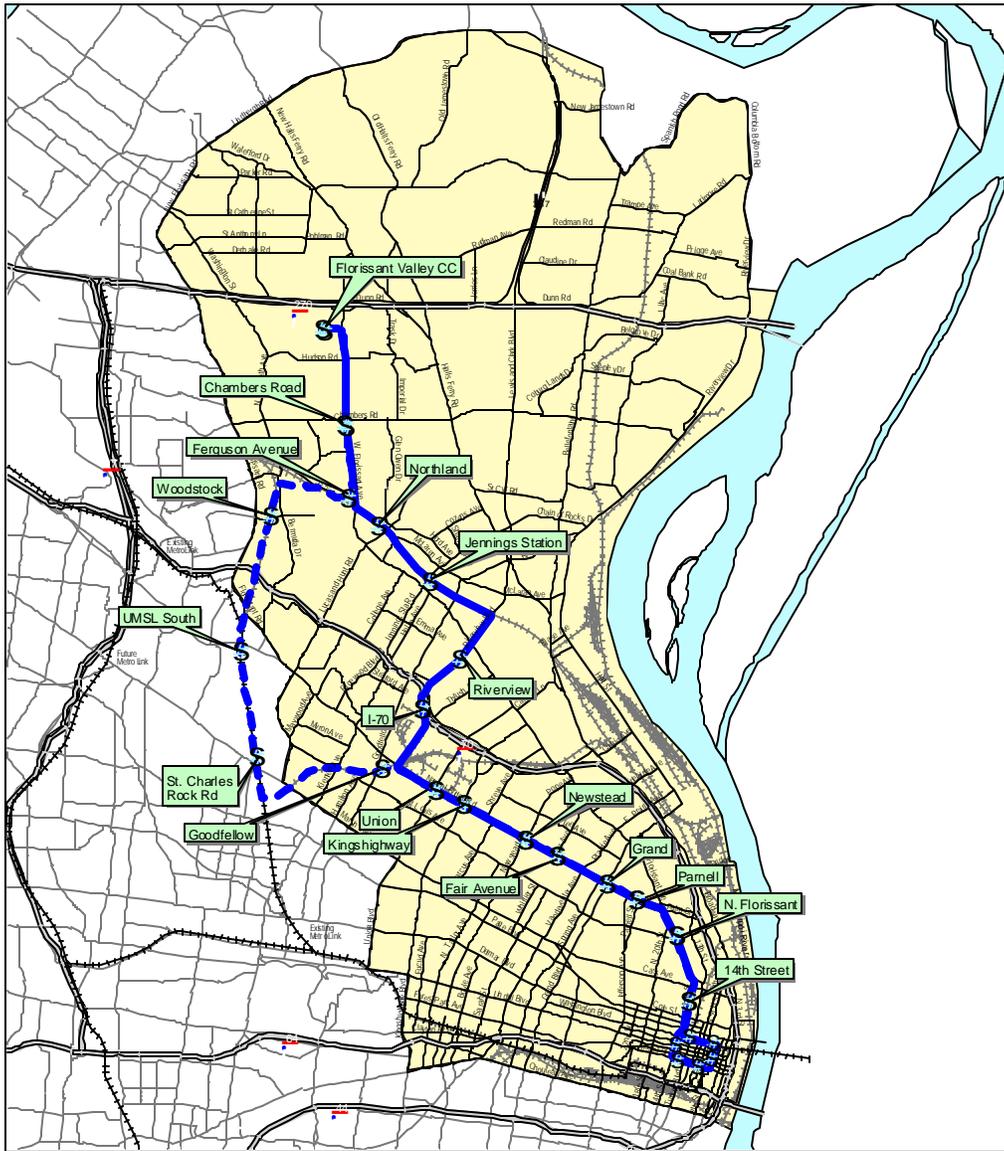
¹ TSM on West Florissant Avenue

Northside Study Area

Light Rail Transit Alternatives Studied

LEGEND

-  LRT Alignment #3
-  LRT Alignment #4
-  Station Location
-  Station Label



Source: Parsons Brinckerhoff Quade & Douglas, Inc., March 2000.

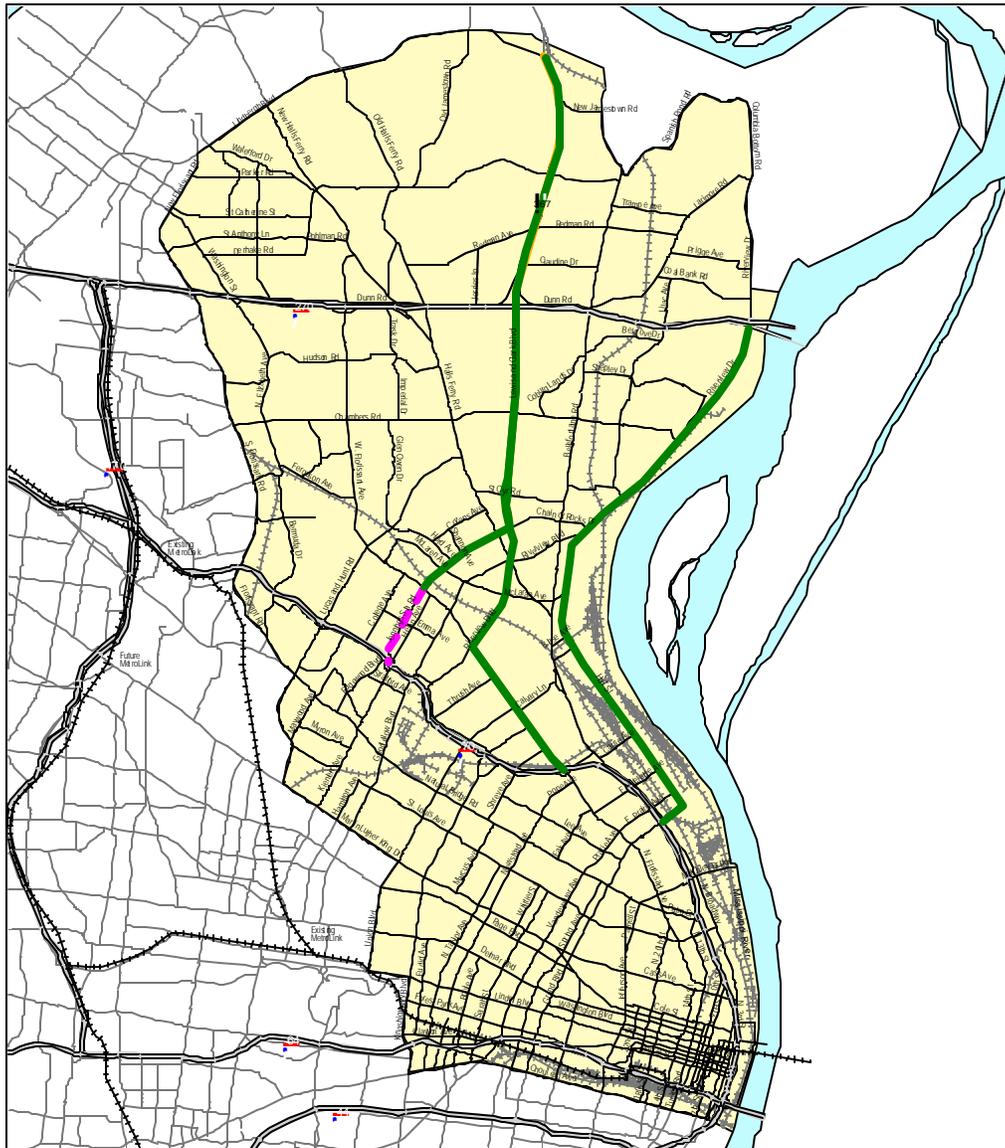
Northside Study Area

Roadway Alternatives Studied

LEGEND

 Improve Roadway

 Improvements by Others



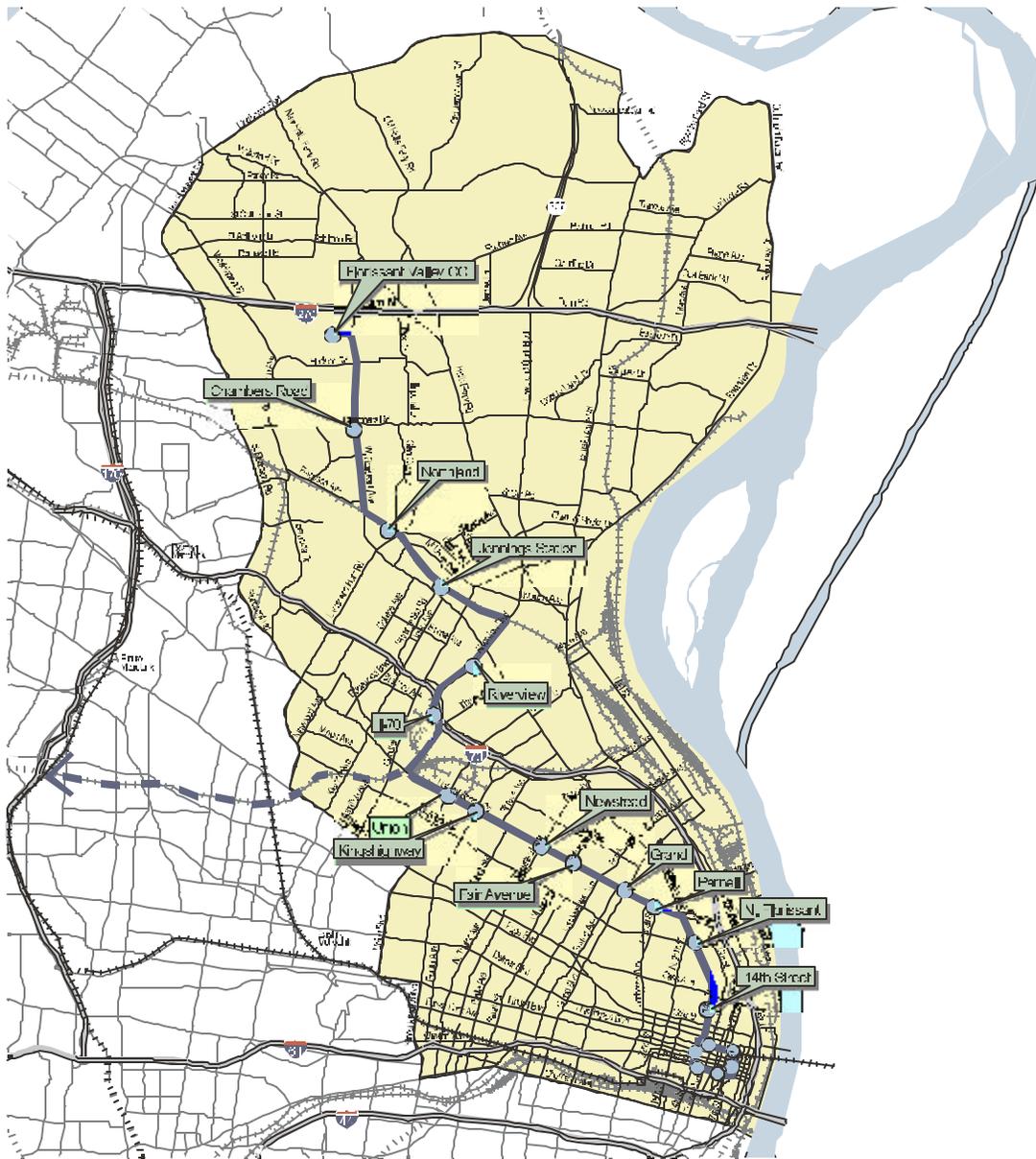
Source: Parsons Brinckerhoff Quade & Douglas, Inc., March 2000.

Northside Study Area

Light Rail Transit Alternative Recommended

LEGEND

-  Main Alignment Segment
-  Optional Alignment Segment
-  Station Location
-  Station Label



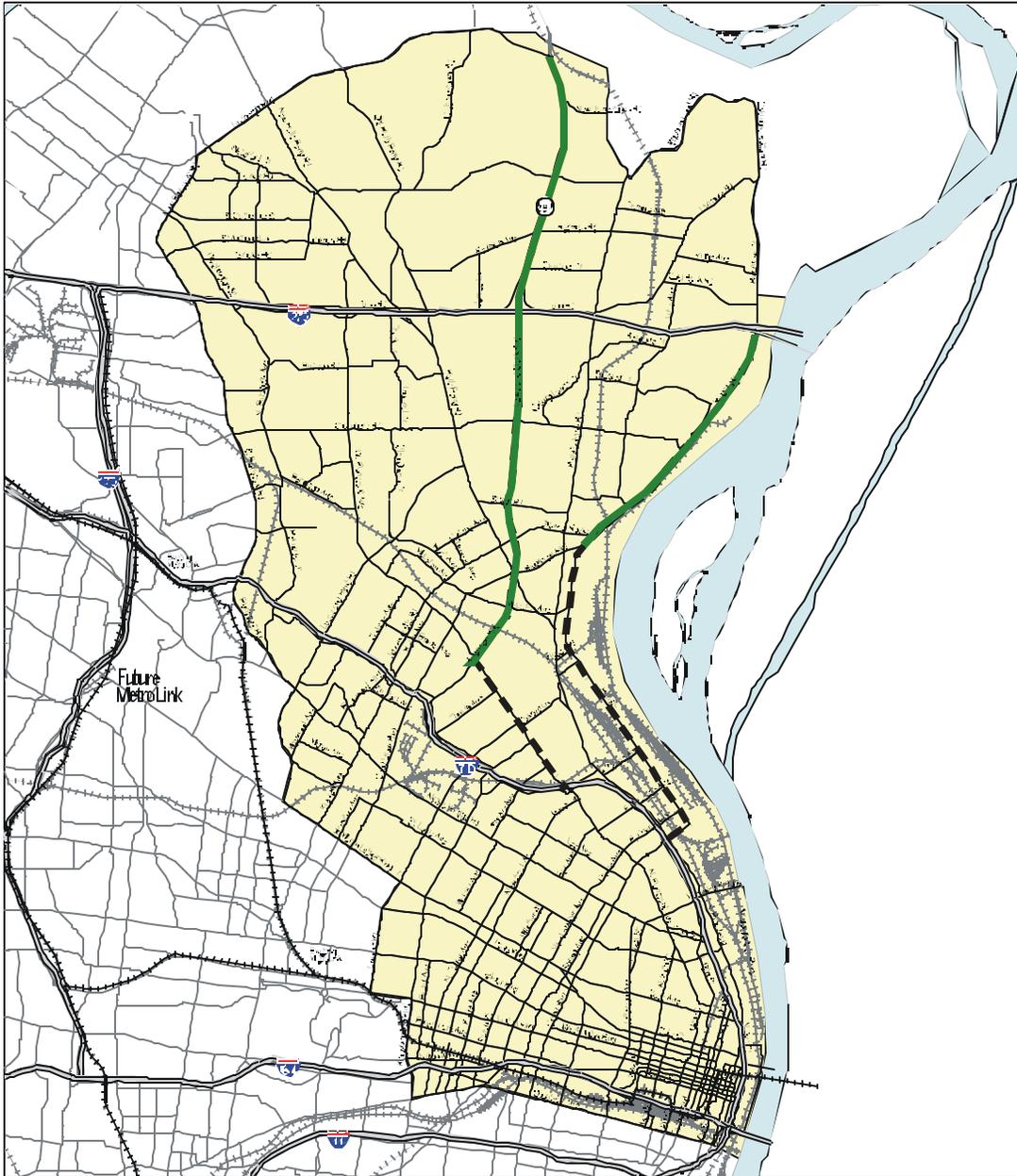
Source: Parsons Brinckerhoff Quade & Douglas, Inc., May 2000.

Northside Study Area

Roadway Alternatives Recommended

LEGEND

-  Roadway Improvements
-  TSM Improvements



Source: Parsons Brinckerhoff Quade & Douglas, Inc., May 2000.

C. Discussion

Light Rail Transit - Riverview Alignment (LRT Alternative 3)

Light Rail Transit - Terminal RR Alignment (LRT Alternative 4)

As the data below show, the two rail alternatives are closely matched. Although LRT Alternative 3 is less expensive and has a narrow performance advantage, judging between the two is difficult. For example, while LRT 3 costs \$18-\$30 million less to build, \$2 million less a year to operate, and produces more rail trips than LRT Alternative 4, LRT 4 actually generates more total transit (bus and rail) trips. Further, while LRT 4 offers greater rail access to such destinations as UMSL and the Airport and provides a better staging point for a possible westward connection with the Rock Island/Page Ave. (Daniel Boone) rail extension along the Terminal RR, LRT 3 better penetrates neighborhoods on the far northside of the City and the inner areas of North County, it gives direct access to the Northland site, a major redevelopment area in North County and the proposed site of an important transit center, and it creates more potential for development and redevelopment in the study area. Finally, while LRT 4 is two miles longer and takes a more circuitous route from Florissant Valley Community College to downtown St. Louis, and while residents from significantly more households can reach downtown in less than 30 minutes using LRT 3, the number of households served by longer trips becomes the same for the two alternatives and the travel time difference for a trip between the Community College and downtown are negligible.

Transit Performance Data

PERFORMANCE CATEGORY	LRT ALT. 3	LRT ALT. 4
Capital cost (millions)	\$485.5	\$504.1-\$516.4
Annual operating cost (millions)	\$19.9	\$22.2
Increase in daily rail boardings	18,200	20,300
Increase in total daily transit boardings	5,500	7,400
Increase in daily rail trips	15,500	14,700
Increase in daily total transit trips	2,700	3,200
% Transit share of work trips	9.6	9.5
% Households with transit travel times to St. Louis CBD <30 minutes	46.3	31.7
% Household with transit travel times to St. Louis CBD <45 minutes	88.2	88.2
Households within ½ mile of transit stop	23,036	22,773
Low income households within ½ mile of transit stop	13,967	13,876
Existing jobs within ½ mile of transit stop	107,293	105,711

Annual operating cost is the difference between the no-build and the build alternatives, including bus costs.

Change in daily boardings and trips is the difference between the TSM and build alternatives.

Because it provides higher access to households and has greater development potential, as well as having lower capital and operating costs, LRT 3 better meets the goals and objectives established for the study area and, therefore, is preferred. The community largely agrees with this assessment. Although some groups, notably Citizens for Modern Transit, have lately come out in favor of LRT 4, principally because of the potential westward connection with the Rock Island/Page Ave. extension, public comment

overwhelmingly supports LRT 3. Since the open houses in late March, the study team has received almost 2,100 comments concerning the Northside rail alternatives. Over 95% of those comments expressed support for LRT 3.

The potential merits of a westward connection to the Rock Island/Page Ave. extension should not, however, be discounted. The costs and benefits of that connection are now being studied. If the merits of the connection are proven, it becomes a viable option to be considered in conjunction with the implementation of LRT 3. LRT 3 could be built in phases, with the first phase terminating at the Northland site (West Florissant Ave. and Lucas & Hunt Rd.), which is the minimum operating segment that still provides high levels of service in the County, with the second phase completing the route to the Community College. The west connector could be implemented as part of the first phase, prior to the second phase, or after the completion of both phases.

One element common to both the Northside and Southside rail alternatives is the downtown loop. The cost of the loop (\$45.8 million) is included in the capital costs of all the Northside and Southside rail alternatives, with the cost ultimately being attributed to the rail project built first. The loop concept has received strong support, although some have questioned the viability of rail operations along Market St. and Washington Ave. There are other streets that could be used, and when the projects moves forward to engineering and design, the exact alignment of the loop will be reconsidered. As with all the improvements recommended in this report, the Board is being asked to approve a general project concept, not an unchangeable design or alignment concept.

Staff recommends the Alternative 3 (Riverview) MetroLink extension from downtown St. Louis to Florissant Valley Community College, including the downtown loop, at a capital cost of \$485.5 million. The extension should be built in two phases, with the option of a west connection to existing MetroLink and the Rock Island/Page Ave. light rail extension, if studies prove the viability of that connection.

MO 367, Lewis and Clark Blvd., Jennings Station Rd. (367 Alternative 5)

MO 367, Lewis and Clark Blvd., Riverview Blvd., W. Florissant Ave. (367 Alternative 6)

These alternatives are a system of roadway improvements designed to enhance traffic flow and connectivity for north-south movements in the study area and to improve safety. Connectivity -- defined by the community as a high-speed, continuous roadway through the study area that would provide better access between the northern portions of St. Louis County and downtown St. Louis -- was a consistent public theme throughout the MTIA. While building a major new facility to accommodate that public desire is not warranted by existing traffic conditions, nor would it be justified in light of the community disruption it would cause, both these alternatives create the desired connectivity.

In comparison, both alternatives generate important safety benefits throughout the length of MO 367, but Alternative 6 is less costly and provides slightly greater travel benefits, with marginally higher increases in VMT and travel speeds. Alternative 6 also avoids the issue of widening Jennings Station Rd. between MO 367 and W. Florissant Ave., which could be problematic because of the impact on surrounding land uses. The public also supports Alternative 6 over Alternative 5, believing that the improvement of the Halls Ferry Circle and the use of Riverview Blvd. and W. Florissant Ave. would create a more direct connection to

I-70 and downtown St. Louis. Of the over 2,000 comments received on roadway improvements in the study area, 96% of the comments favored Alternative 6.

Most of the travel benefits derived from Alternative 6 are experienced north of I-270, where MO 367 is upgraded to freeway standards. Although travel benefits drop off sharply south of I-270, safety concerns warrant the upgrade of Lewis and Clark Blvd. from I-270 to (and including) the Halls Ferry Circle. As for Riverview Blvd., there may be some conflict between the proposed road improvements and the implementation of light rail along the roadway. Those conflicts will be resolved as both projects are designed. When considering the full system of improvements, a major upgrade of W. Florissant Ave. is not needed to handle the traffic resulting from improvements to the north. Access management and signal/intersection improvements, as envisioned in the Transportation System Management (TSM) option, should suffice. Staff recommends the MO 367, Lewis and Clark Blvd., and Riverview Blvd. improvements, with TSM improvements along W. Florissant Ave., at a cost of \$120.9 million.

Riverview Dr., Hall St., E. Grand Ave.

This improvement is designed to enhance north-south connectivity through the corridor and create a more efficient route for goods movement, promoting the safe interaction of trucks and automobiles and providing a high quality roadway for truck traffic that will eliminate the need for trucks to move onto other arterial roadways to find better operating conditions. While the improvements create significant increases in VMT, which suggests the desired concentration of truck traffic in the corridor, overall travel conditions will not change appreciably. Because of the heavy truck traffic, upgrading Riverview Dr. to increase the number of lanes and separating directional traffic with a median will create a safer roadway that will accommodate more traffic. TSM access controls and other site-specific operational improvements would appear to suffice on Hall St. and E. Grand Ave. Staff recommends the Riverview Dr. improvement, with TSM improvements along Hall St. and E. Grand Ave., at a cost of \$28.6 million.

IV. SOUTHSIDE STUDY AREA

A. Purpose and Need

- T **Provide Direct Access to Jobs:** Serve the commute trip from home to work within the study area.
- T **Preserve Neighborhoods:** Use new transportation infrastructure to maintain and enhance the quality of life in communities and neighborhoods
- T **Promote Economic Opportunities:** Use new transportation infrastructure as a catalyst for new development (jobs, services, commercial activity) in areas of declining employment.
- T **Relieve Congestion:** Improve mobility on major arterials and roadways experiencing high levels of traffic congestion.
- T **Minimize Traffic Impacts:** Mitigate secondary travel impacts on local city streets due to high traffic demand from South County to downtown St. Louis and from South County to Clayton and other destinations.

B. The Alternatives

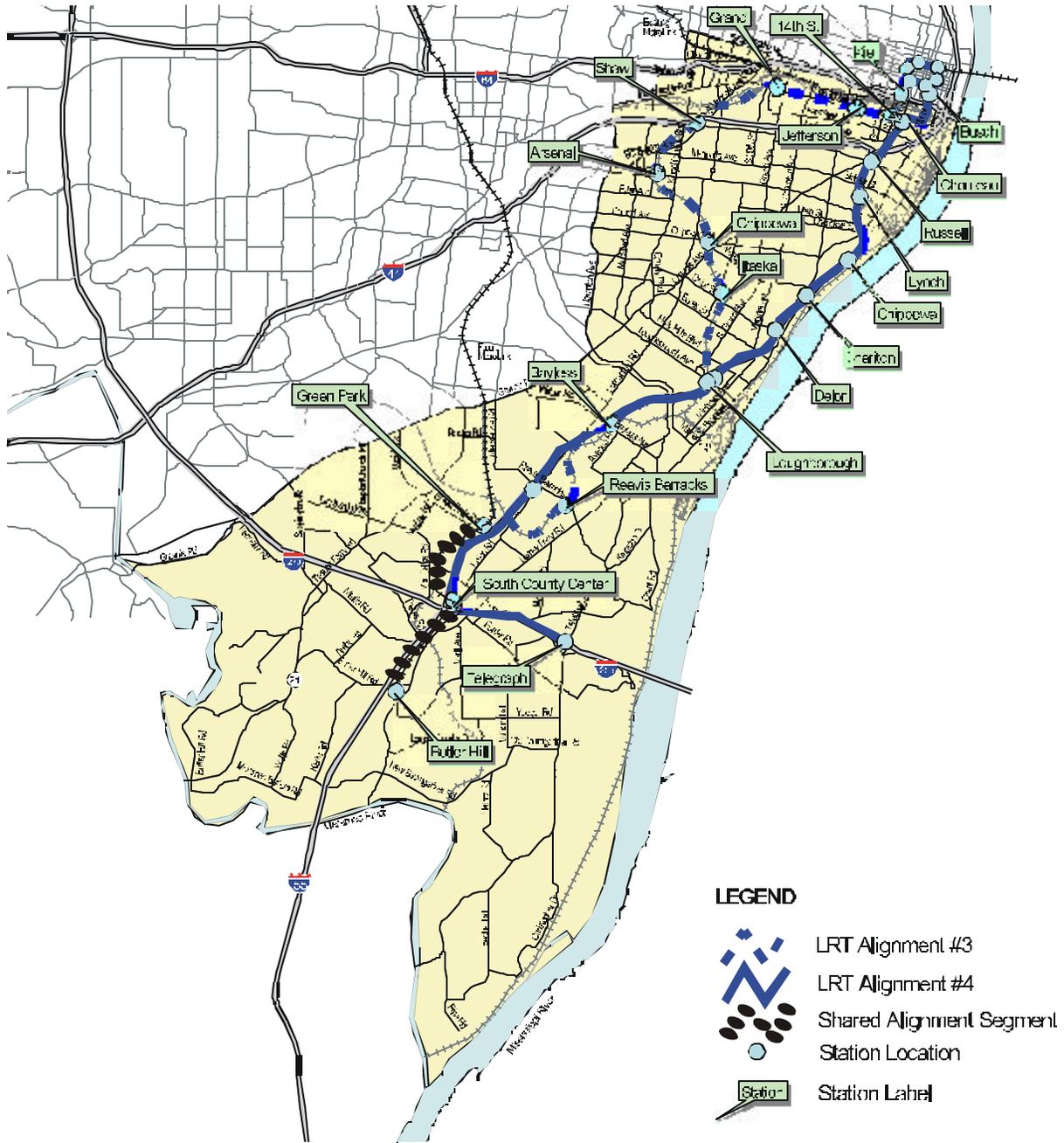
- < **Light Rail Transit - Union Pacific RR Alignment (LRT Alternative 3)**
Build alternative: *new light rail extension from downtown St. Louis to a connection with Cross-County Segment 2 at Green Park and with operations to Butler Hill Rd., using rights-of-way within 14th St., Chouteau Ave., the U.P. RR, I-55, and Grant's Trail. Downtown St. Louis connection would involve a single-track loop using 14th St., Market St., 7th St., and Washington Ave.**
- < **Light Rail Transit - I-55 (LRT Alternative 4)**
Build alternative: *new light rail extension from downtown St. Louis to I-255 at Telegraph Rd, using rights-of-way within or along 7th St., Chouteau Ave., Tucker Blvd., I-55, and I-255. Downtown St. Louis connection would involve a single-track loop using 7th St., Washington Ave., 14th St., and Market St.*
- < **Bus Rapid Transit - Union Pacific RR Alignment (BRT Alternative 5)**
Build alternative: *new roadway for bus-only use from near Grand Ave. to Loughborough Ave., using rights-of-way along the U.P. RR. Downtown access would involve using Grand Ave. and a reserved curb lane on Market St. for bus use during peak traffic periods. Access to south St. Louis County would be via I-55 in mixed traffic.**

B. The Alternatives *(continued)*

- < **Hampton Avenue**
Build alternative: *add lanes and landscaped median from I-44 to Oakland Ave. (cost: \$5.4 million)**
- < **I-55/I-44 and I-64 Interchange**
Build alternative: *new interchange ramps connecting northbound I-55/I-44 with westbound I-64 and eastbound I-64 with southbound I-55/I-44 (cost: \$44.0 million)*
- < **Telegraph Road, Kingston Road, Broadway**
Build alternative: *widen or add lanes from Marceau St. in the City of St. Louis to Christopher Dr., with intersection improvements and with landscaped median from the River Des Peres to Grant Rd. and from Sappington Barracks Rd. to Christopher Dr. (cost: \$59.4 million)**
TSM alternative: *add raised medians, add left turn pockets and left/right turn bays at select locations, improve select intersections (cost: \$4.5 million)*¹*
- < **Lemay Ferry Road**
Build alternative: *widen lanes and add sidewalks from River Des Peres to Reavis Barracks Rd. (cost: \$8.0 million)*
TSM alternative: *upgrade to major arterial with intersection and design improvements, add right turn bay at Bayless Rd. (cost: \$0.6 million).*
- < **Tesson Ferry Road/Gravois Road**
Build alternative: *add lane and landscape median, with intersection improvements and sidewalks on Tesson Ferry Rd. from Gravois Rd. to Meramec Bottoms Rd. (cost: \$92.7 million); widen lanes and add landscaped median with left turn bays or center left turn lane on Gravois Rd. from River Des Peres to Lindbergh Blvd. (cost: \$29.0 million)**
TSM Alternative: *add medians, add left turn pockets/bays and right turn lanes at select locations, improve select interchanges (cost: \$6.2 million)*²*
- < **Baumgartner Road**
Build alternative: *add lanes from Lemay Ferry Rd. to Old Baumgartner Rd and widen existing four-lane section to incorporate a landscaped median from Old Baumgartner Rd. to Telegraph Rd. (cost: \$17.3 million)**
- < **Yaeger Road**
Build alternative: *add lanes to existing Yaeger Rd. and build new four-lane connecting roadway to create a continuous arterial from Telegraph Rd. to I-55 (cost: \$38.5 million)*
- < **Butler Hill Road**
Build alternative: *add lanes from Tesson Ferry Rd. to I-55 (cost: \$8.0 million)*

Southside Study Area

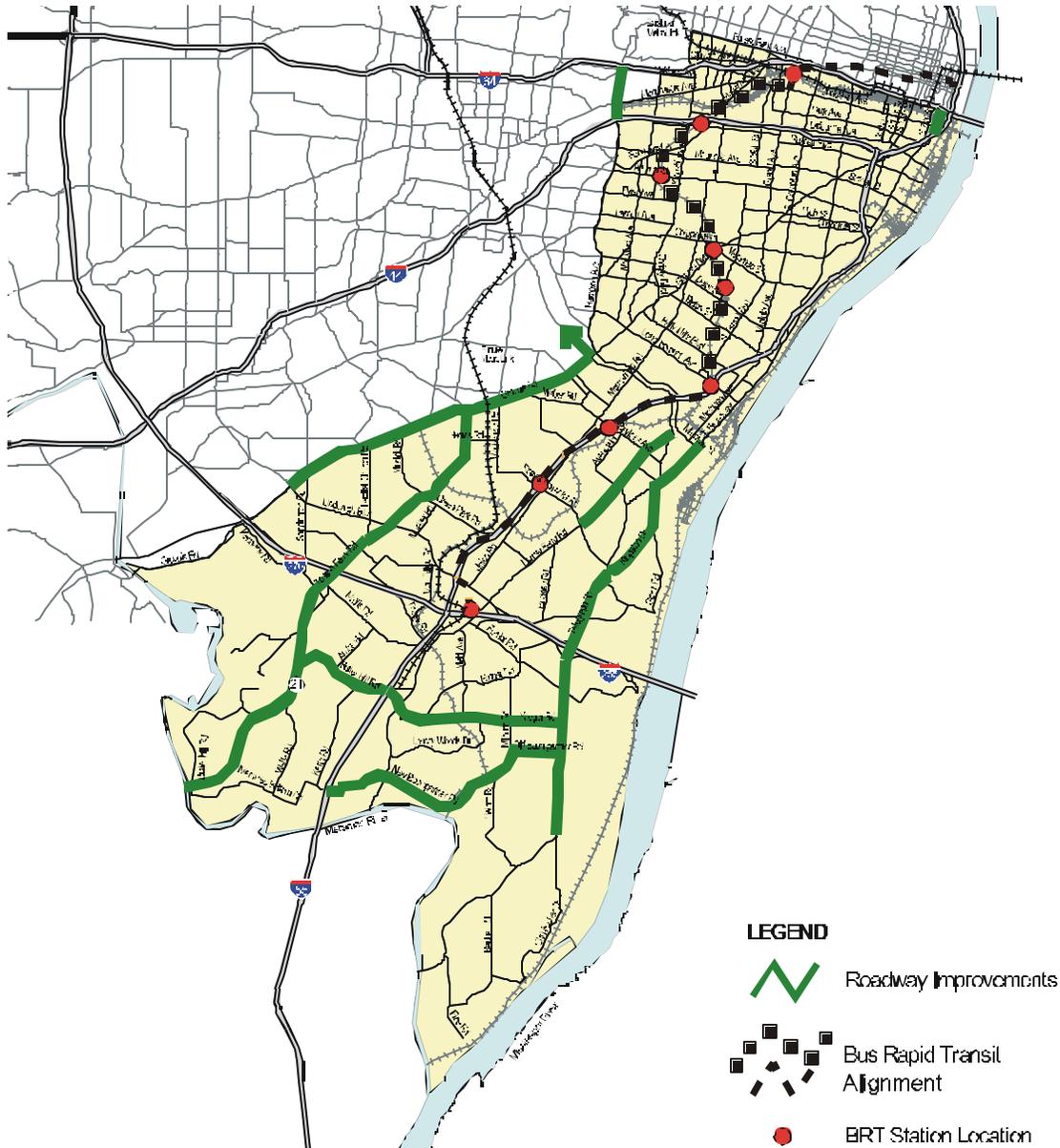
Light Rail Transit Alternatives Studied



Source: Parsons Brinckerhoff Quade & Douglas, Inc., March 2000.

Southside Study Area

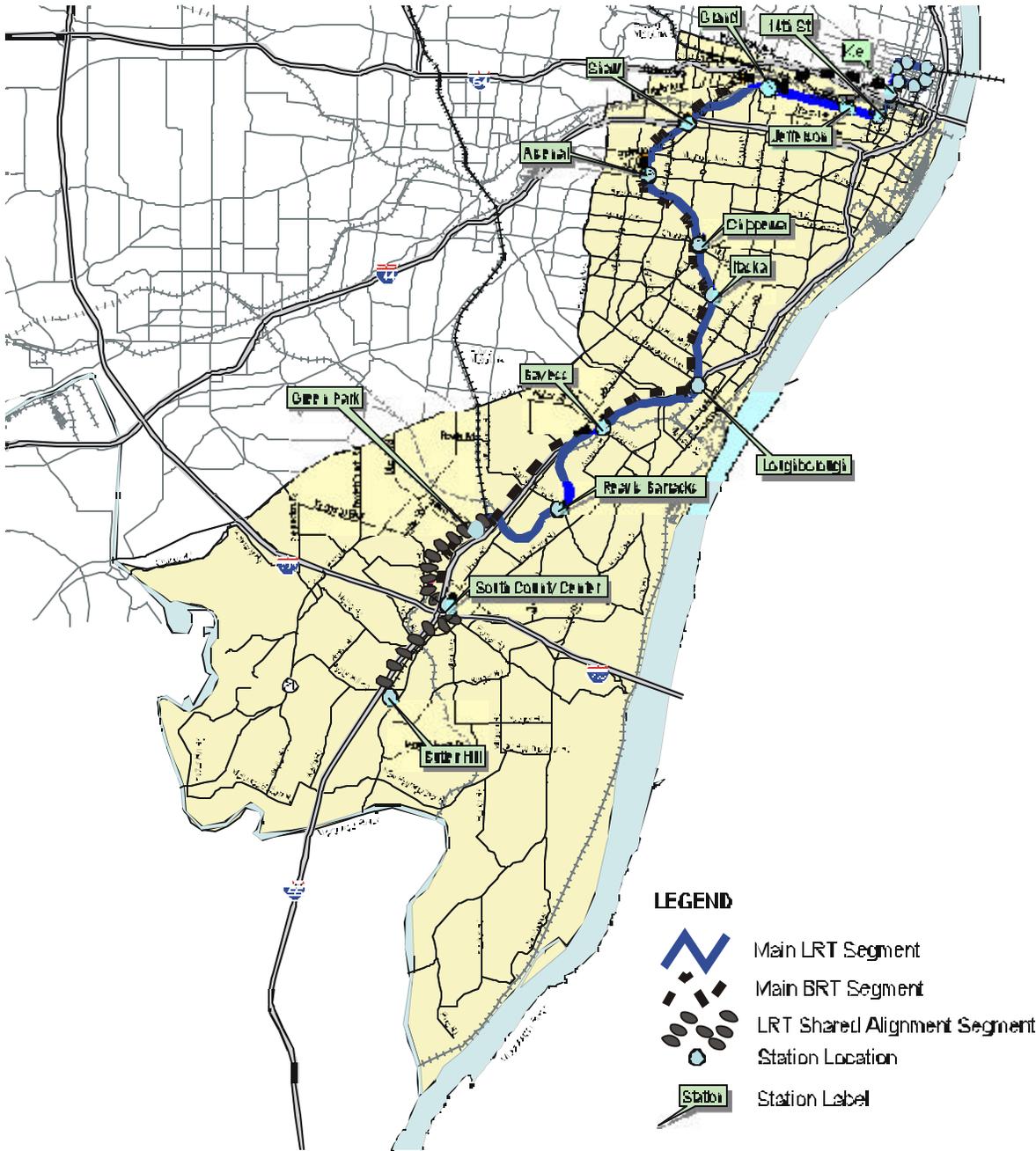
Roadway and Bus Rapid Transit Alternatives Studied



Source: Parsons Brinckerhoff Quade & Douglas, Inc., March 2000.

Southside Study Area

Transit Alternatives Recommended



Source: Patrick Brickerhoff Quade & Douglas, Inc., May 2000.

Southside Study Area

Roadway Alternatives Recommended



Source: Parsons Brinckerhoff Quade & Douglas, Inc., May 2003.

C. Discussion

Light Rail Transit - Union Pacific RR Alignment (LRT Alternative 3)

Light Rail Transit - I-55 (LRT Alternative 4)

Bus Rapid Transit - Union Pacific RR Alignment (BRT Alternative 5)

The data below indicate that all three alternatives perform well, variously increasing rail, bus, and total transit trips. Among the two rail alternatives, LRT Alternative 3, because it shares track with Cross-County Segment 2 south of Green Park, costs \$113 million less to build than LRT Alternative 4, but LRT 3 costs \$4.6 million more a year to operate because of its greater operating length. While LRT 4 has a higher increase in rail boardings, LRT 3 has higher increases in both total rail trips and total transit trips and shows a lower decline in bus-only trips. This indicates that LRT 3 will be more productive. LRT 3 also serves more low-income households and employment opportunities than LRT 4, captures a marginally higher percent of the work trip market, and has greater development/redevelopment potential, especially within the City of St. Louis. If not for the cost differential, choosing between the two alternatives would be challenging; but given the lower capital cost and greater ridership associated with LRT 3, it is the preferred rail alternative. That preference is consistent with public comment on the alternatives.

Transit Performance Data

PERFORMANCE CATEGORY	LRT ALT. 3	LRT ALT. 4	BRT ALT. 5
Capital cost (millions)	\$614.3	\$727.2	\$238.3
Annual operating cost (millions)	\$27.5	\$22.9	\$20.4
Increase in daily rail boardings	23,800	24,500	(1,400)
Increase in daily bus boardings	(15,500)	(14,700)	23,600
Increase in total daily transit boardings	8,300	9,800	22,200
Increase in daily rail trips	20,100	19,300	2,700
Increase in daily bus-only trips	(13,500)	(14,000)	5,000
Increase in daily total transit trips	6,600	5,300	7,700
% Transit share of work trips	10.7	10.4	10.6
% Households with transit travel times to St. Louis CBD <30 minutes	38.9	11.2	40.2
% Household with transit travel times to St. Louis CBD <45 minutes	71.8	86.6	78.3
Low income households within ½ mile of transit stop	11,387	11,253	7,394
Existing jobs within ½ mile of transit stop	120,010	112,383	23,223

Annual operating cost is the difference between the no-build and the build alternatives, including bus costs. Change in daily boardings and trips is the difference between the TSM and build alternatives.

The BRT Alternative 5 introduces a two-lane busway in the Union Pacific corridor from Chouteau Ave. south to Loughborough Ave. This bus-only roadway has stations similar to those found on MetroLink. The BRT concept is simple. Buses circulate throughout the Southside study area picking up passengers and then enter the busway from either I-55, where the buses operate in mixed traffic, or at arterial access points in the City. Once on the busway, buses move at high, unimpeded speeds through the entirety of the City's southside. For trips destined to downtown St. Louis, BRT offers a *one-seat* ride, requiring no

transfers between modes. Because buses do not mix with other traffic once on the busway, and because buses circulate through the community prior to entering the busway – an advantage that fixed rail cannot match – BRT provides a high quality transit service, much higher than people who are only familiar with the existing bus system expect.

Although an unfamiliar mode to most St. Louisans (as was MetroLink a decade ago) at 40% of the capital cost of LRT 3 and with significantly higher transit ridership, BRT obviously is competitive with light rail in this study area. One downside to BRT, relative to rail, is that it probably creates fewer development opportunities, and promoting such opportunities is an important objective of any major transit investment in the corridor. Another potential problem with the BRT is the availability of the UP corridor for non-rail use. Early discussions with representatives from the Union Pacific indicated that busway construction in their right-of-way might not be acceptable, although they took a more favorable position on the sharing the right-of-way with a rail project. Those discussions, however, were much too preliminary to eliminate the BRT on that basis.

Some local opponents of the BRT concept believe that the travel demand forecasts for this study have either underestimated the rail ridership or overestimated the BRT ridership. Staff shares this concern, and further analysis is underway to reevaluate the forecasts. Given that the goal of the MTIA is finding the best solution for meeting the transportation needs of people and businesses, staff believes that until further technical studies are completed, no technical decision can be made on the relative merits of BRT vs. LRT 3 in the study area, although it is clear that a major investment in the UP corridor is warranted. If LRT 3 is recommended by the Board, St. Louis County has requested that a short stretch of the alignment be moved from Grant's Trail to the I-55 right-of-way. That change can be easily accommodated. Staff recommends a major transit capital investment in the Union Pacific/I-55 corridor, either the Alternative 3 MetroLink extension from downtown St. Louis to Cross-County Segment 2, or the Alternative 5 Bus Rapid Transit improvement from downtown St. Louis to South County, at a capital cost ranging from \$283.3 million to \$614.3 million.

Hampton Ave.

This project creates a better north-south connection between I-44 and I-64 in the central part of the City of St. Louis. Implementing the improvement increases both the throughput and performance of Hampton Ave., with significant increases in VMT and speeds and a notable decrease in vehicle delay. The improvement also provides minor traffic relief to adjacent north-south arterials. Staff recommends the Hampton Ave. improvement at a cost of \$5.4 million.

I-55/I-44 and I-64 Interchange

Designed to accommodate traffic movements between Interstate highways that currently can only be made through more circuitous routes, the interchange provides direct access to westbound I-64 from northbound I-55/I-44 and to southbound I-55/I-44 from eastbound I-64. While the need for this connection seems obvious, the analysis does not support its implementation. The interchange fails to produce significant travel times savings over other possible routes and, therefore, attracts few trips and creates only minimal travel benefits. Staff does not recommend the I-55/I-44 and I-64 Interchange improvement.

Telegraph Rd., Kingston Rd., Broadway

The purpose of this project is to improve traffic flow on this major north-south arterial from the City of St. Louis to south St. Louis County and to alleviate congestion on Telegraph Rd. south of I-255. The improvement produces modest increases in VMT and speed but significant reductions in delay. While traffic conditions show improvement over the entire roadway, the greatest benefits are derived south of I-255, where the highest congestion levels are anticipated. There is also a greater potential for community disruptions the further north improvements are made. Given the likelihood of displacements or property impacts along northern sections of the roadway and the higher travel benefits realized along southern sections, a major investment restricted to the south of I-255 is preferred. Staff recommends the Telegraph Rd. improvements south of I-255, with TSM improvements along Broadway, Kingston Rd., and Telegraph Rd. north of I-255, at a cost of \$25.2 million.

Lemay Ferry Rd.

This modest improvement is intended to improve traffic flow and create a safer roadway environment along this northern section of Lemay Ferry Rd. The project offers only minor benefits, having negligible effects on speeds, delay, or safety. Staff recommends TSM improvements only on Lemay Ferry Rd.

Tesson Ferry Rd./Gravois Rd.

The objective of this project proposal is two-fold. First, use combined improvements on Tesson Ferry Rd. and Gravois Rd. to enhance north-south connectivity through the interior of St. Louis County, possibly linking with future roadway improvements in the vicinity of Shrewsbury to provide a quality arterial route from I-270 to I-44 and I-64. Second, reduce congestion problems on Tesson Ferry south of I-270 and at Lindbergh Blvd. Although the overall improvement produces significant increases in VMT and decreases in delay, traffic conditions on Gravois do not improve because of additional traffic drawn to the roadway, and, as with Telegraph Rd., the benefits on Tesson Ferry are mostly realized south of I-270. Staff recommends the Tesson Ferry Rd. improvement south of I-270, with TSM improvements on Gravois Rd. and Tesson Ferry Rd. north of I-270, at a cost of \$52.2 million.

Baumgartner Rd.

A major transportation need in far south St. Louis County is a high quality arterial connecting Telegraph Rd. with I-55 and I-55 with Tesson Ferry Rd. This project is intended to provide half of that connection. When improved, Baumgartner experiences significant increases in VMT and speed and high decreases in vehicle delay, fully accomplishing the project's intended purpose. Staff recommends the Baumgartner Rd. improvement at a cost of \$17.3 million.

Yaeger Rd.

The Yaeger Rd. and Baumgartner Rd. improvements serve the same purpose: providing a good east-west link between Telegraph Rd. and I-55. While the Yaeger improvement performs well, especially if linked to an improved Butler Hill Rd. (which would provide the link between I-55 and Tesson Ferry Rd.) Baumgartner appears to be the superior improvement. One concern with Yaeger is that the necessity of building new roadway segments opens up a new transportation corridor that could have detrimental impacts on neighboring subdivisions. Staff does not recommend the Yaeger Rd. improvement.

Butler Hill Rd.

This project is designed to enhance the east-west connection between Tesson Ferry Rd. and I-55. The improvement produces significant travel benefits, especially on the section of Butler Hill approaching I-55, but historically there has been and there still is deep public opposition to widening the roadway. While the roadway offers substantial benefits at a modest cost, strong community sentiment against the project probably precludes its implementation. The project's performance, nevertheless, demonstrates the continuing need for an improved connector west of I-55. Staff does not recommend the Butler Hill Rd. improvement.

V. STAFF RECOMMENDATION

Staff recommends that the Board of Directors approve the following projects as the Locally Preferred Alternatives (LPA) emerging from the Daniel Boone, Northside, and Southside Major Transportation Investment Analyses, and that the Board provisionally adopt these improvements into the region's long-range transportation plan, subject to a credible assessment of reasonably available funding.

A. Daniel Boone Study Area

PROJECT	IMPROVEMENT TYPE	RESPONSIBLE AGENCY	COST (\$ MILLIONS)
<i>TRANSIT:</i>			
LRT Alternative 3	New light rail extension from Cross-County MetroLink to Westport	Bi-State	\$249.5
<i>HIGHWAY:</i>			
Eatherton Road	Realign roadway	St. Louis County	\$36.0
Spirit of St. Louis Blvd. Interchange	New I-64 interchange	MoDOT	\$33.5
Long Road Interchange	Reconfigured I-64 interchange	MoDOT	\$37.2
Long Road/Kehrs Mill Road/Wildhorse Creek Road	Realign roadways/ intersection improvement	St. Louis County	\$8.8
Clarkson Road	Interchange at Baxter Rd./ access management	MoDOT	\$9.5
MO 141	New six-lane roadway on new alignment	MoDOT	\$72.4
Earth City Extension	New six-lane roadway	Undetermined	\$63.8
I-64	TSM (ITS) operational improvements	MoDOT	\$10.4
I-270	TSM (ITS) operational improvements	MoDOT	\$3.8

B. Northside Study Area

PROJECT	IMPROVEMENT TYPE	RESPONSIBLE AGENCY	COST (\$ MILLIONS)
TRANSIT:			
LRT Alternative 3	New light rail extension from downtown St. Louis to Florissant Valley Community College (2 phases), with an optional west connection to Daniel Boone LRT Alternative 3	Bi-State	\$485.5 excluding west connection
HIGHWAY:			
MO 367	Upgrade to freeway	MoDOT	\$87.8
Lewis & Clark Blvd.	Upgrade to urban parkway	MoDOT	\$29.7
Riverview Blvd.	Upgrade lanes, signals, and intersections	City of St. Louis	\$2.0
West Florissant Avenue	TSM operational improvements	City of St. Louis	\$1.4
Riverview Drive	Upgrade to urban parkway	MoDOT	\$26.8
Hall Street/East Grand Avenue	TSM operational improvements	City of St. Louis	\$1.8

C. Southside Study Area

PROJECT	IMPROVEMENT TYPE	RESPONSIBLE AGENCY	COST (\$ MILLIONS)
TRANSIT:			
Union Pacific RR Corridor	Major Transit Investment: new light rail extension from downtown St. Louis to Cross-County MetroLink Segment 2, or new busway from Chouteau Avenue to Loughborough Avenue	Bi-State	\$238.3- \$614.3
HIGHWAY:			
Hampton Avenue	Add lanes and median	City of St. Louis	\$5.4
Telegraph Road: south of I-255	Add lanes and median	MoDOT	\$23.3
Telegraph Road: north of I-255	TSM operational improvements	MoDOT	\$1.0
Broadway/Kingston Road	TSM operational improvements	MoDOT	\$0.9
Lemay Ferry Road	TSM operational improvements	MoDOT	\$0.6
Tesson Ferry Road: south of I-270	Add lanes and median	MoDOT	\$48.2
Tesson Ferry Road: north of I-270	TSM operational improvements	MoDOT	\$1.8
Baumgartner Road	Add lanes or widen/add median	St. Louis County	\$17.3

D. Total Cost of the LPA Recommendation (\$ millions):

CORRIDOR	HIGHWAY COST	TRANSIT COST	TOTAL COST
Daniel Boone	\$275.4	\$249.5	\$524.9
Northside	\$149.5	\$485.5	\$635.0
Southside	\$98.5	\$238.3- \$614.3	\$336.8-\$712.8
All Corridors	\$523.4	\$973.3-\$1349.3	\$1496.7-\$1872.7