Final Report

June, 2001
Prepared by: Carter-Burgess
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US 36 Major Investment Study - Final Report

**Project Background**

Executive Summary

The US 36 Major Investment Study (MIS) was initiated in February 1998 by the Regional Transportation District (RTD) to identify transportation needs in the corridor extending from Denver to Boulder, with a focus on short- and long-term solutions to support and improve the commuting conditions. The project aims to provide access to the City of Denver, as well as the metro area's commuters, with I-25 to accommodate access to the City of Boulder.

**Study Area**

The study area for the US 36 MIS includes the northwestern part of Boulder County in the northern Front Range, a distance of approximately 27 miles from the City of Boulder to downtown Denver, as shown in Figure E-1. The study area is extended from the City of Boulder to downtown Denver for the study area for the US 36 MIS study.

**Background**

Themaking process of the review and decision to be part of the review and decision to provide the public with an opportunity to provide feedback was a process developed to provide feedback on the study process.

**Process**

The study process was comprised of technical staff in addition to technical advisors and RTD Board members.

**Agencies and Special Interest Groups**

Agencies, Regional Agencies, Federal Agencies, and State Agencies, along with US 36 local transportation agencies and State agencies, are represented in the study process. Federal, State, and local agencies, along with State agencies, are represented in the study process.

**Executive Summary**

The Executive Summary provides an overview of the study process, including the need for improved transportation in the US 36 corridor, and the steps taken to address this need. It includes a timeline of events, a review of the study's objectives, and a summary of the recommendations and conclusions.

**Study Area Map**

Figure E-1
Transportation Improvements

Recommended Improvements:
- Development and evaluation of
  - Increase the emissions for the
  - TAC performance in terms of
  - Assessment of transportation projects
  - Examine current conditions
  - Studies and plans, field surveys, to

The MTS includes a review of previous

Alternatives Considered

- Space along the corridor
- Preserve views and strategic open
- Design open
- Promote use of alternative
- Use mixed use within the activity
- Encourage the development of alternative
denises and
- Encourage the development of alternative
centers.
- Use and design within the activity
- Encourage the development of alternative
centers.
- Have the current activity
- Focus future development in the

Land Use

US 36 Corridor
- Support the Land Use Vision for the
- Serve the needs of activity centers
- Serve between activity centers
- Serve regional markets and

Travel Markets

- Users.
- Alternatives must be compatible to

Conclusion
- Alternatives should minimize future
- Travel time between activity centers.
- Alternatives should maintain existing

Transportation Alternatives

Must be able to implement
- Options.
- Viability and not preclude future
- Alternatives must have long term
- Desirable land use patterns.
- Alternatives must be supportive of
- Solutions must be multi-modal.

Transportation Objectives

Categorical:
- Goals and Objectives fell into three
- 2020 population between 1996 and 2020
- 1.4 percent increase in corridor

Goals & Objectives

- 35 percent increase in traffic on US
- Employment between 1996 and 2020
- 27 percent increase in corridor
- Location within the corridor. Due to
- Significant growth in housing and jobs.
- Community participation, supportive
- Denver Metropolitan area.
- Expansion of urbanized development in

Since the I-250, the nature of travel

Purpose & Need

Project Background
Executive Summary
Executive Summary

Regional Rail

Each element of LPA is discussed in capital improvement.

11 improvements amounting to $693 M

lane, roadway, bridge, TD, and

including Regional Rail, BRT, HOV

improvements for the US 36 corridor.

The LPA incorporates multi-modal

improvements is shown in Figure ES-2.

2001. A map of proposed LPA


2001 and the CDOT commissioner

RBD board approved the LPA on March 3.

HZS PAC on February 21, 2001. The

was unanimously addressed by the US

A Locally Preferred Alternative (LPA)

wider

Preferred

Local

ALTERNATIVE

Evaluate the multi-modal strategies.

Acceptability, contraction issues, and

environmental impacts, community,

costs, mobility, transportation, users,

CityRail, preferred alternative includes

analysis in CityRail detailed multi-modal

altematives were narrowed down, and

perspective. The preliminary

from both a technical and public/policy

met the project goals and objectives.

Allalternatives were reviewed through a

EVALUATION PROCESS

Evaluation Process

Personal Rapid Transit (PRT)

Bicycle Facilities

ITS Strategies

Intelligent Transportation Systems

Traffic Demand Management (TDM)

Widening of US 36

Bus Rapid Transit (BRT)

Railway Acceleration/Deceleration

Purchase of Open Space

Railway

Buffer Separated Bus/HOV Lanes

Railway

No Build

Monitor

MIS Process Included:
newly constructed track, and on an existing BNSF track shared with freight trains. An operating agreement with BNSF would be required for Regional Rail operations.

Key elements of the Regional Rail component of the LPA include:
- 28 miles of Regional Rail Service on one new track and one track shared with BNSF railroad;
- 5 stations at: Denver Union Station, Westminster, 96th, Louisville, and Boulder (30th/Pearl);
- 46 minute travel time between Denver and Boulder;
- Trains every 20 minutes during peak periods, every 40 to 60 minutes during off-peak periods; and
- Bus circulator and feeder service to Rail stations.

**Bus Rapid Transit/HOV Lanes**

Bus/HOV infrastructure is currently under construction at the eastern end of the corridor. A single-lane reversible barrier-separated Bus/HOV lane on US 36 from Pecos St. to I-25 has recently been completed by the Colorado Department of Transportation (CDOT). This reversible lane connects directly to the I-25 Bus/HOV lanes via an exclusive freeway ramp. Two additional buffer-separated Bus/HOV lanes (one in each direction) are currently under construction, and will extend the westbound Bus/HOV lanes in the US 36 corridor to Lowell Blvd.; the eastbound lanes start at Sheridan.

The BRT/HOV component of the LPA builds upon existing infrastructure in the corridor with the extension of Bus/HOV lanes west from Lowell Blvd. to the Foothills Parkway in Boulder. BRT represents an improvement to current bus operations in the US 36 corridor with the addition of bus stations in the median of US 36 at five locations to provide improved travel times. BRT also provides more frequent Regional and Express bus service between Boulder and Denver with the same number of vehicles as a result of reduced travel times.

Key aspects of the BRT/HOV element of the LPA include:
- 15 miles of new buffer separated Bus/HOV Lanes in the median of US 36 in each direction;
- 5 Median Bus Rapid Transit stations connecting to park-n-Rides at: Westminster, Church Ranch, Broomfield, Interlocken Loop/StorageTek Drive (96th) and Superior/Louisville.
- A Bus Rapid Transit station at the existing Table Mesa park-n-Ride, adjacent to US 36.
- Bus Rapid Transit “Superstops” along the 28th Street Corridor, Downtown Boulder, and 30th/Pearl;
- Bus circulator and feeder service to BRT Stations;
- Carpool access to HOV lanes at select locations between Boulder and Table Mesa.
Buses every 5 to 10 minutes during peak periods, every 10 to 15 minutes during off peak periods.

Enforcement of the HOV lanes.

Roadway Improvements
The LPA includes recommendations to widen US 36 to six general purpose lanes from Interlocken Loop/Storage Tek Drive to I-25, with a climbing lane over Davidson Mesa. Acceleration and deceleration lanes, both eastbound and westbound, between McCaslin and Sheridan were also included. Ramp metering and other roadway improvements are proposed with implementation of the Locally Preferred Alternative.

Bikeway
The LPA includes a paved eight to twelve foot shared-use path from Table Mesa Dr. to Sheridan Blvd. along US 36. Portions of the bikeway may be adjacent to highway lanes, separated by a concrete barrier and/or landscaped area. Connections between the bikeway and local bike routes, as well as access to BRT and rail stations, will further enhance bicycling as a viable commute option.

TDM
Travel Demand Management (TDM) seeks to: 1) reduce overall travel demand; and 2) optimize transportation facilities through use of carpooling, vanpooling, and transit. Many of the TDM strategies can be implemented as construction mitigation strategies. LPA TDM measures include:

- Transportation options education and outreach.
- Transportation Management Organization (TMO)/Agency support and funding.
- Telework assistance program and promotion.
- Land use/Transit Oriented Development (TOD) planning assistance.
- Community ECO Passes.

ITS
Intelligent Transportation Systems (ITS) are improvements that can enhance the major investments by using technology to manage and facilitate operations and to disseminate information. ITS strategies incorporated into the LPA include:

- Real time data collection (transit and roadway)
- Incident management
- Internet web site providing real-time transportation information (road, weather, and traffic condition data; transit systems schedule status)
- Traffic entrance regulation onto US 36 at interchanges using ramp meters
- Traveler information systems including electronic highway message signs and real-time transit information at BRT stations.
Chapter 1

BACKGROUND

1.1 PROJECT DESCRIPTION

The US 36 Major Investment Study (MIS), initiated in February 1998 by the Regional Transportation District (RTD), began a collaborative process to identify potential solutions to short and long-term transportation needs in the corridor extending from Denver to Boulder. Participants in the study process consisted of representatives from communities along US 36, local agencies, regional agencies, federal agencies, and special interest groups including:

- Bicycle Colorado
- Boulder County
- Broomfield Chamber of Commerce
- Build the Bikeway
- Burlington Northern Santa Fe Railroad
- City of Arvada
- City of Broomfield
- City of Boulder
- City of Louisville
- City of Broomfield
- ColoRail
- CDOT
- DRCOG
- Environmental Defense Fund
- Colorado State Legislature
- EPA
- FTA
- FHWA
- Jefferson County
- League of Women Voters
- RTD
- Transit Alliance
- Union Pacific Railroad

- Town of Superior
- US 36 TMO
- US 36 Mayors Coalition

A Major Investment Study (MIS) is a process to identify transportation problems and needs in a major transportation corridor and to evaluate potential alternative solutions to overcome them. The MIS uses public input extensively throughout the process. The term "public" includes citizens, governments, organizations, agencies, and any others who may be impacted by the implementation of a major capital investment designed to mitigate mobility problems and address corridor needs.

An MIS is a valuable planning tool since it comprehensively identifies and evaluates the potential alternatives to address mobility problems in a major travel corridor. The process allows input from affected persons, agencies, organizations, and levels of government. It can eliminate those alternatives which are less effective solutions in favor of transportation projects that have greater benefits and a higher potential for implementation. Alternatives recommended from the MIS may become part of the long term Regional Transportation Plan (RTP) if funding sources are identified for the LPA. To be eligible for federal transportation funds, projects must be included in the RTP.

Key steps of the MIS process included:
1.3 **PLANNING PROCESS**

Alternatives were refined through a multi-phased evaluation process to best meet the project goals and objectives. Both preliminary and detailed evaluations were conducted to assess the full range of improvements considered. Evaluation criteria, including costs, mobility characteristics, users, environmental impacts, community acceptance, construction issues, and expansion capability, were used to develop and evaluate multi-modal strategies. Elements of different modes that were most effective based on the evaluation criteria were combined to arrive at a Locally Preferred Alternative (LPA).

1.4 **GOALS AND OBJECTIVES**

Goals and objectives were established at the outset of the project by both the PAC and TAC to guide the development of transportation alternatives. These goals and objectives fall into three categories:

1.4.1 **Transportation Objectives**

- Solutions must be multi-modal.
- Alternatives must be supportive of desired land use patterns.
- Alternatives must have long term viability and not preclude future options.
- Must be able to implement recommended alternative(s).
- Alternatives should maintain existing travel times between activity centers.
- Alternatives should minimize future congestion.
1.4.2 Travel Markets
- Serve regional markets and trips
- Serve trips between activity centers
- Serve trips within activity centers

1.4.3 Land Use Vision for the US 36 Corridor
- Focus future infill development in the corridor within the current activity centers.
- Encourage transit compatible land use and design within the activity centers.
- Encourage appropriate densities and land use mixes within the activity centers to promote use of alternatives modes.
- Preserve views and strategic open space along the corridor.

1.5 Funding
Aside from the $67M for MIS projects and other TIP and RTP improvements already allocated to specific improvements, no additional funding has been yet identified for the corridor.

The main objective of the MIS was to identify transportation improvements to meet projected needs through year 2020. A fiscal constraint was not placed on study recommendations beyond the first phase of screening where a cap of $450 million dollars was used as one of the key criteria to screen alternatives. However, capital and O&M costs were presented for all alternatives and cost was a major factor used in the screening of alternatives and the selection of the Locally Preferred Alternative (LPA). It was understood that funding was the key to actual implementation. A funding plan was not one of the required products of the MIS.

1.6 Organization of Report
This document provides an overview of the US 36 MIS process. The following chapters highlight key tasks of the project:

Chapter 2: Corridor Conditions: A discussion of existing and proposed land use, transportation infrastructure, and historical and forecast travel patterns is provided. Goals and objectives were established to guide the study and evaluation of alternatives.

Chapter 3: Public Involvement: Public and agency outreach was an integral component of the study process. Numerous tools were used to engage and solicit feedback from corridor constituents.

Chapter 4: Development and Screening of Alternatives: Alternatives for each technology considered were screened and refined to identify alternatives for each mode which best met corridor needs.

Chapter 5: Detailed Evaluation of Final Alternatives: Technology alternatives advanced from the Alternatives Development and Screening Phase were grouped into multi-modal packages and evaluated against cost, mobility, environmental factors and the goals and objectives identified in
Chapter 2. Modal packages varied in levels of investment in bus, rail, and roadway improvements.

Chapter 6: Locally Preferred Alternative: A detailed description of the Locally Preferred alternative is provided. A comparison to the No-Build scenario and a discussion of impacts and benefits that may result from implementation are included.

Chapter 7: Outstanding Issues & Next Steps: Items requiring further analysis are identified in addition to steps to be completed towards implementation of the MIS recommendations.
Chapter 2

CORRIDOR CONDITIONS

Existing and projected corridor conditions set the framework for transportation needs in the corridor and provided opportunities to build upon existing, planned, and programmed infrastructure.

2.1 POPULATION AND EMPLOYMENT

Population and employment growth in the corridor is occurring at a very rapid rate. Forecasts indicate a 27 percent increase in population and 114 percent increase in employment between 1996 and 2020 in the US 36 Corridor. Table 2-1 shows population trends for the region, US 36 Corridor, and municipalities based on 2020 forecasts. Table 2-2 shows employment trends. Figures 2-1 through 2-4 show 2020 population and employment densities and comparisons to 1996 data.

Table 2-2

<table>
<thead>
<tr>
<th></th>
<th>1996 Employment</th>
<th>2020 Employment</th>
<th>% Change 1996 to 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region*</td>
<td>1,209,000</td>
<td>1,980,000</td>
<td>64 percent</td>
</tr>
<tr>
<td>US 36 Corridor**</td>
<td>55,000</td>
<td>117,900</td>
<td>114 percent</td>
</tr>
<tr>
<td>Boulder</td>
<td>76,000</td>
<td>107,100</td>
<td>41 percent</td>
</tr>
<tr>
<td>Broomfield</td>
<td>9,900</td>
<td>32,000</td>
<td>223 percent</td>
</tr>
<tr>
<td>Lafayette</td>
<td>2,600</td>
<td>4,800</td>
<td>85 percent</td>
</tr>
<tr>
<td>Louisville</td>
<td>8,100</td>
<td>12,600</td>
<td>56 percent</td>
</tr>
<tr>
<td>Westminster</td>
<td>24,000</td>
<td>41,200</td>
<td>72 percent</td>
</tr>
<tr>
<td>Denver CBD</td>
<td>104,000</td>
<td>174,300</td>
<td>68 percent</td>
</tr>
</tbody>
</table>

*The eight county area
**The corridor was defined as a 3 mile buffer on either side of US 36.

Key trends shown in the forecasts are:

- In the US 36 Corridor the annual growth rate for population and employment is projected at 3.1 percent and 2.7 percent, respectively, between 1996 and 2020.

- Region-wide, a significant amount of growth in population occurs by year 2005. Population grows at an annual growth rate of 4.2 percent from 1996 through 2005, and then at an annual rate of 1.7 percent through 2020.

- Region-wide, over half of the growth in employment occurs by the year 2005. Employment grows at an annual growth rate of 4.0 percent from 1996 through 2005, and then at an annual rate of 1.4 percent through 2020.

Table 2-1

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
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<td>Region*</td>
<td>1,859,000</td>
<td>3,225,000</td>
<td>73 percent</td>
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<tr>
<td>US 36 Corridor**</td>
<td>164,000</td>
<td>208,000</td>
<td>27 percent</td>
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<tr>
<td>Boulder</td>
<td>90,000</td>
<td>100,500</td>
<td>12 percent</td>
</tr>
<tr>
<td>Broomfield</td>
<td>29,700</td>
<td>46,300</td>
<td>56 percent</td>
</tr>
<tr>
<td>Lafayette</td>
<td>12,000</td>
<td>14,800</td>
<td>23 percent</td>
</tr>
<tr>
<td>Louisville</td>
<td>14,500</td>
<td>18,200</td>
<td>26 percent</td>
</tr>
<tr>
<td>Westminster</td>
<td>84,700</td>
<td>112,000</td>
<td>32 percent</td>
</tr>
<tr>
<td>Denver CBD</td>
<td>9,000</td>
<td>69,000</td>
<td>667 percent</td>
</tr>
</tbody>
</table>

*The eight county area
**The corridor was defined as a 3 mile buffer on either side of US 36.
Figure 2-1
2020 Population Density in the US 36 Corridor
Figure 2-2
1996 to 2020 Percent Population Density Change in the US 36 Corridor
Figure 2-3
2020 Employment Density in the US 36 Corridor

Legend

2020 Employment Density (employees/acre)

- 0 - 5
- 5 - 20
- > 20

US 36

Freight Rail Alignment
Figure 2-4
1996 to 2020 Employment Density Change in the US 36 Corridor

Legend
Growth in Employment Density between 1996 and 2020 (employees/acre)
- minimal change
- 1 - 5 additional employees/acre
- > 5 additional employees/acre

US 36
Freight Rail Alignment

Legend
Growth in Employment Density between 1996 and 2020 (employees/acre)
- minimal change
- 1 - 5 additional employees/acre
- > 5 additional employees/acre

US 36
Freight Rail Alignment
2.2 Land Use Patterns

Land use characteristics directly influence the level of demand placed on transportation networks. Residential and employment density, jobs-housing balance, site design and land use diversity all influence the type and length of trips made each day.

2.2.1 Existing Conditions

Historically, US 36 has served as the key regional connection between the corridor's residential areas and the concentrated employment centers of Denver and Boulder. Over the past 20 years, however, the rapid pace of growth along US 36 has dramatically changed the dynamics of travel origins and destinations.

Denver and Boulder maintain their role as the most significant employment destinations in the US 36 corridor. With over 110,000 employees, the Denver central business district (CBD) is the region's largest employment center. Boulder, with over 88,000 employees, has the region's third largest employment concentration, with slightly fewer employees than the Denver Technological Center (DTC). In addition to the high employment concentrations in Denver and Boulder, these two communities are home to major cultural and recreational destinations, including the University of Colorado at Boulder (with over 24,000 students), downtown Boulder, the Auraria Campus, Pepsi Center, Mile High Stadium, Coors Field, the Colorado State Capital, and downtown Denver. Key activity centers in the corridor are shown in Figure 2-5.

While Denver and Boulder continue to create and attract a substantial number of trips, intense residential and employment growth between these cities has significantly increased the volume and type of demand placed on the facility.

The cities of Superior and Lafayette have primarily experienced residential growth, while the cities of Louisville, Broomfield and Westminster have had a significant increases in both population and employment. Major residential projects include the Rock Creek Ranch in Superior, scheduled to have 2,660 single-family units and 1,530 multi-family units when completed.

Major employers between Boulder and Denver include the Storage Technology Corporation in Louisville, with over 3,500 employees, Hunter Douglas in Broomfield, with approximately 1,000 employees, Sun Microsystems in Broomfield, with 4,300 employees, and the Flatirons Crossing regional mall with 4,000 employees at the mall and surrounding retail developments. The 963 acre Interlocken Business Park, located just south of US 36 east and west of Storage Tech Dr./Interlocken Loop, is becoming a major employment center in the metropolitan region. Interlocken has approximately 15,000 employees today, with capacity for 13,000 more.

2.2.2 Development Activities

If past trends continue, the US 36 corridor will maintain a rapid pace of growth over the next five to ten years. While some residential growth will continue to occur, new office,
commercial and retail projects constitute the vast majority of development planned in the corridor. Figure 2-6 highlights the major development activities which are either under construction or have received final approval. With the majority of these projects planned for the areas between Boulder and Denver (Superior, Louisville, Broomfield and Westminster), regional transportation dynamics will continue to change. Employment, retail and service destinations are no longer confined to Denver and Boulder. With this dispersion of employment, retail and service destinations throughout the entire length of the corridor, travel patterns have become more complex and traffic congestion has become more severe. New projects slated for completion in the next five years suggest that these land use changes will continue along the same pattern.

The communities along the corridor have historically been physically separated by undeveloped farmland and open space. Interchanges along US 36 were limited, and growth was concentrated around these interchanges. In the past five years, growth in both population and employment led to the construction of two new interchanges, one at Church Ranch/104th in Westminster to serve developing office and retail developments, and one at Storage Tech Dr./Interlocken Loop in Broomfield to serve the Interlocken Business Park, Storage Technology Corporation and Flathorns Crossing. Both of these areas are developing rapidly, and like the rest of the corridor, the undeveloped land between the interchanges has been filling in with residential and small commercial/retail projects.

2.3 US 36

US 36 is a four-lane highway between I-25 and Boulder, with a continuous access eastbound Bus/HOV lane between Sheridan Boulevard and Pecos Street and a recently opened reversible HOV lane between Pecos and I-25. US 36 currently operates at level-of-service "F" during the peak hours and hours of heavily congested traffic are forecast to increase in the future, increasing travel time and inconvenience for users. Figure 2-7 graphically illustrates historical and current volumes along each of the major roadway segments of US 36.

> Traffic on US 36 increased almost 45 percent between 1988 and 1996, from 45,000 vehicles per day to 130,000 per day.

> Traffic has consistently increased on all segments of US 36 over the last ten years, and is forecast to increase by 200 percent over 1988 levels by 2020.

Growth in traffic has affected corridor arterials as well, with delays at interchanges occurring throughout the corridor.
Figure 2-6
Major Development Activities

Legend:
• = Interchange
○ = Study Area
2.3.1 Historical Traffic Data
In the 1950s, the US 36 corridor was constructed as a four-lane toll road between Denver and Boulder. At that time, the only location between Denver and Boulder with any access need was Broomfield, about midway along the corridor. Suburban expansion of the Denver metro area eventually created the need for additional accesses on US 36, and now there are 11 interchanges spaced about 2 miles apart along the corridor. During this period of growth, US 36 has remained at four lanes, with recent construction to be completed in 2001 providing additional general purpose, HOV, and auxiliary lanes between Lowell Boulevard and I-25.

2.4 Existing Traffic
Updated hourly traffic counts from various sources were compiled during the summer and early fall of 2000. These counts focused on the mainline US 36 lanes and the on and off-ramps for US 36. Counts were combined with study information to account for interchange improvements including the Interlocken Loop/Storage Tek Interchange and the I-25/US 36 Direct Connect. Existing (year 2001) peak hour volumes are shown in the following figures:

- Existing AM Peak Traffic and Laneage, west side, Figure 2-8
- Existing AM Peak Traffic and Laneage, east side, Figure 2-9
- Existing PM Peak Traffic and Laneage, west side, Figure 2-10
- Existing PM Peak Traffic and Laneage, east side, Figure 2-11

Existing peak hour traffic flows show that the maximum flow rate on the US 36 general lanes rarely exceeds 3,900 vehicles per full hour for two lanes, which is less than the capacity of 4,000 vehicles per hour. Less than optimal usage of the facility can be attributed to the following factors:

- Ramp merge areas are un-metered, so vehicles entering US 36 in "bunches" interrupt the steady traffic flow on US 36, reducing the potential vehicle flow. Ramp metered facilities such as I-25 and I-225 have shown flow rates well over 2,000 vehicles per lane per hour.

- The physical characteristics of the on-ramps in some locations result in poor acceleration distances, which also contributes to interrupting flow on US 36.

- Flow rates were observed in 5 to 10 minute increments that were as high as 2,100 vehicles per lane per hour, but that flow rate broke down several times per hour due to upstream or downstream conditions that could not accommodate the traffic flow.

Traffic flow rates for on and off-ramps are also restricted by the signalized intersections in the interchanges. This is particularly evident at interchanges such as Superior (McCaslin) and Sheridan, where the current interchange configurations cannot accommodate the demand for traffic trying to enter US 36.
Figure 2-10: Existing US 36 PM Peak Hour Traffic and Laneage – West Side

Figure 2-11: Existing US 36 PM Peak Hour Traffic and Laneage – East Side
2.5 West End (Boulder)

The capacity of the roadway network in Boulder currently controls how much traffic can enter US 36 at the west end of the corridor in the PM peak hour. In addition, the roadway network limitations in Boulder restrict how many vehicles can enter Boulder in the AM peak hour, but the current AM peak traffic is limited more by the capacity of two lanes of US 36.

Figures 2-12 and 2-13 illustrate the peak hour traffic characteristics of vehicles entering and exiting Boulder in the AM and PM peak hours. The signalized intersections at interchanges or where US 36 and Foothills Parkway transition from access-controlled highways to arterials have an impact on how much traffic can access the US 36 corridor at the Boulder end.

US 36 is served by two arterials, 28th Street and Foothills Parkway. Generally, each of these arterials has about half the capacity of the freeway lanes leading into or out of the arterials, so the current network has a fairly even balance between US 36 capacity and Boulder arterial capacity. There are several ramps at the Table Mesa and Baseline interchanges that have capacity for accommodating additional traffic volume, and possible improvements to 28th Street and Foothills Parkway could also result in a capacity increase. It should be noted that any additional traffic using these interchanges would have to be accommodated further into the Boulder street network in the AM peak or would need to be able to get back out through the Boulder street network in the PM peak.

The potential capacity of the system based on existing laneages and planned capacity increases is also shown in Figures 2-12 and 2-13. Additional capacity was determined based on critical movements at the intersections, for which the major intersections of 28th/Colorado Ave. and Foothills/Baseline are basically at capacity. Ramps to other roadways have some capacity for additional traffic, however additional traffic would have to be accommodated at other capacity limited locations such as Broadway/Table Mesa and Broadway/Baseline.

2.5.1 East End (I-25)

Ongoing improvements at the I-25 interchange complex, which includes I-76, I-270, US 36, and I-25, are planned to be complete in the 2005/2006 timeframe. This ramp work will substantially increase the capacity of the interchange complex and should accommodate future planned capacity improvements on I-270, I-25 north, and I-76. The proposed interchange complex layout, with the planned laneages on ramps and through routes, is shown in Figures 2-14 and 2-15 with the current existing AM and PM peak hour. It should be noted that these existing volumes are affected by the ongoing construction in the interchange complex and on US 36 west of the interchange.
Figure 2-12
AM Peak Hour Existing and Near Term Capacity

Figure 2-13
PM Peak Hour Existing and Near Term Capacity
Figure 2-14: Existing AM Peak Hour Lanes/Volumes on I-25

Legend
- HOV/BRT Lane
- General Purpose Lane
- Median guardrail
= Existing/Potential “Bottlenecks”

- 1,000 84th
- 5,000
- 6,000
- 800 to 270 E (on loop in 2006)
- 2,000 from 36
- 2,000 to 36
- 1,000 76 WB
- 2,000 from 36 and 70th
- 3,300
- 6,200
- 1,200 from 76 W
- 2,000 36
- 8,200
- 7,000

**Laneage based on completion of I-25/US 36/SH 270 Interchange**
Figure 2-15: Existing PM Peak Hour Lanes/Volumes on I-25

Legend
- = HOV/HRT Lane
- = General Purpose Lane
- - - - = Median guardrail

= Existing/Potential "Bottlenecks"

*Laneage based on completion of I-25/US 36/SH 270 interchange
Daily 24-hour traffic counts completed in June of 1997 and 1998 were used to assess the directionality of trips during the peak hours of congestion. The highest volumes along the corridor are found at the east end of US 36 near I-25, where approximately 10,000 two-way trips occur per hour.

2.6 Transit

The US 36 Corridor has the highest bus ridership in the region, with over 9,700 riders a day. Ridership has increased over 60 percent in the past ten years. RTD continues to add new service in response to the high levels of demand. Over 90 percent of the 2,700 park-n-Ride spaces in the corridor are utilized on a daily basis, and park-n-Rides are near capacity at most locations.

2.6.1 Bus Service

RTD provides extensive service in the US 36 corridor through a network of regional, express and local bus routes. Seven regional routes are currently in operation along the US 36 corridor. RTD offers six weekday express routes within the US 36 corridor. Local routes include Boulder Metro Routes. Most routes operate with 30-minute headways, while Routes 204 and 207 run at 15-minute headways during peak periods. A summary of average bus operations statistics is provide in Table 2-3.

SkyRide service to Denver International Airport is also provided. Route AB is one of RTD’s SkyRide services, which operates a 60-minute headway all day. This route travels between Boulder Station and Denver International Airport (DIA), with stops at all the US 36 park-n-Rides, except Broadway, and the Stapleton Transfer Station/park-n-Ride.


2.6.2 Transit Facilities

Bus/HOV Lanes

US 36 contains an eastbound Bus/HOV lane from Sheridan to I-25. Additional Bus/HOV lanes are under construction resulting in two lanes, one in each direction, between Sheridan and Pecos. At Pecos, the buffer separated HOV transitions to a barrier separated facility which connects to the I-25 Bus/HOV lanes.

The I-25 Bus/HOV lanes (Downtown Express) are barrier-separated, reversible lanes constructed in the median of I-25 between downtown Denver and 70th Avenue (6.6 miles). The lanes are used by southbound traffic from 5:00 a.m. to 10:00 a.m. and by northbound traffic from 12:00 PM to 3:00 AM. Northern access points are at 70th Avenue (from 70th Avenue) and at 53rd Avenue (from the I-25 left lane). HOV traffic merges into general traffic lanes south of 20th Street. Bus traffic can continue in bus-only lanes that run past Denver Union Terminal (DUT) to the Market Street Station.
## Table 2-3
Average Weekday Operating Statistics for US 36 Corridor Bus Routes

<table>
<thead>
<tr>
<th>Service</th>
<th>Route</th>
<th>Name</th>
<th>Service Frequency</th>
<th># of Trips</th>
<th>Bus Requirements</th>
<th>Platform Hours</th>
<th>Vehicle Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Peak Base</td>
<td>A.M.</td>
<td>Mid</td>
<td>P.M.</td>
<td></td>
</tr>
<tr>
<td>Local</td>
<td>6</td>
<td>East 6th Ave./N Pecos</td>
<td>30 30</td>
<td>79 10</td>
<td>7 12</td>
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<td></td>
</tr>
<tr>
<td>Routes</td>
<td>8</td>
<td>North Broadway/Huron</td>
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<td>52 5</td>
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<td>49.0 779.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>North Federal</td>
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<td>128 8</td>
<td>8 9</td>
<td>108.2 1,909.8</td>
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</tr>
<tr>
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<td>Sheridan Crosstown</td>
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<td>79.3 1,590.9</td>
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<td></td>
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<td>72nd Avenue Crosstown</td>
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<td>4 4</td>
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<td></td>
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<td>12 12</td>
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<td>104th Avenue Crosstown</td>
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<td></td>
<td>120</td>
<td>120th Avenue Crosstown</td>
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<td>42 4</td>
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<td></td>
<td>128</td>
<td>Broomfield/Wagon Road</td>
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<td>1 2</td>
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<td>228</td>
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<td>- 17</td>
<td>2 0</td>
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<tr>
<td>Limited</td>
<td>225 LTD</td>
<td>Boulder/Lafayette via Baseline</td>
<td>30 90</td>
<td>34 3</td>
<td>1 3</td>
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<tr>
<td>Routes</td>
<td>227 LTD</td>
<td>Boulder/Lafayette via Louisville</td>
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<td>53 6</td>
<td>2 6</td>
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<td>7 2</td>
<td>0 2</td>
<td>3.8 81.1</td>
<td></td>
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<tr>
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<td>18X</td>
<td>North Pecos</td>
<td>30* N/A</td>
<td>6 2</td>
<td>0 2</td>
<td>3.7 77.6</td>
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<tr>
<td></td>
<td>31X</td>
<td>North Federal/Lowell</td>
<td>30* N/A</td>
<td>6 2</td>
<td>0 2</td>
<td>4.2 96.7</td>
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<td>80X</td>
<td>West 80th</td>
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<td>0 3</td>
<td>4.6 107.9</td>
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<td></td>
<td>82X</td>
<td>Ponoma</td>
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<td>6.2 151.5</td>
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<td>86X</td>
<td>Westminster Center</td>
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<td>Countryside</td>
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<td>0 3</td>
<td>7.3 178.1</td>
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<td>182 18</td>
<td>7 23</td>
<td>155.5 5,526.0</td>
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</tr>
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<td>Routes</td>
<td>D</td>
<td>Boulder/DTC via Colorado Blvd.</td>
<td>15* N/A</td>
<td>26 6</td>
<td>0 8</td>
<td>46.4 1,209.0</td>
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<td></td>
<td>F</td>
<td>Foothills/Superior/Denver</td>
<td>30* N/A</td>
<td>10 3</td>
<td>0 2</td>
<td>6.9 270.7</td>
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</tr>
<tr>
<td></td>
<td>H</td>
<td>Boulder/Superior/Denver</td>
<td>15* N/A</td>
<td>15 5</td>
<td>0 6</td>
<td>14.2 440.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>L</td>
<td>Longmont/Denver</td>
<td>15 120</td>
<td>39 10</td>
<td>2 8</td>
<td>49.9 1,540.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S</td>
<td>Denver/East Boulder</td>
<td>30* N/A</td>
<td>9 2</td>
<td>0 3</td>
<td>9.8 447.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>T</td>
<td>Boulder/Greenwood Plaza via I-25</td>
<td>15* N/A</td>
<td>10 5</td>
<td>0 3</td>
<td>20.0 629.0</td>
<td></td>
</tr>
<tr>
<td>SkyRide</td>
<td>AB</td>
<td>DIA/Boulder via US 36</td>
<td>60 60</td>
<td>37 5</td>
<td>4 10</td>
<td>1.2 1,882.2</td>
<td></td>
</tr>
<tr>
<td>Corridor Totals</td>
<td></td>
<td></td>
<td>1,235 147 56 154</td>
<td>1,174</td>
<td>28,551</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
1. *Indicates that service is provided in peak direction only.
2. Headways shown in table reflect approximate service frequencies in the peak direction.
3. Non-peak direction service frequencies are usually less for regional routes.
4. Platform hours and miles are in-service statistics.

**Source:** 1997/98 RTD Schedule Information
**Park-n-Rides**

Nine park-n-Rides are located in the corridor and one is planned for construction. A summary of existing plus committed park-n-Ride spaces in the corridor is provided in Table 2-4.

- Broadway park-n-Ride is located at Broadway and 70th Avenue. This surface lot contains 308 available spaces and is served by five bus routes.

- Westminster Center park-n-Ride is comprised of two parking lots. A lot is located on each side of US 36 east of Sheridan Boulevard. Both lots are surface lots and contain a total of 684 parking spaces. They are connected by a pedestrian overpass. A parking structure is currently under construction and will result in a total of 1340 spaces. This park-n-Ride is served by 14 bus routes.

- Broomfield park-n-Ride is located at Wadsworth Parkway and SH 128, just south of US 36. This facility underwent expansion in 1994 and again in 1996/1997. It currently has 905 parking spaces in a surface lot. In the first half of 1998, the Broomfield park-n-Ride was 102 percent utilized. The facility will be expanded in conjunction with the US 287/US 36 interchange reconstruction to accommodate 1500 parking spaces. This park-n-Ride is currently served by 9 bus routes.

- Superior/Louisville park-n-Ride is a surface lot containing 306 parking spaces, four bicycle spaces and six bicycle lockers. This facility is located in the southwest quadrant of the US 36/McCaslin Boulevard interchange and is currently operating at nearly 80 percent utilization. Plans are in place to build an additional park-n-Ride lot on the opposite side of the highway, resulting in a total of 500 surface spaces. This park-n-Ride is served by 7 bus routes in addition to Louisville and Superior call-n-Ride.

- Table Mesa is a parking structure located at the US 36/Table Mesa Drive/Foothills Parkway interchange in Boulder. An additional two levels were recently added to the parking structure. Table Mesa now contains 832 parking spaces. This park-n-Ride is served by 8 bus routes.

- Tantra park-n-Ride is a 105 surface space lot located at Table Mesa and Tantra Drive near the LDS church. This park-n-Ride is served by 6 bus routes.

**Table 2-4**

**Existing & Committed park-n-Ride Spaces**

<table>
<thead>
<tr>
<th>Location</th>
<th>Existing + Committed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foothills</td>
<td>143</td>
</tr>
<tr>
<td>Table Mesa</td>
<td>832</td>
</tr>
<tr>
<td>Tantra Drive</td>
<td>105</td>
</tr>
<tr>
<td>Flatiron</td>
<td>59</td>
</tr>
<tr>
<td>Church of the Nazarene</td>
<td>49</td>
</tr>
<tr>
<td>Superior</td>
<td>500</td>
</tr>
<tr>
<td>96th</td>
<td>400</td>
</tr>
<tr>
<td>Broomfield</td>
<td>1500</td>
</tr>
<tr>
<td>Church Ranch</td>
<td>217</td>
</tr>
<tr>
<td>Westminster</td>
<td>1340</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5,002</strong></td>
</tr>
</tbody>
</table>
Flatiron park-n-Ride is a 59 surface space lot located at 27th Way and Broadway in Boulder. This park-n-Ride is served by 5 bus routes including Boulder's LEAP route.

Foothills park-n-Ride is a surface lot owned by the City of Boulder at 47th and Pearl Street. It has 143 spaces and has been averaging 36 percent utilization. This park-n-Ride is served by 5 bus routes including Boulder's LEAP route.

2.7 PLANNED AND PROGRAMMED IMPROVEMENTS

The Regional Transportation Plan (RTP) Year 2000 to 2020 includes the US 36 Corridor projects shown on Figure 2-16, amounting to $216 in recent and future allocations of funding. In addition, $67M has been identified for corridor improvement projects resulting from the US 36 MIS process.

Transportation Improvement Program (TIP) improvements for 1999-2004 amount to $146 M, and are also shown in Figure 2-16.

RTD is planning to add over 2,000 new park-n-Ride spaces at several locations along the US 36 Corridor by the year 2002. These improvements will relieve some of the overcrowding at the existing park-n-Ride locations and provide new opportunities for bus riders to access the bus system.

The following projects represent upgrades to existing park-n-Ride facilities:

Westminster Center park-n-Ride expansion consisting of a new 450-space parking structure and was completed in 2001.

Broomfield park-n-Ride will be relocated in conjunction with the redesign of the US 287/US 36 interchange. The facility will be expanded at this time. Completion is expected by the year 2003.

Superior/Louisville park-n-Ride was relocated and expanded as part of the Superior Town Center development located in the southwestern quadrant of the US 36/McCaslin Boulevard interchange. Completion was in 2001.

Table Mesa North park-n-Ride was expanded to include an additional 340 parking spaces.

The projects listed below involve the development of new park-n-Ride facilities:

Church Ranch Road park-n-Ride was recently constructed in the southwestern quadrant of the US 36/Church Ranch Road interchange with 217 parking spaces.

96th Street park-n-Ride will be constructed in conjunction with the redesign of the Storage Tech Dr./Interlocken Loop Street/US 36 interchange. This facility will initially
Figure 2-16
Planned & Programmed Improvements

Roadway Improvements
1. Widen 96th St to 4 Lanes
2. Reconstruct McCaslin Blvd Interchange
3. Widen US 287 to 6 Lanes - US 36 to Empire Rd
4. Reconstruct Interlocken Loop/STC Dr Interchange
5. Widen Sheridan Blvd to 6 Lanes - US 36 to 113th Ave
6. Widen Sheridan Blvd to 4 Lanes - 113th Ave to 120th Ave
7. Reconstruct Sheridan Interchange, Widen Sheridan Blvd to 6 Lanes - 87th Ave to 91st Ave
8. Widen McCaslin Blvd to 4 Lanes - US 36 to SH 128
9. Reconstruct Broomfield Interchange, Relocate 120th Ave
10. Widen Wadsworth Parkway to 6 Lanes - 100th Ave to US 287
11. Cherryvale Rd & 88th St Bridge Rehabilitation
12. Construct Northwest Parkway Tollroad
13. Sheridan Interchange Interim Improvements
14. 92nd St/98th St Partial Interchanges
15. Construct 96th St - SH 128 to Coalton Rd
16. Widen 88th Ave to 6 Lanes - Lamar St to Sheridan Blvd

Transit Improvements
A. Table Mesa pnR Expansion
B. Louisville/Superior pnR Expansion
C. Interlocken Loop/STC Drive pnR Construction
D. Broomfield pnR Relocation & Expansion
E. Church Ranch pnR Construction
F. Westminster pnR Expansion
G. I-25/US 36 Bus/HOV Direct Connect, SH 270 Connection, WB HOVLane
contain 400 parking spaces on the north side of US 36 with a pedestrian underpass connection to the south side of the highway. A transit center and privately funded circulator bus system to connect to the Flatiron Crossing Mall are planned for this location.

Roadway improvements include the construction of the Northwest Parkway, a new toll road, as well as reconstruction and widening of arterial streets feeding in to US 36 and US 36 interchanges, as shown in Figure 2-16.
Chapter 3
PUBLIC AND AGENCY INVOLVEMENT

The public involvement program has been an integral component of every step in the study process. In addition to stakeholder input, a series of newsletters, focus groups, open houses, a survey and a website have been developed to provide the public with an opportunity to be part of the review and decision making process. A detailed discussion of public involvement is provided in the Summary of US 36 MIS Public Involvement, April, 2001.

3.1 THE ROLE OF PUBLIC INVOLVEMENT IN THE US 36 MIS PROCESS

A comprehensive public involvement program during the MIS process has resulted in widespread support for implementation of the Locally Preferred Alternative components.

Following is a breakdown of the phases and what public involvement elements were used during each segment.

3.1.1 Phase 1: Project Initiation
(October 1998 - November 1998)
The project initiation phase entailed data collection, issues identification, development of project goals and objectives, and the identification of purpose & need.

Public Involvement methods used to solicit input in Phase 1 included:

- TAC/PAC Meetings

3.1.2 Phase 2: Preliminary Screening
(Nov. 1998 - May 1999)
A wide range of individual transportation improvements were explored including several bus options, additional general purpose lanes, HOV lanes, and rail options. After evaluation, including extensive public input, several of the elements were eliminated from further consideration.

Public Involvement methods used to solicit input in Phase 2 included:

- Newsletters 2 and 3
- Focus Groups
- Agency and Group Coordination
- TAC/PAC
- Public Meetings
- Second Set of Open Houses
- Press Release and Newspaper Ads
- Website
- Public Opinion Survey

3.1.3 Phase 3: Conceptual Alternatives
(June 1999 - August 1999)
Alternatives were developed for bus, rail and roadway investments. The costs, benefits and users of alternatives were evaluated. Based on a combination of the technical evaluation and public and agency input, a set of packages was
developed. Packages were multi-modal and included, bus, rail and roadway improvements.

Public Involvement methods used to solicit input in Phase 3 include:

- Agency and Group Coordination
- TAC/PAC Meetings
- Website

3.1.4 Phase 4: Detailed Evaluation
(September 1999 - October 2000)
Capital, operating and maintenance costs, users and congestion impacts were evaluated for the four packages. Two additional options were evaluated at agency and public request including a roadway widening option and bikeway. Elements of both the roadway option and the bikeway option were added to the packages for final evaluation.

Public Involvement methods used to solicit input in Phase 3 include:

- Newsletter
- Agency and Group Coordination
- TAC/PAC Meetings
- Website

3.1.5 Phase 5: Final LPA
(October 2000 - March 2001)
The final alternatives were narrowed to two alternatives. After discussion with the communities along the corridor, one of the options was refined and recommended as the Draft Locally Preferred Alternative.

Public Involvement methods used to solicit input in Phase 4 include:

- Final brochure

- Agency and Group Presentations
- TAC/PAC Meetings
- Third Set of Open Houses
- Press Release Newspaper Ads
- Mailer
- Website

3.2 SUMMARY OF KEY PUBLIC INVOLVEMENT TECHNIQUES

Interviews with community leaders were conducted at the onset of the MIS to introduce the project and receive initial input regarding project issues and direction. The intent of this exercise was to take a proactive approach in identifying transportation issues and needs in the US 36 corridor. By working with community members along the corridor, the US 36 team was able to identify needs and concerns along the corridor. Common themes arose from the discussion, one of which was to provide a multi-modal solution for the corridor. These themes were incorporated into evaluation criteria and used through the remainder of the screening process.

3.2.1 Community Leader Interviews
The following questions were asked in order to guide the discussion regarding the corridor:

- Are there any issues that the MIS Project Team should be aware of within the study area?
- What are the major land development activities in your community?
Are there any alternatives that you think the MIS Project Team should look at?

What are you think the greatest transportation problems/needs in your community are related to the US 36 corridor?

Do you have any ideas regarding the public involvement plan for this project?

Is there anyone else from your jurisdiction who we should contact?

How would you like to stay involved?

3.2.2 Technical Advisory Committee and Policy Advisory Committee

Two committees, a Technical Advisory Committee (TAC) and a Policy Advisory Committee (PAC), were established and met over a three year period to develop consensus on a long-term transportation strategy for the US 36 corridor. The PAC consisted of elected and appointed officials from municipalities and agencies within the study area, while the TAC included technical staff from the same agencies. Their roles are described below:

Policy Advisory Committee

- Provide general guidance to the study team on the matters of policy.
- Serve as a filter for comments received from the general public or special interest groups.
- Primarily responsible for developing a policy recommendation for a Preferred Alternative.

Technical Advisory Committee

- Provide Guidance to the study team on technical issues.
- Serve as a filter for comments received from the general public or special interest groups.
- Provide input to the PAC regarding the technical recommendations for a Preferred Alternative.

During the first half of the project TAC and PAC meetings were held separately. Meetings included a formal presentation of analysis conducted on the alternatives, followed by discussions which provided direction for the study process. During the second half of the project, PAC and TAC were combined to foster interaction between these two groups. To provide an equitable representation of stakeholder concerns, each jurisdiction and agency was asked to provide a single voting member from PAC members to cast one vote during the selection of the Draft Locally Preferred Alternative in November, 2000 and during the selection of the Final LPA in February, 2001.

Participants

The following agencies and groups were represented on the Policy and Technical Advisory Committees:

- Adams County (TAC)
- Broomfield Economic Development Corporation (TAC)
- Boulder County (PAC/TAC)
- Burlington Northern Santa Fe Railroad (TAC)
- City of Arvada (PAC/TAC)
- City of Broomfield (PAC/TAC)
- City of Boulder (PAC/TAC)
City and County of Denver (TAC)
City of Lafayette (PAC)
City of Louisville (PAC/TAC)
City of Westminster (PAC/TAC)
Colorado Department of Transportation (CDOT) (PAC/TAC)
Colorado House of Representatives (PAC)
CDOT Transportation Commission (PAC)
Colorado Public Interest Research Group (TAC)
Denver Regional Council of Governments (PAC/TAC)
Federal Highway Administration (TAC)
Federal Transit Administration (TAC)
Jefferson County (PAC/TAC)
League of Women Voters (TAC)
Plan Boulder County (TAC)
Public Utilities Commission (TAC)
Regional Transportation District (RTD) (PAC)
Town of Superior (PAC/TAC)
University of Colorado at Boulder (TAC)
US 36 Transportation Management Organization (PAC/TAC)

questions or concerns, the team was able to respond to these concerns and incorporate information derived from these meetings into the MIS.

Working groups were also formed during the scoping process and met at regular intervals throughout the study. These groups met and discussed different modal technologies available and prospective solutions to problems faced by commuters on US 36. These working groups also participated in the evaluation of alternatives and ultimately helped to define and select the Locally Preferred Alternative.

A list of presentations and workshops conducted throughout the MIS process is included in the Appendix.

3.3 Focus Groups

The purpose of the focus groups was to obtain input on the alternatives, better understand the transportation concerns of employees in the corridor and how to resolve these concerns. A first set of focus groups was conducted April to May 1998 followed by a second set from October to December of 1998.

The first group of meetings was a "scoping" exercise where members of the US 36 Team asked groups of employees a set of questions regarding the nature of the commute along the corridor. A set of "Transportation Problems and Needs" was developed from this exercise as well as potential solutions to the problems.

Sessions with the following groups were held during the first set of focus group discussions:
Geneva Pharmaceuticals
Department of Commerce
Sun Microsystems
Ball Aerospace
McData Corporation
Neodata
Storage Tek
Westminster Mall
Hunter Douglas
Westmoor Business Park
Pearl Izumi
Interlocken, LTD.

The second set of focus Groups held from October to December 1998 were held at major employment sites along the corridor. The conceptual alternatives were introduced and participants offered comments on each alternative individually.

Sessions with the following groups were held during the second set of focus group discussions:

- Hunter Douglas
- US Department of Commerce/NIST
- US West Advanced Technologies
- Sun Microsystems Focus Group 1
- Sun Microsystems Focus Group 2
- Geneva Pharmaceuticals

3.3.1 Survey
A survey was used to gauge public opinion on the Conceptual Alternatives being considered for US 36. It was distributed with the second issue of the US 36 MIS newsletter in October of 1998. Recipients of the newsletter were asked to rank the alternatives by degree of effectiveness or those which would most successfully solve the future transportation needs within the corridor.

There were an estimated 4,800 newsletters distributed containing the survey. 450 responses were received.

3.3.2 Website
The website, www.us36.com, was established in 1998. The purpose of the site was to keep the public updated on the status of the project, let them know how to get involved and provide them with the opportunity to comment. Since the project's inception, over 15,000 people have visited the US 36 website. The website provided a place where people could submit comments directly to the US 36 Study Team. During the course of the project approximately 300 comments were received. The comments received have been compiled and can be found in the Summary of US 36 MIS Public Involvement, April, 2001.

The website was advertised in several newspapers, in the newsletters and at the Public Open Houses.

3.3.3 Public Open Houses
During the course of the study, three sets of public open houses were held. These open houses provided information about the projects through handouts and graphics on the walls. The public was asked to review the information and provide input to the US 36 Study Team. People were encouraged to outline concerns, ask questions and comment on development and the alternatives. Information obtained at these open houses was incorporated into the evaluation of alternatives.

Invitations to open houses were advertised by sending press releases to local papers along the corridor, mailing
postcards to over 4,800 people on the project mailing list, placing paid advertisements in several community papers and sending mailers to homes advertising dates and locations for open houses.

**June 1998 Open Houses**
The purpose for these meetings was to introduce the project and obtain initial input from the public to issues surrounding the US 36 corridor. Information gathered at these meetings was used to develop alternatives and establish criteria for evaluating the alternatives.

**October 1998 Open Houses**
The public was invited to attend these “workshops” to review the results of the preliminary evaluation of alternatives and to offer suggestions regarding potential solutions.

**January 2001 Open Houses**
A third and final set of open houses was held to present the draft Locally Preferred Alternative (LPA). The LPA was presented and the public was asked to provide input and comments before the LPA was finalized and the Center.

**Newspaper Ads**
Newspaper ads and press releases were used throughout the MIS process to keep the public informed of opportunities to get involved with the MIS process.

Press releases advertising upcoming public open houses and updates to the website were sent to local newspapers throughout the study. (September and October 1998 and January 2001):

- Boulder Weekly
- Boulder Daily Camera
- Broomfield Enterprise
- Denver Post
- Lafayette News
- Louisville Times
- Westminster Window

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**TRAIN TO BOULDER?**

**BUSES TO BROOMFIELD?**

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SOLUTIONS!

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February 2000
Chapter 4  
DEVELOPMENT AND SCREENING OF ALTERNATIVES

The Phase I Modal Screening consisted of an initial screening of technologies based on feasibility, cost, and forecast year 2020 users.

Phase I is described in more detail in: US 36 MIS Detailed Evaluation Report, September 1999.

4.1. ALIGNMENTS CONSIDERED

Two main transportation corridors are present within the study area: US 36 and the Burlington Northern Santa Fe (BNSF) freight railroad. A map of both of these corridors is shown in Figure 4-1.

Connections to downtown Denver are provided by both I-25 and the existing freight tracks. The rail alignment interfaces with the Union Pacific Railroad west of downtown Denver. Connections to Boulder are provided by US 36 which ends at 28th street in South Boulder, and the BNSF rail line in northeast Boulder.

The US 36 roadway alignment connects to 28th St. in Boulder. US 36 connects to I-25, the primary roadway access to downtown Denver. The BNSF line continues north through Longmont and Fort Collins to Wyoming.

4.1.1 Freight Rail Alignment

The corridor includes the southern portion of the Burlington Northern-Santa Fe’s (BNSF) Front Range Subdivision. The line connects Denver with Longmont, Loveland, Fort Collins, and Cheyenne and terminates in Wendover, WY.

In the study area, the line is generally single track, with passing sidings at Broomfield and Boulder. There is a short double-ended siding in Westminster used for trackside loading. There are spur tracks that serve Western Paving (Denver), Birko Chemical (Westminster), Homestead House (Westminster), Burns Junction
(Broomfield), Valmont (Boulder), and several in downtown Boulder.

The portion of the line between Denver Union Terminal (DUT) and Utah Junction (about 3.5 miles from DUT, just southeast of Pecos Street) is very different from the main line north of Utah Junction. This area is considered "yard limits" by BNSF, and includes four major junctions and two BNSF yards. From DUT, the tracks cross over 20th Avenue, pass under the Park Avenue viaduct, cross the Consolidated Main Line (CML) at 23rd Street Junction, cross the Platte River, pass through Prospect and Fox Junctions while passing under I-25 and over 38th Avenue, pass through Rennick Yard, pass under I-70, pass through the BNSF TOFC yard, and cross the Union Pacific (UP) tracks at Utah Junction. Between Prospect Junction and Utah Junction, the UP runs parallel to the BNSF and operates North Yard.

Currently (year 2001) the rail segment between Denver and Boulder experiences a daily train of 4 trains/day plus local service resulting in a total of 6 trains a day. Historically frequencies have been higher, 8 to 10 freight trains per day. BNSF expects that in the near term, freight operations may reach 8 to 10 trains again.

4.1.2 Denver Terminus
(Figure 4-2)
The southern terminus for the study area is DUT in downtown Denver. Currently the only passenger service at DUT is Amtrak and the Ski-Train. RTD has begun efforts to turn DUT into a regional intermodal transit hub with the purchase of DUT. The downtown Denver Mall shuttle will extend service to DUT in the Fall of 2001 and the Central Platte Valley LRT spur will serve DUT by the Spring of 2002. Plans envision additional rail corridors feeding into DUT: Light Rail Transit (LRT) from the I-70 West Corridor, and Commuter Rail service from Denver International Airport. In addition, HOV lanes from I-25 feed into DUT, providing direct bus access.

Denver CBD Rail Access
It was identified early in the process that the feasibility of rail alternatives depended on access to DUT in downtown Denver. This segment is currently constrained with both UP Railroad and BNSF Railroad operations in the rail corridor adjacent to downtown. In addition to freight rail activity, numerous junctions, rail structures, and roadway structures present obstacles to the implementation of passenger rail service from the US 36 Corridor. As a result, several options to access downtown Denver with rail were evaluated in conjunction with other corridors in the region and with input from UP and BNSF representatives. A discussion of rail CBD access options is provided later in this chapter.
**Figure 4-2**
**Downtown Denver Access**

**Denver CBD HOV Access**
The extension of HOV lanes on US 36 would impact the Downtown Express HOV Lanes on I-25 leading to downtown Denver. The Downtown Express consists of two reversible HOV lanes which cannot be expanded within the existing ROW. A discussion of HOV CBD access options is provided in the Bus/HOV Section.

**4.1.3 Boulder Terminus (Figure 4-3)**
Two termini were identified in Boulder. The first is at the Table Mesa park-n-Ride and the second was identified near 30th/Pearl, the potential site of the Boulder Intermodal facility. Extension of service to key activity centers in Boulder played a significant role in the development of alternatives. Existing bus service (the Hop, Skip, and Jump) was envisioned to connect to regional bus service.

**Figure 4-3**
**Boulder Access**

**4.2. Phase I: Modal Screening**
A several phased process was used to evaluate the applicability of transportation improvements. The following technologies/approaches were considered during various portions in the evaluation process, based on input from the US 36 Policy and Technical Advisory Committee Meetings:

- No Build;
- Bus;
- Light Rail;
- Commuter Rail;
- Roadway;
- Purchase of Open Space;
- TDM; and
- ITS.

The approach entailed the evaluation of several alternatives within each mode to determine the "best of" each mode for application in the US 36 corridor.
description of each technology/approach considered is provided, followed by an assessment of each option.

4.2.1 No-Build
The No-Build alternative served as a baseline for the comparison of Build alternatives.

The No-Build transit element outside of the US 36 corridor assumed all transit service improvements that are in the DRCOG 2020 Regional Transportation Plan (RTP).

Within the corridor, proposed route modifications are intended to reflect existing plus committed (E+C) transit services.

Bus Operating Plan
The No-Build bus operating plan assumed all transit service improvements that are in the DRCOG 2020 Regional Transportation Plan (RTP) outside of the US 36 corridor. Within the corridor, proposed route modifications were intended to reflect an existing plus committed (E+C) transit network. The No-Build Alternative reflected service changes that are generally consistent with "immediate need" transit service improvements proposed by the US 36 Corridor Transportation Management Organization (TMO). Route descriptions and corresponding travel demand model transit line numbers are included in the Detailed Evaluation Report, May 2001 and the US 36 MIS Corridor Transit Operations Report, April 2001.

4.2.2 TSM
Transportation System Management (TSM) alternatives assume low cost transportation improvements, beyond the No-Build. A TSM option was initially developed and evaluated. However it was not carried forward in response to FTA’s Final Rule on Major Capital Investment Projects, December 7th, 2000 which eliminates the requirement for the comparison of build alternatives with a TSM. For a description of the TSM option that was developed for the US 36 MIS, refer to the US 36 MIS Corridor Transit Operations Report, April 2001.

4.2.3 Light Rail
Light Rail Alternatives Considered
Two alignments were initially evaluated: LRT along using US 36 and I-25, and LRT along the BNSF corridor (Figure 4-4).

Common elements of the Light Rail Alternatives considered included:

- Double track system serving bi-directional peak demand;
- Terminus in downtown Denver at Denver Union Terminal (DUT);
- Stations at existing or planned park-n-Ride stations along the corridor;
- Average station spacing of 2.7 miles;
- Terminus in Boulder at Table Mesa park-n-Ride or near Crossroads Mall
Figure 4-4
Light Rail Alternatives Map

LRT on US 36 and Burlington
Northern Santa Fe (BNSF) Railroad

- LRT on the south side of US 36 from Boulder to Westminster Mall, and along the BNSF right-of-way from Westminster to Union Station in downtown Denver.

Screening of LRT Alternatives
Three key indicators, travel times, cost, and the ability to accommodate demand were assessed. The results, shown in Table 4-1 were used in combination with public input and input from the TAC and PAC to identify alternatives to be carried forward to the next phase.

Table 4-1
LRT Screening

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Competitive Travel Time?</th>
<th>Cost &lt;$450 M?</th>
<th>Accommodates Existing Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>LRT I-25/US 36 (to Crossroads)</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>LRT I-25/US 36 (to Table Mesa)</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>LRT BNSF/US 36 (to Crossroads)</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>LRT BNSF/US 36 (to Table Mesa)</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Light Rail Findings
- Visual impact of electrification;
- Length of corridor not typical for LRT applications (greater need for seated capacity);
- High capital cost
- Does not open up additional corridor for transit service

Characteristics of each of the alternatives is provided below:

LRT on US 36/ I-25

- LRT on the south side of US 36 from Boulder to I-25, and in the median of I-25 to Union Station.
Duplicates existing express bus service
Requires use of CDOT ROW for rail
Does not build on existing infrastructure in the corridor
Limited opportunities for expansion to northern communities
Significant impacts to roadways and/or properties
Impacts to dedicated open space and wetlands
LRT has a high cost per seated passenger
LRT is limited to 4 car train consists, which limits capacity and increases O&M costs
LRT has lower maximum speeds than LHC or DMUs
Alternative street running alignments in Boulder and Denver will not provide competitive regional travel times

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>LRT I-25/US 36 (to Crossroads)</td>
<td>Eliminate</td>
</tr>
<tr>
<td>LRT I-25/US 36 (to Table Mesa)</td>
<td>Eliminate</td>
</tr>
<tr>
<td>LRT BNSF/US 36 (to Crossroads)</td>
<td>Eliminate</td>
</tr>
<tr>
<td>LRT BNSF/US 36 (to Table Mesa)</td>
<td>Eliminate</td>
</tr>
</tbody>
</table>

**Table 4-2 LRT Recommendation**

**4.2.4 Commuter Rail**

**Locomotive Hauled Coaches (LHCs):** LHC commuter rail is comprised of passenger rail cars pushed or pulled by a locomotive. LHC service is most appropriate for corridors characterized by widely spaced stations and/or high levels of peak period demand. LHC require long acceleration and deceleration distances due to the weight of the vehicles.

**Diesel Multiple Units (DMUs):** DMUs are a hybrid between LRT vehicles and locomotive hauled coach commuter rail. They accommodate more seated passengers than LRT and less than LHC. DMU vehicles are self propelled, using multiple diesel/electric units which can operate individually or linked together to create a train of up to 10 cars. DMUs can operate on existing freight tracks. DMUs are most commonly used in Europe. For domestic use, DMUs need to be reconfigured to meet Federal crashworthiness standards if they are operated on freight tracks. DMUs operating on their own tracks do not need to be compliant, and have the potential to be interlined with LRT vehicles.

**Commuter Rail Alternatives**

Common elements of the Commuter Rail alternatives show in **Figure 4-5** included:

- Terminus at Denver Union Terminal (DUT) in downtown Denver;
- Average station spacing of 2.3 to 4.3 miles;
- Multiple operating and capital investment options.
Two New Tracks on US 36 and BNSF

- Assumes FRA Non Compliant DMU Vehicles;

BNSF

Existing Track plus Passing Track on BNSF

- Assumes DMU Vehicles;

Existing Track plus New Track on BNSF

- Assumes DMU Vehicles;

Two New Tracks on BNSF

- Assumes Locomotive Hauled Coaches (LHCs);

Screening of Commuter Rail Alternatives

Three key indicators, travel times, cost, and the ability to accommodate demand were assessed. The results, shown in Table 4-3 were used in combination with public input and input from the TAC
and PAC to identify alternatives to be carried forward to the next phase.

### Table 4-3

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Competitive Travel Time?</th>
<th>Cost &lt; $450 M?</th>
<th>Accommodates Existing Demand?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commuter Rail BNSF Existing + passing Tracks</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Commuter Rail BNSF Existing + 1 new track</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Commuter Rail BNSF two new tracks</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Commuter Rail BNSF/US 36 Existing + passing tracks</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Commuter Rail BNSF/US 36 Existing + 1 new track</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Commuter Rail BNSF/US 36 Two new tracks</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Each of the US MIS commuter rail alternatives serve similar locations between Denver Union Terminal and the 96th Street interchange. The primary distinction between the US 36 and the BNSF commuter rail alignments was an alternate means of accessing Boulder Valley. The following describes the advantages and disadvantages associated with these alignment options.

### US 36 Alignment Opportunities

- Serves the Town of Superior, Louisville’s Centennial Valley and the southern portion of the City of Boulder.
- Serves Superior/Louisville park-n-Ride and Table Mesa park-n-Ride.
- Few noise/vibration impacts to residential areas.

### US 36 Alignment Constraints

- Limited opportunity for future regional connections to North Front Range communities.

### BNSF Alignment Opportunities

- Serves downtown Louisville, Western Lafayette, the eastern portion of the City of Boulder and the Crossroads area.
- Serves the planned Crossroads Mall Transit Center.
- Takes advantage of existing rail right-of-way.
- Preserves US 36 right-of-way for Bus/HOV and/or roadway options.
- Potential for regional connections to North Front Range communities.

### BNSF Alignment Constraints

- Requires additional investment to maintain existing transit connections to the southern portion of the City of Boulder.
- More noise and vibration impacts to residential areas.

### CBD Access

Two alignments were proposed for US 36 Regional Rail service into DUT. For the purposes of this document, they will be referred to as the West Alignment and the East Alignment. A description of each alignment follows.
West Alignment - This alignment would begin at Utah Junction and follow the BNSF south through the TOFC Yard, Rennick Yard, Fox Junction, Prospect Junction, and 23rd Street Junction to gain access to DUT. The existing track configuration places speed restrictions on all trains along this alignment, since there is no exclusive main line, and the alignment passes directly through both yards and all of the junctions. The potential for conflicts with freight trains is large, since UP trains cross the BNSF line at Utah Junction, blocking BNSF traffic. General freight movements in the yards and through the remaining junctions would also place a strain on commuter operations. This alternative covers 3.5 miles of railroad.

Passenger rail service from the northeast (from UP’s Greeley Subdivision) would be required to traverse the Belt Line to use the west alignment. In order for this to occur, a connection would be required between Sand Creek Junction and Belt Junction, and another connection would be required from the Belt Line to the BNSF at Utah Junction. It is 4.9 miles from Sand Creek Junction to DUT on the Greeley Line. It would be 3.6 miles from Sand Creek Junction to Utah Junction on the Belt Line plus the 3.5 miles Utah Junction to DUT on the West Alignment, or an increase in distance of 2.2 miles. It has been assumed that the East Corridor will continue to use the ROW along the Greeley Subdivision to access DUT.

East Alignment - This alignment would begin at Sand Creek Junction. It would follow the Greeley Subdivision through Pullman Yard and 36th Street Yard to DUT. The existing track configuration places speed restrictions on all trains along this alignment, since there is no exclusive main line, and the alignment passes directly through both yards and all of the junctions. The purchase of a strip of ROW along the east side of this alignment from UP between Pullman Yard and DUT would allow for the construction of an exclusive commuter rail main line, operating at higher speeds. However, trains from the northeast would be required to cross UP’s Salina Branch with an overpass. This alternative covers 4.0 miles of railroad.

The northeast alignments (from BNSF’s Front Range Subdivision or UP’s Bond Subdivision) would be required to use the Belt line to access this alignment. In order for this to occur, a connection from each of these lines would be required at Utah Junction, and the connection from the Bond Subdivision would be required to be grade separated to avoid freight conflicts with the BNSF. Connections from the Belt Line would also have to cross the UP Greeley Subdivision to join the East Corridor’s ROW to the east.

The Belt Line - Either of these option may require the use of UP’s Belt Line for commuter service. Based on discussions with UP, there is insufficient capacity to carry both commuter rail and the existing freight traffic on the existing single track line. It has been assumed that additional tracks would be required for commuter service. The existing Belt Line ROW is 40’ wide, which would constrain the addition of tracks on this
alignment. The line is approximately 4.1 miles long.

Based on a review of all MIS's and corridor studies completed, or in process, the following services need to be accommodated for an alignment into downtown.

- Double track for US 36 service
- Double track for East Corridor service (route already determined)
- Single track for North Front Range Transportation Alternatives Feasibility Study (can be overlaid on other services)

It has been assumed that double track could accommodate all three services with signal upgrades.

Double track (two new tracks) service into downtown along the West Alignment would necessitate the following improvements:

- TOFC yard Relocation Improve Utah Junction – Grade Separation
- Improve Prospect Junction – At Grade
- Double track service into downtown (two new tracks)
- Some segments would also require the following improvement:
  - Structure at C&S Junction for some alternatives.
- The West Alignment was carried forward as the preferred Comuter Rail access to downtown Denver.

**Commuter Rail Findings**
Alternatives which were advanced for further study are shown in Table 4-4.

**Table 4-4**
Commuter Rail Recommendations

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commuter Rail BNSF Existing + passing tracks</td>
<td>Eliminate</td>
</tr>
<tr>
<td>Commuter Rail BNSF Existing + 1 new track</td>
<td>Advance, create hybrid with new double track sections to improve travel time</td>
</tr>
<tr>
<td>Commuter Rail BNSF Two new tracks</td>
<td>Advance, modify to use FRA compliant DMU vehicles or LHC</td>
</tr>
<tr>
<td>Commuter Rail BNSF/US 36 Existing + passing tracks</td>
<td>Eliminate</td>
</tr>
<tr>
<td>Commuter Rail BNSF/US 36 Existing + 1 new track</td>
<td>Eliminate</td>
</tr>
<tr>
<td>Commuter Rail BNSF/US 36 Two new tracks</td>
<td>Advance</td>
</tr>
</tbody>
</table>
4.2.5 Bus/HOV

Bus/HOV Alternatives Considered (Figure 4-8)
Several types of Bus/HOV facilities were considered for the US 36 Corridor including:

Exclusive Two-Directional Bus/HOV Facilities - these are generally constructed within the freeway right-of-way, and used exclusively by Bus/HOVs for all or a portion of the day. They are usually separated from the general lanes by concrete barriers and often have limited access points and may include direct ramps access and egress.

Exclusive Reversible HOV Facilities - these are similar to the two-directional facilities, but they usually operate inbound toward the central business district or other activity center in the morning and outbound in the evening. Some type of daily set-up is required, such as opening the lanes in the morning and evening. These facilities are appropriate where there is a strong directional split.

Concurrent Flow Bus/HOV Facilities - these are freeway lanes in the same direction of travel, not physically separated from the general purpose traffic lanes. They are usually open for use by all HOVs. A few facilities are open only to buses to allow them to bypass specific bottlenecks. Concurrent flow lanes are usually located on the inside lane or shoulder and are delineated with paint striping. In some cases a 1 to 4 foot separation is provided. Unlimited ingress and egress or may be allowed or access may restricted to specific points.

- Bus/HOV Access Options included:
- Direct Connections - connection to facility is done via exclusive ramps or flyovers from park-n-rides and/or interchanges
- Weave - access to the facility requires weaving across general purpose lanes
- Combination - access to the facility uses a combination of weave sections and direct connections.

Bus/HOV configuration options included:

- Median - Bus/HOV or Bus Lane in median of US 36
- Outside - Bus/HOV or Bus Lane adjacent to US 36 general purpose lanes on outside of facility - one lane on each side
- Separate - Bus/HOV or Bus Lane on separate facility adjacent to US 36 (two lanes on one side)

Bus technologies carried forward to the Alternatives Development phase included:
Barrier-Separated Bus/HOV Lanes (Figure 4-6)
- HOV lanes are physically separated from the general purpose auto lanes by a concrete barrier
- Access to/from the facility is limited to interchanges and select weave sections of US 36 via signing and breaks in the barrier

Buffer-Separated Bus/HOV Lanes (Figure 4-7)
- HOV lanes are separated from the general purpose auto lanes by a painted buffer
- Access to/from the facility is limited to interchanges and select weave sections along US 36 via signage and striping.

Buffer Separated Bus/HOV Opportunities
- Typical section requires additional 32’ of right-of-way (ROW).
- Full emergency vehicle access.

Buffer Separated Bus/HOV Constraints
- Potential safety issues with weaving between general traffic lanes and HOV lanes.
- Requires high level of enforcement.
Barrier Separated Bus/HOV Opportunities

- Three Direct Connects provide a travel time savings of up to 15 minutes for buses during peak periods.

Barrier Separated Bus/HOV Constraints

- Typical section requires additional 48' of ROW.
- Limited emergency vehicle access.
- Potential safety issues with weaving between general traffic lanes and HOV lanes.

Additional Bus/HOV Constraints

An analysis of existing and forecast traffic on HOV lane, both on US 36 and I-25 was conducted to assess constraints and needed improvements which set the framework for the development of HOV alternatives. Findings of the analysis include capacity constraints on I-25.

- In the PM peak, the flow of vehicles into the HOV lanes from northbound I-25 and the Denver CBD entrance (by Coors Field) is approaching the maximum volume that can enter the facility.
- Design modifications at the endpoints are needed to accommodate additional carpool vehicles on the I-25 HOV lanes.
- A range of options is available to address these design issues, with cost estimates in the range of $50M.

- The City of Denver would like to see a Central Denver Study (I-25) conducted to develop a comprehensive solution for this section of I-25 prior to finalizing a design solution to address the HOV capacity issue.
- To ensure that Bus/HOV options are viable for the existing I-25 HOV lanes, as well as extensions on US 36 or I-25 north, these design issues in downtown Denver will need to be addressed.

Screening of Bus/HOV Alternatives

Three key indicators, travel times, cost, and the ability to accommodate demand, were assessed. The results, shown in Table 4-5, were used in combination with public input and input from the TAC and PAC to identify alternatives to be carried forward to the next phase.

<table>
<thead>
<tr>
<th>Alt.</th>
<th>Competitive, Travel Time?</th>
<th>Cost &lt; $450 M?</th>
<th>Accommodates Existing Demand?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus/HOV - Buffer</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Bus/HOV - Barrier</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Bus/HOV Findings

- Bus/HOV builds on existing investments;
- Bus/HOV creates opportunities for managed lanes;
- Bus/HOV requires strict enforcement to be effective;
- Barrier separation is not as cost effective as buffer separation.
Buffer separated lanes are consistent with the planned HOV lanes between Pecos and Lowell.

Table 4-6
Bus/HOV Findings

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus/HOV- Buffer</td>
<td>Advance</td>
</tr>
<tr>
<td>Bus/HOV – Barrier</td>
<td>Eliminate</td>
</tr>
</tbody>
</table>

4.2.6 Roadway
Roadway alternatives primarily focused on highway improvements along US 36 (see Figure 4-9). A segment of I-25, between the US 36 interchange and downtown Denver, and primary arterials which feed into US 36 were evaluated in the context of US 36 highway improvements.

Roadway Technologies Description
Roadway infrastructure improvements considered included:

- Widening of US 36 to 8 lanes
- Widening of Us 36 to 6 lanes
- Minor roadway improvements including ramp metering, acceleration/deceleration lanes, and climbing lanes.

8 General Purpose Lanes
Widening to 8 general purpose lanes was eliminated based on an analysis of projected traffic volumes and roadway constraints at either end of the corridor, feeding into I-25 in the south and Boulder to the north.

6 General Purpose Lanes
This alternative includes widening of US 36 to six lanes between Foothills Parkway in Boulder to Broadway near I-25, with overpass/interchange improvements at Pecos, Sheridan, 104th/Church Ranch, Old Wadsworth, 80th St. and Table Mesa. Improvements to the Broomfield, 92nd Street and McCaslin, interchanges are already programmed. Other roadway improvements will be considered once traffic forecasts are available.

Screening of Roadway Alternatives
Three key indicators, travel times, cost, and the ability to accommodate demand were assessed. The results, shown in Table 4-7 were used in combination with public input and input from the TAC and PAC to identify alternatives to be carried forward to the next phase.
Table 4-7
Screening of Roadway Alternative

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Competitive Travel Time?</th>
<th>Cost &lt; $450 M?</th>
<th>Accommodates Existing Demand?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roadway Widen to 6 Lanes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Minor Roadway Improvements
Short Term Low Cost Improvements to US 36 were identified and analyzed costs and benefits of low-cost ($2M to $10M) improvements to US 36 to improve traffic operations were assessed using traffic simulation models.

Improvements Considered for both eastbound and westbound travel included:

- Ramp Metering at Interchanges
- Acceleration/Deceleration Lanes between Interchanges
- Climbing Lanes – Davidson Mesa
- Ramp Improvements at Interchanges
- Combinations of above

The traffic simulation model used to assess the minor roadway alternatives output the following factors which were used in the assessment of each option.

- Travel Time
- Weighted Average Speed
- Lane Changes (weaving)
- Weighted Stop Time

Improvements Showing Greatest Benefit were:

Eastbound:
  - Cost: $2.9M
- Acceleration/Deceleration Lanes between McCaslin and West Split Diamond at 96th, Cost: $1.9M.
- Acceleration/Deceleration Lanes between 104th and Sheridan, Cost: $2.3M.
- Acceleration/Deceleration Lanes between Wadsworth and 104th, Cost: $2.8M.

Westbound:
- Ramp Improvements - East ½ diamond, 2-lane WB off-ramp
  - Cost: $765K.
- Ramp Improvements – Foothills WB off-ramp, McCaslin WB on-ramp, Cost: $1.3M.
- Ramp Metering at Wadsworth, 104th, East Split Diamond, McCaslin, and Foothills, Cost: $2.1M.
- Acceleration/Deceleration Lanes between McCaslin and West Split Diamond at 96th Cost: $1.9M.

Findings
- At the Boulder end, the capacity restrictions of the arterials that feed and accept US 36 traffic can not handle any more than a 4-lane freeway plus two HOV lanes.
- At the Denver end, I-25 and I-270 cannot accommodate or supply more than six freeway lanes plus two auxiliary lanes (not including HOV
lanes) based on the 2020 laneage assumptions of 10 lanes on I-25 south and 6 lanes on I-270.

- Additional right-of-way (ROW) and construction on US 36 between Federal and I-25 being completed in 2001 should accommodate the 6+2+2 section (or the 6+2+1 reversible section east of Pecos). Any additional widening of US 36 to a larger 8+2+2 section would require a substantial amount of additional ROW, with up to 40 homes needing relocation.

- Several interchanges and grade separations have been reconstructed or re-designed on US 36 that have been designed to accommodate only the 6+2+2 cross section. Some of these crossings may be able to accommodate the 8+2+2 cross section with special design provisions or some additional ROW acquisition.

- The analysis of existing traffic and the forecasting effort determined that the capacity constraints at the Boulder end of the corridor could not accommodate or supply more than a four-lane freeway plus either auxiliary lanes or HOV lanes.


<table>
<thead>
<tr>
<th>Alternative</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accel/Decel Lanes</td>
<td>Advance</td>
</tr>
<tr>
<td>Ramp Metering</td>
<td>Advance</td>
</tr>
<tr>
<td>Climbing Lane</td>
<td>Advance</td>
</tr>
<tr>
<td>Widen US 36 to 8 lanes</td>
<td>Eliminate</td>
</tr>
<tr>
<td>Widen US 36 to 6 Lanes</td>
<td>Advance</td>
</tr>
</tbody>
</table>

4.2.7 Purchase of Open Space
The purchase of Open Space in the US 36 Corridor was considered as a means to reduce travel demand and the need for additional improvements in the future.

Vacant Land Analysis
The first step in the process was to identify what land is available in the corridor to be purchased as open space or down-zoned. The study area included three miles on each side of US 36. Vacant land was delineated through visual inspection of aerial maps in GIS to identify “opportunity sites” for further analysis. “Committed Open Space,” those areas already purchased as permanent parks and/or open space were identified so that they would not be included as candidate parcels. This was accomplished by overlaying four land use designations using the Comprehensive Plans of corridor jurisdictions:

- Residential (all densities).
- Office/Light Industrial/Commercial/ Retail.
- Non-committed parks/open space.
- Public.
Figure 4-10
Opportunity Sites Map

Legend

Opportunities for Open Space

Current Open Space

US 36

Freight Rail Alignment

1 0 1 Miles
The second step of the process involved eliminating lands which were already in the process of development. Based on meetings with planning staff from the City of Boulder, Town of Superior, City of Broomfield, Boulder County, and City of Louisville, and the City of Westminster:

- Committed development projects were identified and removed from the original list of opportunity sites.
- Comprehensive plan designations were verified.

**Characteristics of Opportunity Sites**

With the Office / Light Industrial / Commercial / Retail properties comprising 4,800 acres of remaining "Opportunity Sites", these opportunity sites represent a significant amount of territory. As a point of reference, the Interlocken Business Park covers approximately 1,000 acres. Remaining "Opportunity Sites" exhibited the following characteristics:

**Total Area of Opportunity Sites:**

- Residential: 2,900 acres (4.5 sq miles) 127,000,000 sq. ft.
- Office/Light Industrial/Commercial/ Retail: 4,800 acres (7.5 sq miles) 208,000,000 sq. ft.

**Trip Generation Potential of Opportunity Sites (Daily):**

- Residential: 95,000 – 115,000
- Office/Light Industrial/Commercial/ Retail: 800,000 – 950,000

**Estimated Cost of Opportunity Sites:**

- Residential: $254,000,000 (@ $2.00/sf)
- Office/Light Industrial/Commercial/ Retail: $520,000,000 (@ $2.50/sf)
- Total: $774,000,000.

**Quantification of Impacts**

The DRCOG Regional Sketch Plan model was used to explore the impact of open space purchases on the volume of traffic using US 36.

To determine the trip generating capability of the identified sites based on identified land uses, the following steps were undertaken:

- Calculated total acreage and square footage for final list of "Residential" and "Office / Light Industrial / Commercial / Retail" opportunity sites.
- Apportioned a percentage of use types and densities within each land use category, based on historic and assumed development patterns in the US 36 corridor.
- Incorporated Institute of Transportation Engineers (ITE) trip generation factors to calculate the total number of trips generated, per day, by each land use type.

In order to adjust the land use assumptions built into the regional model, the open space opportunity sites were examined in the traffic analysis.
Results
- Fee simple purchase: 7,000 trips reduced.
- Conservation easement purchase resulted in 6,500 trips reduced.
- The two revised land use scenarios produce nearly identical reductions in daily travel volumes on US 36 when isolating a specific segment, (volumes between 96th Street and Wadsworth Blvd, both directions, 24 hour period).

Open Space Findings
The detailed results of this process, including the number of trips on US 36 reduced are shown in Figure 4-11. The analysis revealed the following conclusions:

- Purchasing Residential opportunity sites exacerbates already problematic jobs-housing imbalances in the corridor. As such, Office / Light Industrial / Commercial / Retail properties represent the best opportunity.
- The purchase of all Office / Light Industrial / Commercial / Retail properties is not financially or politically feasible. However, even if only one quarter of the opportunity sites were combined as a strategic open space purchase, this alternative represents a significant financial investment of approximately $130 million.
- The TAZ which exhibits the most significant travel reduction potential is located at US 36/96th Street interchange. It is composed largely of retail and service employment land uses which general a high number of trip attractions.
- The model suggests that latent demand (i.e. trips currently using other routes) for extra capacity on the highway is significant enough that US 36 will remain at or near capacity, even with significant open space purchases in the US 36 corridor.
- The purchase of Open Space was not carried forward as an MIS option.

4.2.8 TDM
The selection of TDM measures was tailored to the elements of the LPA and is included in Chapter 7.

4.2.9 ITS
The selection of ITS measures was tailored to the elements of the LPA and is included in Chapter 7.
Figure 4-11
Open Space Purchase Trip Reduction

Legend

Trips Reduced
By Purchasing
Open Space
(TAZ Boundaries)

- 2500 - 1400
- 1400 - 150
- 150 - 0

US 36
Freight Rail Alignment

1 0 1 Miles

Boulder
Louisville
Superior
Broomfield
Lafayette
Westminster
Arvada
Chapter 5

DETAILED EVALUATION OF FINAL ALTERNATIVES

Individual modes carried forward from the Modal Screening Phase were refined and combined into modal packages with varying emphasis on bus, rail, and roadway solutions. The Detailed Evaluation Phase included a thorough evaluation and narrowing of alternatives based on project goals, cost, mobility, users, ease of use, long-term viability, implementation and community and environmental factors.

5.1. REFINEMENT OF MODAL ALTERNATIVES

Prior to packaging of the multi-modal alternatives, the Bus/HOV modal option was optimized as a Bus Rapid Transit Transit (BRT) alternative and a 6 lane roadway element was added in addition to acceleration/deceleration lanes and a climbing lane.

5.1.1 Bus Rapid Transit (BRT) Option

A Bus Rapid Transit (BRT) option was developed with further refinement of the Buffer Separated Bus/HOV alternative that was recommended from the Phase I Evaluation. Bus rapid transit seeks to optimize bus service with the use of “rail like” amenities such as dedicated travelways, on-line stations, high visibility, ease of use, and enhanced patron amenities.

BRT on-line stations drastically reduce the amount of travel time for buses since buses would not be required to leave the highway alignment to access park-n-Ride locations or traverse congested interchanges and signalized intersections. Direct Connects, considered earlier in the process, also provide a travel time advantage, however BRT was considered to be less visually intrusive and facilitates more efficient transit service.

Advantages and disadvantages of BRT in the US 36 Corridor are listed below.

Advantages of BRT

- Permits incremental construction. Expansion of the system can occur over time, as financial capacity, roadway congestion and/or service demand warrants. The construction of BRT stations and HOV lanes can be phased in over time. Transit operations can be modified to take advantage of dedicated facilities as they are completed.

- Provides multimodal options. The BRT system can be used by buses, carpools, vanpools, employer shuttles, airport shuttles, alternative fuel vehicles, motorcycles, etc.

- Predictable level of service. Use of the BRT facility can be controlled to ensure consistent level of service. The buffer-separation system allows for emergency access and the efficient removal of stalled vehicles or accidents. Centerline stations keep buses off arterial roads, reducing the effects of traffic congestion on bus operations.
Chapter 5
Detailed Evaluation of Final Alternatives

- Leverages existing infrastructure. BRT takes advantage of existing and planned Bus/HOV investment(s) and corridor park-n-Rides. BRT also builds upon current successful bus service.
- Allows service flexibility. Several types of bus routes can use the BRT system. Local, Express and Regional routes, can use the facility with varying stop patterns.
- Potential to shape station-area land use. Significant investments in BRT stations and the fixed nature of the BRT alignment could provide the necessary prerequisites for transit-oriented development surrounding stations.
- Marketable system “identity.” The BRT system, with a clearly demarcated route and highly visible stations, creates heightened public awareness of the transit alternative and improved public understanding of how the system works.
- Ability to extend system “identity” beyond physical facility. BRT stations can be put into place beyond the US 36 BRT alignment. For example, off-line BRT stops and stations could be constructed at CU-Boulder, the Boulder Intermodal Center, downtown Boulder, DIA, and the Denver Tech Center.
- Unlikely conversion to general auto lanes. Significant investment in BRT stations would make lane conversion unlikely, assuaging concerns regarding recent national experience involving the conversion of transit investments into general purpose auto lanes.

Disadvantages of BRT
- Non-peak direction congestion on I-25. The BRT/HOV system would connect to the Downtown Express HOV lanes on I-25. The HOV lanes on I-25 are reversible, requiring outbound buses from Denver to operate in the general purpose lanes in the AM peak, providing less of a travel time savings.
- Weather-related delays. While superior to traditional Bus/HOV design concepts in its ability to avoid weather-related traffic congestion, BRT does not have the all-weather travel-time reliability of rail alternatives.

5.1.2 General Purpose Lanes
Based on further analysis of roadway operations and future travel demand, a 6 lane general purpose lane option between Sheridan Blvd. and McCaslin Blvd. was added to the alternatives.

The analysis of existing traffic and the forecasting effort determined that the capacity constraints at the Boulder end of the corridor could not accommodate or supply more than a four-lane freeway plus either auxiliary lanes or HOV lanes. In addition, the traffic entering and exiting US 36 is mostly balanced at the McCaslin interchange, so the need for additional laneage on eastbound US 36 is not created until at least Interlocken Loop/Storage Tek Drive.

Discussions that led to the LPA agreements recognized these and other factors and led to the development of what became known as the “Mayors' and Commissioners' Alternatives” for US 36 laneage. The Mayors' and Commissioners' Alternative was mostly
consistent with the 6+2+2 cross section but also recognized the constraints at the Boulder end of the corridor. The specific items in the Mayors’ Alternative included:

- Four general purpose lanes plus two HOV lanes plus an eastbound climbing lane (4+2+1) between the Foothills Interchange and the McCaslin interchange.

- Four general purpose lanes plus two HOV lanes plus two auxiliary lanes (4+2+2) between the McCaslin Interchange and the Interlocken Loop/Storage Tek Drive/NW Parkway interchange.

- Six lanes plus two HOV plus two auxiliary lanes (6+2+2) from Flatiron East interchange to Pecos. This made sense because the traffic characteristics showed that the need for the larger US 36 cross section begins to the east of Interlocken, since more Interlocken traffic is oriented to and from Denver.

- The transition from the 6+2+2 section to the 4+2+2 section works well near Flatiron East and Interlocken Loop/Storage Tek Drive because the two successive interchange exits allow for a reasonable transition of dropping or adding laneage to US 36.

Even with the proposed LPA improvements, there will still be several locations that will constrain peak hour operations in the US 36 corridor and create potential bottlenecks:

- The merge of the westbound on-ramp from McCaslin, a capacity

constraint that is necessary to meter the volume flow into Boulder due to the capacity limitations of the Boulder street network.

- Pecos bridge, both eastbound and westbound. The volume of traffic entering and exiting US 36 at Pecos is small compared to other interchanges in the corridor. This means more of the substantial traffic volumes added to the corridor by the Federal and I-25 interchanges are much more than what will exit at Pecos and must be accommodated over the Pecos bridge.

For more information regarding the analysis of roadway alternatives, refer to the US 36 MIS Roadway Analysis, June 2001.

5.2. Preliminary Set of Modal Packages

Four Multi-Modal Packages were initially developed. All packages included transit and roadway elements with varying levels of investment. Three of the packages included a BRT/HOV option and one maintains the lower cost Bus/HOV option developed in Phase I. A rail element is also included in three of the four packages. A description of each package is provided below.
5.2.1 Package 1
BRT/HOV + Minor Roadway
BRT/HOV Lanes

- 5 Bus Rapid Transit stations:
  Westminster, Church Ranch, Broomfield, Interlocken Loop/Storage Tek Dr., Superior/Louisville.
- Bus Rapid Transit “Superstops”:
  Table Mesa, 28th Street Corridor, Downtown Boulder, 30th/Pearl.
- Carpool access to HOV lanes at select locations between Lowell and Table Mesa.
- Buses every 3 to 6 minutes during peak periods, every 5 to 8 minutes during off-peak periods.
- Traveler information systems such as electronic highway message signs and real time transit information at stops/stations.

Minor Roadway Improvements

- Accel/Decel Lanes eastbound and westbound between Superior/Louisville & Westminster.
- Ramp Metering and Ramp Improvements (i.e. reconfiguration and widening).
- Eastbound Climbing Lane on Davidson Mesa.

5.2.2 Package 2
BRT/HOV + Regional Rail + Minor Roadway
BRT/HOV Lanes
(Same as Package 1)

- 5 Bus Rapid Transit stations:
  Westminster, Church Ranch, Broomfield, Interlocken Loop/Storage Tek Dr., Superior/Louisville.
- Bus Rapid Transit “Superstops”:
  Table Mesa, 28th Street Corridor, Downtown Boulder, 30th/Pearl.
- Carpool access to HOV lanes at select locations between Lowell and Table Mesa.
- Buses every 3 to 6 minutes during peak periods, every 5 to 8 minutes during off-peak periods.
- Traveler information systems such as electronic highway message signs and real time transit information at stops/stations.

Regional Rail Service

- 28 miles of Regional Rail Service on track shared with BNSF railroad.
- 5 stations: Denver Union Station, Westminster, Interlocken Loop/Storage Tek Dr., Louisville, Boulder (30th/Pearl).
- Trains every 30 minutes during peak periods, every 60 minutes during off-peak periods.
- Requires operating agreement with BNSF railroad to use trackage.
- The equipment (locomotive-hauled coaches) and the operations and maintenance of the service would be contracted to either the railroads or a private company.
Minor Roadway Improvements
(Same as Package 1)
- Accel/Decel Lanes eastbound and westbound between Superior/Louisville & Westminster.
- Ramp Metering and Ramp Improvements.
- Eastbound Climbing Lane on Davidson Mesa.

5.2.3 Package 3
BRT/HOV + Enhanced Regional Rail + Minor Roadway

BRT/HOV Lanes
(Same as Package 1)
- 5 Bus Rapid Transit stations: Westminster, Church Ranch, Broomfield, Interlocken Loop/Storage Tek Dr., Superior/Louisville.
- Bus Rapid Transit “Superstations”: Table Mesa, 28th Street Corridor, Downtown Boulder, 30th/Pearl.
- Carpool access to HOV lanes at select locations between Lowell and Table Mesa.
- Buses every 3 to 6 minutes during peak periods, every 5 to 8 minutes during off peak periods.
- Traveler information systems such as electronic highway message signs and real time transit information at stops/stations.

Enhanced Regional Rail Service
- 28 miles of Regional Rail Service on one new track and one track shared with BNSF railroad.

- 5 stations: Denver Union Station, Westminster, Interlocken Loop/Storage Tek Dr., Louisville, Boulder (30th/Pearl).
- Trains every 15 minutes during peak periods, every 30 minutes during off-peak periods.
- Requires operating agreement with BNSF railroad.
- The equipment (locomotive-hauled coaches) and the operations and maintenance of the service would be contracted to either the railroads or a private company.

Minor Roadway Improvements
(Same as Package 1)
- Accel/Decel Lanes eastbound and westbound between Superior/Louisville & Westminster.
- Ramp Metering and Ramp Improvements.
- Eastbound Climbing Lane on Davidson Mesa.

5.2.4 Package 4
Bus/HOV + Commuter Rail + Minor Roadway

Bus/HOV Lanes
- 6 park-n-Rides: Westminster, Church Ranch, Broomfield, Interlocken Loop/Storage Tek Dr., Superior/Louisville, Table Mesa.
- Carpool access to HOV lanes at select locations between Lowell and Table Mesa.
- Buses every 8 to 14 minutes during peak periods, every 13 to 22 minutes during off peak periods.
Traveler information systems such as electronic highway message signs and real time transit information at stops/stations.

Commuter Rail
- 28 miles of Commuter Rail service on two exclusive tracks along the BNSF Railroad.
- 9 stations: Denver Union Station, W. 38th Ave., 72nd/Lowell, Westminster, Church Ranch, Broomfield, Interlocken Loop/Storage Tek Dr., Louisville, Boulder (30th/Pearl).
- Trains every 10 minutes during peak periods, every 20 minutes during off-peak periods.
- Self-propelled diesel multiple units (DMUs).

Minor Roadway Improvements (Same as Package 1)
- Accel/Decel Lanes eastbound and westbound between Superior/Louisville & Westminster.
- Ramp Metering and Ramp Improvements.

Eastbound Climbing Lane on Davidson Mesa.

5.2.5 Evaluation of Multi-modal Packages
Each of the four Multi-Modal Packages was assessed based on cost, mobility impacts, and environmental impacts. Table 5-1 provides a comparison of capital and O&M costs for the alternatives.

Total daily users were estimated using the Denver Metropolitan area regional travel demand forecast model. Forecast users in year 2020 for roadway, carpool, and transit users are shown in Figure 5-1. Package 4 attracts the highest number of transit, carpool, and overall users. Acceleration/deceleration lanes and other minor roadway improvements would generally provide benefits to the same number of roadway users in each of the four packages.
## Table 5-1
Comparison of Alternatives

<table>
<thead>
<tr>
<th></th>
<th><strong>Package 1</strong></th>
<th><strong>Package 2</strong></th>
<th><strong>Package 3</strong></th>
<th><strong>Package 4</strong></th>
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<td><strong>BRT/HOV</strong></td>
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<td><strong>ENHANCED RAIL</strong></td>
<td><strong>LOW COST BUS/HOV</strong></td>
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<td>Total</td>
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<td>$1.9M</td>
<td>$1.9M</td>
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<td>BRT/HOV</td>
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<td>---</td>
<td>$13.1M</td>
<td>$17.2M **</td>
<td>$14.0M **</td>
</tr>
<tr>
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<td>$0.2M</td>
<td>$0.2M</td>
<td>$0.2M</td>
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<tr>
<td><strong>Total</strong></td>
<td>$6.5M</td>
<td>$18.8M</td>
<td>$22.2M</td>
<td>$17.7M</td>
</tr>
</tbody>
</table>

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* 1998 $

** LEASE FEES FOR RAIL VEHICLES INCLUDED

*** INCLUDES $54 MILLION FOR VEHICLES
Figure 5-1
Year 2020 Total Daily Users
Multi-modal Packages

<table>
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<th>Package</th>
<th>Daily Users</th>
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</thead>
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<tr>
<td>No-Build</td>
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<td>Package 1</td>
<td>47,600</td>
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<td>Package 2</td>
<td>47,500</td>
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<tr>
<td>Package 3</td>
<td>47,300</td>
</tr>
<tr>
<td>Package 4</td>
<td>54,900</td>
</tr>
</tbody>
</table>
Mobility factors included the measure of delay and travel times in comparison to the to the No-Build option, and travel times. Delay is defined as the extra time spent travelling on the roadway system due to congestion. Travel times from Boulder to Denver were compared using 2020 travel model projections for the AM peak period. Package 4 provides the most reduction in congestion for both freeways and principal arterials as shown in Figure 5-2. Drive alone auto times are lowest for Package 4 and HOV user travel times are similar, as shown in Figure 5-3.

Figure 5-2
Year 2020 Change in Hours of Delay Compared to No-Build *
Multi-modal Packages

Figure 5-3
Year 2020 AM Peak Auto Travel Time Comparisons Boulder to Denver
Package 1
Figure 5-4 indicates that transit travel times are lowest for Express Bus users. The rail alternatives exhibit longer travel times, partly due to a longer alignment compared to the bus options.

Figure 5-4
Year 2020 AM Peak Transit Travel Time Comparisons
Boulder to Denver
Packages 1-4

Package 4
Package 3
Package 2
Package 1
No-Build

Travel Time (Minutes)

All-Stop Bus
Express Bus
Rail
Figure 5-5 presents estimates of the change in regional vehicle miles of travel (VMT) for each multi-modal package. Overall, VMT reduction for the region little, less than .5 percent between alternatives. Within the US 36 Corridor, VMT on freeways would increase with all of the alternatives due to additional capacity provided by HOV lanes and acceleration/deceleration lanes on US 36. However the increase would be offset by a reduction of VMT on arterial roads as shown in Figure 5-6.

**Figure 5-5: Year 2020 Change in Vehicle Miles of Travel (VMT) (Compared to No-Build) Packages 1-4**

![Bar chart showing change in VMT for packages 1 to 4](chart1)

**Figure 5-6: Year 2020 Change in VMT for Freeways and Other Roads (Compared to No-Build) Packages 1-4**

![Bar chart showing change in VMT for freeways and other roads](chart2)
5.3. **Refined Multi-Modal Packages**

Based on modeling results and input from the Technical Advisory Committee, Policy Advisory Committee, and the public, the Multi-modal packages were modified and narrowed to two alternatives, Option A and Option B. During this phase, the US 36 Bikeway was added to both options.

Strong input from the bicycle advocates within the US 36 Corridor led to the development of a Bikeway element which would include a 10’ – 12’ multi-use path adjacent to US 36. The bikeway option was not modeled, nor was detailed engineering undertaken to determine the alignment, design, buffer requirements, or ROW impacts. Further analysis of the Bikeway is needed in subsequent efforts.

5.3.1 **Option A**

**BRT/HOV Lanes**
- 15 miles of new Bus/HOV Lanes in median of US 36
- 5 Bus Rapid Transit stations: Westminster, Church Ranch, Broomfield, Interlocken Loop/Storage Tek Dr., Superior/Louisville.
- Bus Rapid Transit “Superstops”: Table Mesa, 28th Street Corridor, Downtown Boulder, 30th/Pearl.
- Bus circulator feeder service to BRT Stations.
- Carpool access to HOV lanes at select locations between Table Mesa and Lowell.

- Buses every 3 to 6 minutes during peak periods, every 5 to 8 minutes during off peak periods.
- Traveler information systems such as electronic highway message signs and real time transit information at stops/stations.

**Regional Rail Service**
- 28 miles of Regional Rail Service on track shared with BNSF railroad.
- 5 stations: Denver Union Station, Westminster, Interlocken Loop/Storage Tek Dr., Louisville, and Boulder.
- Trains every 30 minutes during peak periods, every 60 minutes during off-peak periods.
- Requires operating agreement with BNSF railroad to use trackage.
- The equipment (locomotive-hauled coaches) and the operations and maintenance of the service would be contracted to either the railroads or a private company.
- Allows for future expansion of service frequency, capacity, stations and vehicle technology.

**Roadway Improvements**
- 6 General Purpose Lanes from Superior to I-25.
- Eastbound climbing lane on Davidson Mesa.
- Accel/Decel Lanes eastbound and westbound between Superior/Louisville & Westminster.
- Ramp Metering and Ramp Improvements (reconfiguration, widening, etc.)
- Eastbound Climbing Lane on Davidson Mesa.
5.3.2 Option B
Bus/HOV Lanes
- 6 park-n-Rides: Westminster, Church Ranch, Broomfield, Interlocken Loop/Storage Tek Dr., Superior/Louisville, Table Mesa.
- Carpool access to HOV lanes: at select locations between Table Mesa and Lowell.
- Buses every 8 to 14 minutes during peak periods, every 13 to 22 minutes during off peak periods.
- Traveler information systems such as electronic highway message signs and real time transit information at stops/stations.

Inter-urban Rail Service
- 28 miles of Inter-urban Rail service on two exclusive tracks in the BNSF Railroad right-of-way.
- 9 stations: Denver Union Station, 38th ave., 72nd/Lowell, Westminster, Church Ranch, Broomfield, Interlocken Loop/Storage Tek Dr., Louisville, Boulder (30th/Pearl).
- Trains every 7.5 minutes during peak periods, every 15 minutes during off-peak periods.
- Self-propelled diesel multiple units
- Allows for capacity expansion and through service to other corridors.

Roadway Improvements
- 6 General Purpose Lanes from Interlocken Loop/Storage Tek Dr. to I-25.
- Accel/Decel Lanes eastbound and westbound between McCaslin & Sheridan.
- Ramp Metering and Ramp Improvements.
- Eastbound Climbing Lane on Davidson Mesa.

Bikeway on US 36
- 10’-12’ shared-use paved Bikeway from Table Mesa to Sheridan.

Evaluation
Both options, A & B were assessed based on costs, mobility impacts, users and environmental and community factors. Costs are shown in Table 5-2. Mobility and environmental factors are presented in Figures 5-7 to 5-10. Figure 5-11 provides a qualitative comparison of all the evaluation measures.

Option A Roadway Impacts
- Positive impact on local roadways; local roadways experience a 10 percent to 15 percent reduction in traffic volumes or no change due to widening US 36. Exceptions include short segments of roadways at interchanges with US 36.
- Hours of delay reduced on both freeways and arterials.
- Vehicle miles of travel increase on US 36; vehicle miles of travel decrease on local roadways. Widening US 36 removes traffic from local arterials.
- Design does not preclude operation of High Occupancy Toll (‘HOT’) lanes on all or part of US 36.
### Table 5-2
Comparison of Options A&B

<table>
<thead>
<tr>
<th></th>
<th>Package A</th>
<th>Package B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BRT/HOV</td>
<td>Bus/HOV</td>
</tr>
<tr>
<td></td>
<td>Commuter Rail Roadway (1)</td>
<td>Inter-Urban Rail Roadway (1)</td>
</tr>
<tr>
<td><strong>1. Capital Costs (2)</strong></td>
<td></td>
<td></td>
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<tr>
<td>Rail</td>
<td>$172 M</td>
<td>$459 M</td>
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<tr>
<td>Roadway + Bus/HOV</td>
<td>$444 M</td>
<td>$396 M</td>
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<tr>
<td>Bikeway</td>
<td>$15 M</td>
<td>$15 M</td>
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<tr>
<td><strong>Total</strong></td>
<td>$631 M</td>
<td>$870 M</td>
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<tr>
<td><strong>2. Annual O&amp;M: (2)(3)</strong></td>
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<tr>
<td>BRT/HOV</td>
<td>$6-7 M</td>
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</tr>
<tr>
<td>Rail</td>
<td>$20-23 M (4)</td>
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<td>Roadway (5)</td>
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<td><strong>Total</strong></td>
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<td><em>(With Capitalized Rail Vehicle Lease)</em></td>
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<td><strong>3. Daily Users:</strong></td>
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<tr>
<td>Bus</td>
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<td>Rail</td>
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<tr>
<td><strong>Total Transit</strong></td>
<td>23,000</td>
<td>27,000</td>
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<tr>
<td>Carpool</td>
<td>37,500</td>
<td>37,500</td>
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<tr>
<td><strong>4. Annualized Cost/User</strong></td>
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<tr>
<td>Transit Only</td>
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<td>$8.30</td>
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<td>Total Users (Transit, carpool &amp; roadway)</td>
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<td>$1.50</td>
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<tr>
<td>Transit Only (with capitalized leased rail veh)</td>
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<tr>
<td>Total Users (with capitalized leased rail veh)</td>
<td>$1.32</td>
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<td><strong>5. 2020 AM Peak Travel Times:</strong></td>
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<tr>
<td>Table Mesa to DUT</td>
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<tr>
<td>Non-Stop Bus (No-Build = 42 min.)</td>
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<td>31 min.</td>
</tr>
<tr>
<td>All-Stop Bus (No-Build = 57 min.)</td>
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<tr>
<td>Carpool (No-Build = 42 min.)</td>
<td>31 min.</td>
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<td>62 min.</td>
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<tr>
<td><strong>6. 30th/Perai to DUT</strong></td>
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<td></td>
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<tr>
<td>All-stop rail</td>
<td>46 min.</td>
<td>47 min.</td>
</tr>
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</table>

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(1) Roadway cost includes: 6 general purpose lanes to Interlocken Loop/Storage Tek Dr., BRT/HOV to Table Mesa, and accel/decel lanes to Interlocken Loop/Storage Tek Dr.
(2) $1998
(3) Compared to No-Build
(4) Assumes leased vehicles
(5) Includes ROW
Consideration of 3 HOV lanes from Sheridan to I-25 is under analysis by CDOT (extension of reversible HOV lane plus 2 concurrent flow HOV lanes). This option would allow for one HOV lane to continue to I-270.

Option A Transit Impacts
- Travel time between Boulder and Denver for non-stop bus service improved by 11 minutes over a No-Build scenario.
- Travel times for all-stop bus service between Boulder and Denver improved by 21 minutes over a No-Build scenario.
- Rail travel times are comparable to all-stop bus service.
- Rail option allows for future upgrades and expansion – increased frequency of service, increased passenger capacity, additional stations, different vehicle technology, and expansion to North Front Range Communities.

Option B Roadway Impacts
- Travel time for autos between Boulder and Denver improved by 14 minutes over a No-Build scenario.
- Travel time for carpoolers between Boulder and Denver improved by 9 minutes over a No-Build scenario.
- Positive impact on local roadways; most local roadways experience no change or a 10 percent to 15 percent reduction in traffic volumes due to widening US 36. Exceptions are short segments of roadways at interchanges with US 36.
- Hours of delay reduced on both freeways and arterials (slightly more than Option A).
- Vehicle miles of travel increase on US 36; vehicle miles of travel decrease on local roadways. Widening US 36 removes traffic from local arterials (slightly more than Option A).
- Design does not preclude operation of "HOT" lanes on all or part of US 36.
- Consideration of 3 HOV lanes from Sheridan to I-25 is under analysis by CDOT (extension of reversible HOV lane plus 2 concurrent flow HOV lanes). This option would allow for one HOV lane to continue to I-270.

Option B Transit Impacts
- Travel time between Boulder and Denver for non-stop bus service improved by 11 minutes over a No-Build scenario.
- Travel times for all-stop bus service between Boulder and Denver improved by 11 minutes over a No-Build scenario.
- Rail travel times are comparable to all-stop bus service.
- Rail option allows for additional passenger capacity, extension of service and possible interlining with other rail corridors.
- Rail option could share alignment with I-70 West Corridor into downtown Denver.

Refinement of Alternatives Result
- Option A, with some modifications, was chosen as the Locally Preferred Alternative (LPA). Elements of the LPA are detailed in Chapter 6.
Figure 5-7
Year 2020 Change in Hours of Delay Compared to No-Build*
Packages A&B

* US 36 Corridor

Figure 5-8
Year 2020 AM Peak Auto Travel Time Comparisons Boulder to Denver
Packages A&B
Figure 5-9
Year 2020 AM Peak Transit Travel Time Comparisons Boulder to Denver Packages A&B

Figure 5-10
Year 2020 Change in VMT for Freeways and Other Roads (Compared to No-Build) Packages A&B
### Figure 5-11
Comparison of Evaluation Measures
Packages A&B

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</tr>
<tr>
<td></td>
<td>Carpool Travel Time</td>
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<tr>
<td></td>
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<td></td>
<td>Rail Travel Time</td>
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<table>
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<td></td>
<td>- HOV</td>
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<td>Parking Expansion Needs</td>
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<tr>
<td></td>
<td>HOT Lanes Accommodation</td>
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</tr>
</tbody>
</table>

**Legend**
- ● = Better
- ○ = Good
Chapter 6

**LOCALLY PREFERRED ALTERNATIVE**

A Locally Preferred Alternative (LPA) was unanimously endorsed by voting members selected from the US 36 MIS PAC and TAC in February, 2001.

The Draft LPA incorporates multi-modal improvements for the US 36 Corridor including Regional Rail, Bus Rapid Transit (BRT), High Occupancy Vehicle Lanes (HOV), Roadway, Bikeway, Travel Demand Management (TDM), and Intelligent Transportation System (ITS) improvements. Each element of LPA is discussed in this chapter.

6.1. ENDORSEMENTS

6.1.1 Resolutions

Resolutions, included in the Appendix, were passed by the following entities:

- Colorado Transportation Commission
  
  February 13, 2001
- CDOT
  
  February 15, 2001
- City of Broomfield
  
  February 13, 2001
- Colorado State Capitol
  
  January 16, 2001
- City of Westminster
  
  February 12, 2001
- City of Arvada
  
  January 22, 2001
- Sierra Club, Rocky Mountain Chapter
  
  January 17, 2001

6.1.2 Letters of Support

Letters of support, included in the Appendix; were received from the following groups and agencies:

- City of Louisville
  
  December 19, 2000
- City of Boulder
  
  December 19, 2000
- US 36 Transportation Management Organization
  
  February 15, 2001
- League of Women Voters
  
  February 5, 2001
- Adams County
  
  January 23, 2001
- Colorado Public Interest Research Group (CoPIRG)
  
  January 24, 2001

6.2. KEY ELEMENTS

6.2.1 Regional Rail

The Regional Rail component of the LPA includes:

- 28 miles of Regional Rail Service on one new track and one track shared with BNSF railroad
- 5 stations at: Denver Union Station, Westminster, 96th, Louisville, and Boulder (30th/Pearl)
- Trains every 20 minutes during peak periods, every 40 to 60 minutes during off-peak periods
- 46 minute travel time between Denver and Boulder
- Requires train signal system and operating agreement with BNSF railroad to use trackage.
- The equipment (locomotive-hauled coaches) and the operations and maintenance of the service would be contracted to either the railroads or a private company.
- Bus circulator and feeder service to Rail Stations.

Rail service will initially serve regional travel demand between Boulder and downtown Denver using conventional commuter rail trains with locomotive hauled coaches (LHCs) or Diesel Multiple Units (DMUs) if available at the time of implementation. It is assumed that these vehicles would be obtained through a lease to minimize capital expenditures. Trains would operate exclusively within the BNSF ROW on a newly constructed track, and on an existing BNSF track shared with freight trains. An operating agreement with BNSF would be required for Regional Rail operations. Preliminary discussions with the railroad have been initiated.

The Regional Rail alignment follows the southern portion of the Burlington Northern-Santa Fe’s (BNSF) Front Range Subdivision between Utah Junction and Boulder. Regional Rail will be implemented by constructing one additional track parallel to BNSF’s existing track along the Front Range Subdivision.

The new track will be constructed along the southwest side of the BNSF track north of Utah Junction. The southwest side of the freight track was selected to avoid conflicts with Western Paving Wye (Denver), Burns Junction (Broomfield), and Valmont Power Plant trackage.
(Boulder). There will be areas where the BNSF freight track will be relocated northeast to allow for this construction, and there are sidings along the alignment that will require freight access from the commuter rail track.

The section of track into downtown Denver from Utah Junction to Prospect Junction assumes the construction of one new track and the use of an existing track with upgrades. Union Pacific plans to construct a grade separation at Utah Junction, and BNSF is planning to consolidate Fox and Prospect Junctions with the implementation of Regional Rail. Both improvements would enhance the feasibility of passenger rail service.

Regional Rail service will follow existing freight railroad grades into DUT. Longer term expansion beyond the LPA could include construction of additional track, additional stations, and the use of self-propelled diesel multiple units (DMUs).

Connections between the commuter rail track and the freight track will be provided to allow for freight/passenger passing opportunities and freight access to sidings throughout the corridor. It is anticipated that off-peak commuter operations will occur mainly on the new track, and that peak period operations will use both tracks through a negotiated operating agreement. It is also anticipated that both tracks will be signalized with a centralized traffic control (CTC) system between Denver and Boulder to improve operations and ease coordination between freight and passenger trains. Due to shared operations, vehicles that meet federal crashworthiness requirements (compliant with Federal Railroad Administration specifications) will be required.

Stations have been planned at Denver Union Terminal, in the 104th/Church Ranch area of Westminster, at Interlocken Loop/Storage Tek Dr. in Broomfield, in downtown Louisville, and in the area of 30th and Pearl in Boulder. At each station, a third track will be constructed to allow for staging and bypass movements while trains load and unload at the platform. The exact station locations will be determined during subsequent environmental evaluation and engineering design phases of the project. Station amenities include platforms, ticket vending machines, American with Disabilities Act (ADA) accessibility, and shelters. Parking for transit users has also been included as part of the LPA.

6.2.2 BRT/HOV

Key aspects of the BRT/HOV element of the LPA include:

- 15 miles of new buffer separated Bus/HOV Lanes in median of US 36 in each direction;
The BRT/HOV component of the LPA builds upon existing infrastructure in the corridor with the extension of Bus/HOV lanes west from Lowry Blvd. to the Foot Hills Parkway in Boulder. BRT represents an improvement to current bus operations in the US 36 corridor and a greater frequency of regional and express bus service. From US 36, BRT buses will continue along arterial streets in Boulder.

Figures 6-1 and 6-2 illustrate concepts developed for median BRT stations which accommodate businesses and service in the structure. The design of each BRT station will require further refinements and may vary between locations based on unique characteristics and input from each community.

Bus Rapid Transit “Superstop” are planned within Boulder. A “Superstop” is an exclusive freeway ramp. Additional buffer separated Bus/HOV lanes, also connect to I-25, which was recently completed by COTD. This reversible lane will connect directly to the I-25 Bus/HOV lanes via the US 36 corridor to Lowry Blvd. in the westbound direction, and Sheridan in the eastbound direction. These additional segments are currently under construction.
These stations, illustrated in Figure 6-3, will include amenities such as bus shelters, bike facilities, public art, kiss-and-Ride's and bus information kiosks. BRT service would extend beyond US 36 to serve these stops.

Figure 6-2
BRT Cross Section

Figure 6-3
BRT “Superstop” Concept
6.2.3 Roadway Improvements
Six general purpose lanes are identified from Interlocken Loop/Storage Tek Drive to I-25. An eastbound climbing lane between Foothills Parkway in Boulder and Davidson Mesa is also proposed. Acceleration/ deceleration lanes are identified both eastbound and westbound between McCaslin and Sheridan. The section from I-25 to Interlocken Loop/Storage Tek Drive is proposed to have the widest typical cross section in the corridor. It will include a 6+2+2 configuration, 6 general purpose lanes + 2 BRT/HOV lanes + 2 acceleration/deceleration lanes. Cross section dimensions are shown in Figure 6-4. Ramp metering, ramp widening and ramp reconfiguration at select locations will also occur with implementation of the Locally Preferred Alternative to improve roadway operations. Due to the significant amount of additional roadway capacity (more than doubling in some sections), the LPA assumes reconstruction of US 36 between Sheridan Boulevard and the McCaslin interchange. The cost of the full reconstruction of the mainline is reflected in the capital cost estimates provided later in this chapter.

6.2.4 Bikeway
The LPA includes a paved 8 to 12’ multi-use path from Table Mesa Dr. to Sheridan Blvd. along US 36. Portions of the path may be adjacent to highway lanes, separated by a concrete barrier and/or landscaped area. The intent of the bikeway is to provide the most direct path along the corridor for daily bike commuters and to provide bike/ pedestrian connections to BRT and rail stations. Connections between the bikeway and local bike-routes as well as access to BRT and rail stations will further enhance bicycling as a viable commute option. Figure 6-5 shows a typical cross section concept for the Bikeway. Figure 6-6 depicts existing and planned bike paths which should provide connections to the US 36 bikeway.

![Roadway Cross Section Diagram](image-url)
TDM
Travel Demand Management (TDM) seeks to: 1) reduce overall travel demand; and 2) optimize transportation facilities through use of carpooling, vanpooling, transit, and efficient land use planning. Many of the TDM strategies identified for the US 36 Corridor can be implemented as construction mitigation measures. TDM measures include:

- Employer and community based ECO passes for transit
- Transportation Options Education and Outreach
- Transportation Management Organization (TMO)/Agency support and funding
- Telework Assistance Program and Promotion
- Land use/Transit Oriented Development (TOD) planning assistance
- Community ECO Passes

Refer to the US 36 MIS Corridor Travel Demand Management Plan, February 2001 for more information.

6.2.5 ITS
Intelligent Transportation Systems (ITS) are improvements that can enhance the major investments by using some form of electronic media to manage and facilitate operations and to disseminate information.

ITS strategies incorporated into the LPA include:

- Real Time Data Collection (transit and roadway)
- Incident Management
- Internet Web Site providing real-time transportation information (road, weather, and traffic condition data; transit systems schedule status)
- Traffic Entrance Regulation onto US 36 at Interchanges using ramp meters
- Real time information at BRT stations and transit stops

Figure 6-5
Bikeway Concept Cross Section
6.3. ADDITIONAL ELEMENTS

6.3.1 ROW

Minimal ROW acquisitions are anticipated for mainline elements of the LPA. Most stations are sited at existing park-n-Rides, however expansion of existing facilities and the construction of Regional Rail stations in Louisville and Boulder may require the acquisition of property. Only general locations for stations have been determined. As a result, ROW impacts have not been quantified for stations, however ROW costs for additional parking have been included in the LPA estimates.

Existing right-of-way along US 36 varies from 200 feet to 400 feet. The LPA US 36 configuration, with the exception of the bikeway, requires a width of approximately 180 feet. At the five BRT station locations, the cross section expands out to a cross sectional width of approximately 200 feet and tapers back to the mainline cross section at approximately 1/2 mile in each direction from median BRT stations.

LPA improvements were overlaid on CDOT ROW coverages to determine potential acquisitions. Approximately 60 acres of non-commercial land, including 12 to 13 acres of designated Open Space in Boulder County would be needed for the widest typical section proposed (6 general purpose lanes + 2 BRT/HOV lanes + 2 acceleration/ deceleration lanes). Preliminary ROW acquisition costs for the Roadway elements of the LPA is estimated at $28 M (1998 dollars). Impacts to Open Space can be avoided if retaining walls are built. The estimated additional cost for retaining walls is $15M and are included in the LPA costs. No full residential acquisitions have been identified at this stage of conceptual design.

Additional ROW may be needed in select locations to accommodate the 8' to 12' shared use Bikeway, in addition to an adequate safety buffer. The specific location of the Bikeway has not been identified. As a result, ROW impacts resulting from the Bikeway were not assessed.

The Regional Rail element would utilize existing freight rail ROW for the entire corridor. A lease or purchase agreement to utilize BNSF and UP rail ROW for Regional Rail service would be required. Preliminary discussions with both railroads have been initiated during the MIS process. Acquisition of ROW outside of the freight rail envelope would not be required for mainline improvements, but may be required for stations.

6.3.2 Parking

Parking needs were estimated based on future ridership forecasts and the relationship between current park-and-Ride demand and transit ridership in the US 36 corridor.

Currently, approximately 3,000 parking spaces are provided within existing corridor park-n-Rides. Within the next five years, park-n-Ride spaces will be almost increased to 5,000 as a result of programmed projects. Additional parking provisions to serve BRT and rail
stations, most of which are at existing or planned park-n-Ride locations, brings the total corridor parking spaces to 6,600, as shown in Table 6-1. Park-n-rides which will exceed 1,000 spaces with the addition of LPA parking have been costed with parking structures, including the conversion of existing and planned surface parking to structured parking. RTD is in the process of estimating additional parking needs beyond 6,600 spaces as part of a system-wide assessment which incorporates recommendations from all of the MISs within the metro area.

During the MIS process, the Boulder end-of line rail station was identified as 30th & Pearl, with a parking allocation of 525 spaces. The City of Boulder is currently assessing alternate end-of line stations locations as part of the planning efforts for the Boulder Intermodal facility and the 28th Street corridor.

### Table 6-1
Parking Estimates

<table>
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<tr>
<th>Location</th>
<th>E+C Parking</th>
<th>With MIS Parking</th>
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<tbody>
<tr>
<td>Boulder Rail End-of-Line</td>
<td>0</td>
<td>525</td>
</tr>
<tr>
<td>Louisville</td>
<td>0</td>
<td>400</td>
</tr>
<tr>
<td>Tantra Drive</td>
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<td>105</td>
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<td>Church of Nazarene</td>
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<td>49</td>
</tr>
<tr>
<td>Flatiron</td>
<td>59</td>
<td>59</td>
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<tr>
<td>Table Mesa</td>
<td>832</td>
<td>832</td>
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<tr>
<td>Superior</td>
<td>500</td>
<td>800</td>
</tr>
<tr>
<td>96th</td>
<td>400</td>
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</tr>
<tr>
<td>Broomfield</td>
<td>1,500</td>
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<td>Church Ranch</td>
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<td>417</td>
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<td>Westminster</td>
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<td><strong>6,627</strong></td>
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### 6.3.3 Highway Structures/Interchanges
Implementation of the LPA would require reconstruction of many structures and interchanges along US 36 to accommodate additional laneage and the BRT stations, as shown in Table 6-2. Table 6-3 lists structures requiring modification and the estimated cost of reconstruction or improvement above and beyond costs included in the region's TIP and RTP.

#### Table 6-2
Structure/Interchange Improvements

<table>
<thead>
<tr>
<th>Structure</th>
<th>Improvement</th>
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<td>Lowell Blvd.</td>
<td>Rebuild</td>
</tr>
<tr>
<td>80th Ave.</td>
<td>Rebuild</td>
</tr>
<tr>
<td>Sheridan Blvd.</td>
<td>Rebuild</td>
</tr>
<tr>
<td>Big Dry Creek Crossing</td>
<td>Rebuild</td>
</tr>
<tr>
<td>BNSF Rail Crossing</td>
<td>Widen</td>
</tr>
<tr>
<td>Old Wadsworth /112th St.</td>
<td>Rebuild</td>
</tr>
<tr>
<td>New 120th Ave.</td>
<td>New</td>
</tr>
<tr>
<td>SH 121</td>
<td>Rebuild</td>
</tr>
<tr>
<td>Flatiron East</td>
<td>Widen</td>
</tr>
<tr>
<td>Flatiron West</td>
<td>Widen</td>
</tr>
<tr>
<td>Coal Creek Crossing</td>
<td>Rebuild</td>
</tr>
<tr>
<td>McCaslin Blvd.</td>
<td>Rebuild</td>
</tr>
<tr>
<td>Cherryvale Rd.</td>
<td>New</td>
</tr>
<tr>
<td>Boulder Creek Crossing</td>
<td>Rebuild</td>
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Table 6-3
Structure/Interchange Costs

<table>
<thead>
<tr>
<th>Structure</th>
<th>Cost included in MIS*</th>
<th>Cost included in TIP/RTP</th>
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<tr>
<td>80th Ave.</td>
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<tr>
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<td>$9.46 M</td>
</tr>
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<td>Big Dry Creek Crossing</td>
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<td>$3.26 M</td>
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<tr>
<td>BNSF Rail Crossing</td>
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<td>Old Wadsworth /112nd St.</td>
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<tr>
<td>New 120th Ave.</td>
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<td>$11.67 M</td>
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<tr>
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<td>Flatiron East</td>
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<tr>
<td>Flatiron West</td>
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<td></td>
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<tr>
<td>Coal Creek Crossing</td>
<td>$2.74 M</td>
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<tr>
<td>McCaslin Blvd.</td>
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<td>$5.71 M</td>
</tr>
<tr>
<td>Cherryvale Rd.</td>
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<td>$1.53 M</td>
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<tr>
<td>Boulder Creek Crossing</td>
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<td>$3.04 M</td>
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<tr>
<td>Totals</td>
<td>$29.48 M</td>
<td>$38.81 M</td>
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</table>

* Includes contingencies and percent add on's including design, force accounts, drainage, construction traffic control, and field work. Bridge costs include structures only, not approach earthwork, approach pavement, etc.

Interchange if minimum shoulders along US 36 are assumed.

- Pecos Street – A diamond interchange is currently under reconstruction. The bridge over Pecos will accommodate 6 general purpose lanes plus one HOV lane in each direction, which matches the 6+2+2 LPA cross section.

- Federal Blvd.(US 287) – A partial cloverleaf interchange is currently being reconstructed to accommodate six general purpose lanes plus HOV and ramp access lanes under the new Federal bridge. This is compatible with the 6+2+2 LPA cross section.

- Sheridan Blvd./92nd Avenue – The 92nd Avenue bridge was recently widened over US 36 and can accommodate 6 lanes plus the proposed ramp modifications. The City of Westminster is proposing additional reconstruction of the Sheridan interchange and bridge over US 36 to accommodate 8 lanes. The inclusion of a BRT station just south of Sheridan may require the design to be revisited to make adjustments to bridge spans and ramp locations.

- 104th Ave./Church Ranch – This diamond interchange was completed in the early 1990s and can accommodate the 6 general purpose lane+2 BRT/HOV lane cross section on US 36 under the bridge with some modifications to the slope paving. There are no current plans to modify this interchange.

Issues related to interchanges on US 36 are discussed below:

- I-25 interchange - Construction will be completed by 2005/2006 that allows at least four inflow and four outflow general purpose lanes from the US 36 corridor, with a single lane, barrier separated, reversible HOV lane. Connections will be provided from US 36 to both I-25 and I-270. This design matches the 6+2+2 LPA cross section.

- Broadway interchange – The US 36 bridge over Broadway accommodates the 6+2+1 reversible LPA cross section and one HOV lane as described above for the I-25 interchange.
Broomfield Interchange (Wadsworth Pkwy) – The City of Broomfield is seeking funding to rebuild the Wadsworth interchange as a partial cloverleaf and adding a 120th Avenue crossing over US 36. The interchange concept design was completed and initial bridge designs would accommodate the largest typical section being considered in this study. The BRT station design proposed by RTD may require some modifications to the plans shown in the Feasibility Study. The estimated cost for this interchange was $71 million in 1999.

Flatiron Circle East – This interchange was completed in year 2000. The bridge over Flatiron Circle was designed to be easily widened to accommodate at least the 6+2+2 US 36 section.

Interlocken Loop/Storage Tek Dr.(96th St) – This diamond interchange, with a bridge over US 36, was completed in June of 1996. The ROW and bridge span for the interchange will accommodate a partial cloverleaf design if necessary. The bridge over US 36 will accommodate the largest typical section being considered in this study plus partial cloverleaf ramps.

Flatiron Circle West – This interchange opened in August of 2000 and accommodates access ramps to and from the west. The US 36 bridge over the ramp was constructed only to accommodate current US 36 laneage, but the bridge and ramp layout was planned to allow widening for future 6+2+2 laneage.

McCaslin Blvd. (Superior) – Reconstruction into a partial cloverleaf design has been proposed for this interchange. The existing bridge over US 36 appears to be barely sufficient to accommodate the recommended laneage for US 36 in this section: 4 general purpose lanes +2 HOV lanes + the acceleration lane from the loop ramp in additional to a BRT station to the west of McCaslin.

Foothills Parkway/Table Mesa Interchange – The LPA assumes that the US 36 configuration is sufficient at this interchange. The Foothills Parkway westbound exit would be a two-lane exit, and the Foothills Parkway eastbound entrance ramp would continue as the climbing lane.

6.3.4 Denver CBD Rail Access

Commuter rail service would use FRA compliant vehicles to provide passenger service to DUT. The LPA identifies the use of BNSF ROW. However, the project will impact both UP and BNSF operations from Utah Junction and Denver Union Terminal (DUT), since many of the junctions serve trains from both railroads. A map of this area is shown in Figure 6-7. In order to accommodate passenger rail service, the following modifications to existing rail facilities are proposed:
Figure 6-7
LPA CBD Access Map

North Yard (UPRR)

TOFC Yard (BNSF)

Utah Junction

Fox Junction & Prospect Junction

Consolidated Main Line (UPRR & BNSF)
Grade Separate Utah Junction -
Fully grade separate UP and BNSF tracks at Utah Junction (2 structures). Currently a significant bottleneck for UP and BNSF, grade separation would result in better operations, speeding up through train operations and potentially freeing up capacity in UP’s North Yard. Commuter rail trains would follow the BNSF alignment through this area. The two structures would accommodate UP’s plans to provide an east/west connection at this junction.

Construct an Additional Track from Utah Junction to Fox Junction -
Construct an additional track (2 total) from Utah Junction to Fox Junction to accommodate passenger rail service in this constrained segment. Additional capacity requirements are anticipated to be fulfilled through trackage rights on parallel BNSF tracks, similar to the remainder of alignment between Utah Junction and Boulder.

Construct an Additional UP Track from Fox Junction to the Joint Line -
Construct an additional track from Fox Junction to the Consolidated Main Line (CML) to accommodate additional UP freight capacity for movements between Fox Junction and the CML. In exchange, the existing UP track through Prospect Junction would be utilized for commuter rail service and BNSF operations.

Relocation of the TOFC yard is not necessary, and the cost of this is not included in the LPA. If the US 36 rail technology were changed to a non-FRA compliant vehicle, then relocation of the TOFC rail yards would be required to allow for sufficient separation between non-compliant and compliant tracks.

US 36 passenger rail service is proposed to cross the Consolidated Main Line (CML) tracks at grade. Based on discussions with BNSF, a grade separated crossing is not necessary for the implementation of US 36 rail service. BNSF recently spent several million dollars to upgrade this junction, and current operations do not allow trains to block the crossing. Existing Amtrak passenger rail service operates through this junction with minimal delays.

6.3.5 Roadway Impacts
As a result of additional highway capacity added by the LPA, select arterials are forecast to experience a reduction in daily traffic volumes between 10 percent and 15 percent compared to No-Build, as shown in Figure 6-8.

Figure 6-9 illustrates increased roadway volumes on US 36 as a result of additional lanes. Compared to the No-Build, volumes primarily increase on US 36 between I-25 and Foothills Parkway, the point at which LPA widening improvements end.
Figure 6-8
Impact of LPA on Roadways

Change in Traffic Volumes:
- No Change
- > 10% Increase
- 10 - 15% Reduction
- > 15% Reduction
6.3.6 Rail & BRT Capture Areas
BRT and Regional Rail cater to slightly different travel markets with some overlap, as shown in Figure 6-10. BRT caters to mostly existing transit markets near US 36. Regional Rail provides additional areas with convenient rapid transit service including Louisville, Lafayette and North Boulder, in addition to attracting regional trips from Longmont.

Figure 6-10
BRT and Rail Market Capture Areas
6.3.7 Rail Grade Crossings

There are more than two dozen locations along the Regional Rail alignment where rail tracks cross roadways at-grade. These crossings were evaluated using the Federal Railroad Administration's (FRA) PCAPS software, which allows for the estimation of future grade crossing collision probabilities. These probabilities were calculated and summarized with the addition of commuter rail service, and crossings that reflected higher probabilities were recommended for grade separation. A list of every grade crossing, forecast 2020 traffic volume forecasts, and the probability of accidents is provided in Table 6-4.

Grade separations were conservatively based on an average daily traffic (ADT) volume threshold of 20,000. Grade separations are recommended at W. 72nd Avenue (Westminster), W 88th Avenue (Westminster), and S. Boulder Road (Louisville). Based on high accident probabilities, 55th St., 80th Ave., and Baseline Rd require further evaluation.

The W. 72nd Avenue crossing is close to two other crossings on the line – Lowell Boulevard and Bradburn Boulevard. It was assumed that all three streets would be separated as part of the same structure, and costs were increased accordingly to build a rail structure over the roadways. The 88th grade crossing would require the rail line to go over the roadway. The South Boulder Rd. grade crossing would carry rail under South Boulder Rd, approximately 200 feet east of the Main Street intersection. An additional crossing would be required at 120th Avenue. However this crossing will be required as part of the Wadsworth Interchange reconstruction project, and is not included in the MIS cost estimate.

Pearl Street in Boulder reflected a similar accident probability to the 120th Avenue crossing with commuter rail service, but it was not included in the recommended grade separation list since rail service may not cross Pearl Street. The City of Boulder is currently in the process of selecting a site for an inter-modal facility and the terminus of Regional Rail.

Costs were included in the LPA for improving the remaining crossings in the corridor to accommodate a second track, upgraded traffic control devices, new crossing surfaces, and other elements. It should be noted that this analysis has not been reviewed by the FRA or the Colorado Public Utilities Commission, and is therefore subject to change during the environmental assessment and engineering design phases of the project.
Table 6-4
Accident Prediction and Forecast
2020 Traffic

<table>
<thead>
<tr>
<th>Roadway</th>
<th># Lanes</th>
<th>2020 Daily Volume</th>
<th>Accident Prediction Rate (%)</th>
<th>Separate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pecos St</td>
<td>2</td>
<td>13,900</td>
<td>3.52%</td>
<td>No</td>
</tr>
<tr>
<td>84th St</td>
<td>2</td>
<td>9,700</td>
<td>2.0%</td>
<td>No</td>
</tr>
<tr>
<td>Federal Blvd</td>
<td>6</td>
<td>47,000</td>
<td></td>
<td>Existing Overpass</td>
</tr>
<tr>
<td>Lowell Blvd</td>
<td>2</td>
<td>13,100</td>
<td>3.05%</td>
<td>Yes</td>
</tr>
<tr>
<td>72nd Ave</td>
<td>4</td>
<td>30,400</td>
<td>4.33%</td>
<td>Yes</td>
</tr>
<tr>
<td>Bradburn Ave</td>
<td>2</td>
<td>6,300</td>
<td>1.36%</td>
<td>Yes</td>
</tr>
<tr>
<td>76th Ave</td>
<td>2</td>
<td>600</td>
<td>1.8%</td>
<td>No</td>
</tr>
<tr>
<td>50th Ave</td>
<td>4</td>
<td>15,400</td>
<td>9.93%</td>
<td>No*</td>
</tr>
<tr>
<td>Sheridan Blvd</td>
<td>4</td>
<td>35,400</td>
<td>N/A</td>
<td>Existing Overpass</td>
</tr>
<tr>
<td>88th Ave</td>
<td>6</td>
<td>21,600</td>
<td>6.17%</td>
<td>Yes</td>
</tr>
<tr>
<td>Pierce St</td>
<td>2</td>
<td>3,400</td>
<td>6.9%</td>
<td>No</td>
</tr>
<tr>
<td>92nd St</td>
<td>4</td>
<td>20,600</td>
<td>N/A</td>
<td>Existing Overpass</td>
</tr>
<tr>
<td>Wadsworth Blvd</td>
<td>4</td>
<td>20,200</td>
<td>2.13%</td>
<td>Existing Overpass</td>
</tr>
<tr>
<td>Church Ranch Blvd</td>
<td>4</td>
<td>13,800</td>
<td>N/A</td>
<td>Existing Underpass</td>
</tr>
<tr>
<td>104th St</td>
<td>4</td>
<td>13,200</td>
<td>N/A</td>
<td>Existing Underpass</td>
</tr>
<tr>
<td>US 36</td>
<td>4</td>
<td>90,300</td>
<td>N/A</td>
<td>Existing Overpass</td>
</tr>
<tr>
<td>112th Ave</td>
<td>2</td>
<td>11,400</td>
<td>.8%</td>
<td>No*</td>
</tr>
<tr>
<td>120th Ave.</td>
<td>6</td>
<td>54,800</td>
<td>2.26%</td>
<td>Planned Overpass</td>
</tr>
<tr>
<td>Nickel St.</td>
<td>2</td>
<td>N/A</td>
<td>3.08%</td>
<td>No</td>
</tr>
<tr>
<td>Wadsworth Pkwy</td>
<td>4</td>
<td>56,500</td>
<td>N/A</td>
<td>Existing Overpass</td>
</tr>
<tr>
<td>Brainard Dr/Industrial Lane</td>
<td>2</td>
<td>7,200</td>
<td>1.64%</td>
<td>No</td>
</tr>
<tr>
<td>Carbon St</td>
<td>2</td>
<td>2,900</td>
<td>1.67%</td>
<td>No</td>
</tr>
<tr>
<td>Dillon Rd</td>
<td>2</td>
<td>18,600</td>
<td>1.88%</td>
<td>No</td>
</tr>
<tr>
<td>East St.</td>
<td>2</td>
<td>N/A</td>
<td>4.03%</td>
<td>No</td>
</tr>
<tr>
<td>Pine St.</td>
<td>4</td>
<td>7,800</td>
<td>2.42%</td>
<td>No</td>
</tr>
<tr>
<td>Griffith St.</td>
<td>2</td>
<td>N/A</td>
<td>.53%</td>
<td>No</td>
</tr>
<tr>
<td>South Boulder Rd.</td>
<td>4</td>
<td>31,600</td>
<td>3.15%</td>
<td>Yes</td>
</tr>
<tr>
<td>Baseline Rd.</td>
<td>2</td>
<td>6,900</td>
<td>10.01%</td>
<td>No*</td>
</tr>
<tr>
<td>75th St</td>
<td>2</td>
<td>7,500</td>
<td>N/A</td>
<td>Existing Underpass</td>
</tr>
<tr>
<td>SH 7</td>
<td>4</td>
<td>16,300</td>
<td>N/A</td>
<td>Existing Underpass</td>
</tr>
<tr>
<td>63rd St</td>
<td>2</td>
<td>N/A</td>
<td>3.72%</td>
<td>No</td>
</tr>
<tr>
<td>55th St</td>
<td>2</td>
<td>12,400</td>
<td>9.33%</td>
<td>No*</td>
</tr>
<tr>
<td>Foothills Pkwy</td>
<td>4</td>
<td>39,800</td>
<td>N/A</td>
<td>Existing Underpass</td>
</tr>
<tr>
<td>Pearl St.</td>
<td>4</td>
<td>31,300</td>
<td>2.61%</td>
<td>Maybe*</td>
</tr>
</tbody>
</table>

*Further analysis required.

6.3.8 HOV Access Points
To minimize the adverse affect of merging between general purpose lanes and the BRT/HOV lanes, access to the BRT/HOV facility will be limited to select locations. These locations will be designated based on distances between interchanges and the need to maintain safe and efficient traffic weave movements. Along most of the corridor, a 4 foot buffer will be constructed. Crossing of the buffer will be prohibited, with the exception of emergency and enforcement vehicles.

6.3.9 Operating Plan
Bus Operating Plan
Future service modifications for the LPA were recommended for Limited, Regional, Express and Local routes. A summary of routes are listed in Table 6-5 and shown in Figure 6-11.

Proposed bus service changes for the LPA result in improved bus service levels on US 36 to take advantage of BRT/HOV lanes. Figure 6-9 identifies projected 2020 peak and base period hourly bus volumes on US 36 segments and bus service from each BRT station to various destinations. This information is referenced in the “Transit Operations Plans and O&M Costs for Final Alternatives” prepared by Manuel Padron & Associates, April 25, 2001.
### Table 6-5

BUS OPERATING PLAN FOR LOCALLY PREFERRED ALTERNATIVE: REGIONAL RAIL WITH BRT, ROADWAY WIDENING AND BIKEWAY

<table>
<thead>
<tr>
<th>Route Type</th>
<th>Route Number</th>
<th>Route Name</th>
<th>Service Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Routes</td>
<td>6</td>
<td>East I-25/Pecos</td>
<td>30 Peak 30 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>North Broadway/Huron</td>
<td>30 Peak 30 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>North Federal</td>
<td>20 Peak 20 Off-Peak</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To FRCC</td>
<td>20 Peak 20 Off-Peak</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To I-25/144th</td>
<td></td>
</tr>
<tr>
<td></td>
<td>51</td>
<td>Sheridan/Crossing</td>
<td>30 Peak 30 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>72</td>
<td>72nd Ave/Crossing</td>
<td>30 Peak 30 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>76</td>
<td>Wadsworth/Crossing</td>
<td>30 Peak 30 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>80</td>
<td>80th Ave/Crossing</td>
<td>60 Peak 60 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>92</td>
<td>92nd Ave/Crossing</td>
<td>60 Peak 60 Off-Peak</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To 136th/Colorado</td>
<td>30 Peak 30 Off-Peak</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To E-470/76</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>Kipling/Crossing</td>
<td>30 Peak 30 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>104</td>
<td>104th Ave/Crossing</td>
<td>30 Peak 30 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>112</td>
<td>112th Crossing</td>
<td>30 Peak 30 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td>120th Ave/Crossing</td>
<td>30 Peak 30 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>128</td>
<td>Broomfield/Wagon Rd</td>
<td>30 Peak 30 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>129</td>
<td>Broomfield Circulator</td>
<td>30 Peak 30 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>132</td>
<td>Applewood/US 36 &amp; 86th</td>
<td>30 Peak 30 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>136</td>
<td>136th Ave/Crossing</td>
<td>30 Peak 30 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>144</td>
<td>144th Ave/Crossing</td>
<td>30 Peak 30 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>228</td>
<td>Louisville/Broomfield</td>
<td>15 Peak 30 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>229</td>
<td>Rock Creek/Interlocken</td>
<td>15 Peak 30 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>230</td>
<td>Louisville/Lafayette</td>
<td>30 Peak 60 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>231</td>
<td>Church Ranch/West/Bryd</td>
<td>30 Peak 30 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>232</td>
<td>Interlocken Circulator</td>
<td>15 Peak 30 Off-Peak</td>
</tr>
<tr>
<td>Limited Routes</td>
<td>225 Ltd</td>
<td>Bldr/Lafayette via Baseline</td>
<td>30 Peak 30 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>287 Ltd</td>
<td>Longmont/US 36 &amp; 96th</td>
<td>30 Peak 60 Off-Peak</td>
</tr>
<tr>
<td>Express Routes</td>
<td>8x</td>
<td>North Huron</td>
<td>20 Peak 20 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>18x</td>
<td>North Pecos</td>
<td>20 Peak 20 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>31x</td>
<td>North Federal/Lowell</td>
<td>15 Peak 15 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>80x</td>
<td>West 150th</td>
<td>15 Peak 15 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>82x</td>
<td>Pomer</td>
<td>10 Peak 10 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>86x</td>
<td>Westminster Center</td>
<td>15 Peak 15 Off-Peak</td>
</tr>
<tr>
<td></td>
<td>103x</td>
<td>Countryside</td>
<td>15 Peak 15 Off-Peak</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BRT/FnR Stops</th>
<th>Rail Station Stops</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Table</td>
</tr>
<tr>
<td></td>
<td>Mesa</td>
</tr>
</tbody>
</table>

(X) indicates a new stop.
Figure 6-11
LPA Transit Network

LEGEND
- Local Service
- Express Service
- Regional Route
- Limited Service
- Bus Park-and-Ride
- Commuter Rail
- Rail Station

*skyRide AB not shown
Figure 6-12
Bus Service for the LPA

Table Mesa
Routes E, G, H, I, TAB
A.M. Peak: 33 buses/hour
Midday: 13 buses/hour

Superior/Louisville
Routes B, D, H, I, TAB
A.M. Peak: 35 buses/hour
Midday: 13 buses/hour

96th Street
Routes B, D, H, I, L, TAB
A.M. Peak: 43 buses/hour
Midday: 17 buses/hour

Broomfield
Routes B, D, H, I, L, TAB
A.M. Peak: 49 buses/hour
Midday: 18 buses/hour

Church Ranch
Routes B, D, H, I, TAB
A.M. Peak: 23 buses/hour
Midday: 18 buses/hour

Westminster Center
Routes B, D, H, I, TAB
A.M. Peak: 65 buses/hour
Midday: 16 buses/hour

Broadway
Routes T, 20, 30, 50, 231
A.M. Peak: 23 buses/hour
Midday: 18 buses/hour

I-25 to Downtown

Service Frequencies to Various Destinations

<table>
<thead>
<tr>
<th>Origin</th>
<th>Destination</th>
<th>A.M. Peak Tps</th>
<th>Midday Tps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table Mesa</td>
<td>B to Brix Station</td>
<td>14 tps/hour</td>
<td>9 tps/hour</td>
</tr>
<tr>
<td></td>
<td>B to Denver CID</td>
<td>24 tps/hour</td>
<td>7 tps/hour</td>
</tr>
<tr>
<td></td>
<td>B to 125th/88th</td>
<td>8 tps/hour</td>
<td>4 tps/hour</td>
</tr>
<tr>
<td></td>
<td>B to 79th</td>
<td>5 tps/hour</td>
<td>5 tps/hour</td>
</tr>
<tr>
<td>Superior</td>
<td>B to Brix Station</td>
<td>10 tps/hour</td>
<td>9 tps/hour</td>
</tr>
<tr>
<td></td>
<td>B to Denver CID</td>
<td>18 tps/hour</td>
<td>11 tps/hour</td>
</tr>
<tr>
<td></td>
<td>B to 125th/88th</td>
<td>8 tps/hour</td>
<td>4 tps/hour</td>
</tr>
<tr>
<td></td>
<td>B to 79th</td>
<td>5 tps/hour</td>
<td>5 tps/hour</td>
</tr>
<tr>
<td>96th St.</td>
<td>B to Brix Station</td>
<td>8 tps/hour</td>
<td>7 tps/hour</td>
</tr>
<tr>
<td></td>
<td>B to Denver CID</td>
<td>16 tps/hour</td>
<td>11 tps/hour</td>
</tr>
<tr>
<td></td>
<td>B to 125th/88th</td>
<td>8 tps/hour</td>
<td>4 tps/hour</td>
</tr>
<tr>
<td></td>
<td>B to 79th</td>
<td>5 tps/hour</td>
<td>5 tps/hour</td>
</tr>
<tr>
<td>Broomfield</td>
<td>B to Brix Station</td>
<td>8 tps/hour</td>
<td>7 tps/hour</td>
</tr>
<tr>
<td></td>
<td>B to Denver CID</td>
<td>24 tps/hour</td>
<td>12 tps/hour</td>
</tr>
<tr>
<td></td>
<td>B to 125th/88th</td>
<td>8 tps/hour</td>
<td>4 tps/hour</td>
</tr>
<tr>
<td></td>
<td>B to 79th</td>
<td>5 tps/hour</td>
<td>5 tps/hour</td>
</tr>
<tr>
<td>Church Ranch</td>
<td>B to Brix Station</td>
<td>8 tps/hour</td>
<td>7 tps/hour</td>
</tr>
<tr>
<td></td>
<td>B to Denver CID</td>
<td>24 tps/hour</td>
<td>12 tps/hour</td>
</tr>
<tr>
<td></td>
<td>B to 125th/88th</td>
<td>8 tps/hour</td>
<td>4 tps/hour</td>
</tr>
<tr>
<td></td>
<td>B to 79th</td>
<td>5 tps/hour</td>
<td>5 tps/hour</td>
</tr>
<tr>
<td>Westminster</td>
<td>B to Brix Station</td>
<td>8 tps/hour</td>
<td>7 tps/hour</td>
</tr>
<tr>
<td></td>
<td>B to Denver CID</td>
<td>230 tps/hour</td>
<td>12 tps/hour</td>
</tr>
<tr>
<td></td>
<td>B to 125th/88th</td>
<td>8 tps/hour</td>
<td>4 tps/hour</td>
</tr>
<tr>
<td></td>
<td>B to 79th</td>
<td>5 tps/hour</td>
<td>5 tps/hour</td>
</tr>
</tbody>
</table>
**Rail**

The proposed 2020 regional rail operating plan that was modeled for the LPA consists of the following service frequencies (same for both directions, unless otherwise noted):

**Weekday:**

- **Early A.M:** 5:00 to 6:30 a.m. – 60 minutes
- **A.M. Peak:** 6:30 to 9:00 a.m. – 20 min. peak dir.
- **Midday:** 9:00 a.m. to 4:00 p.m. – 60 minutes
- **P.M. Peak:** 4:00 to 6:30 p.m. – 20 min. peak dir.
- **Early Eve:** 6:30 to 9:00 p.m. – 60 minutes
- **Late Evening:** 9:00 p.m. to 12:00 midnight – 60 minutes
- **Saturday/Early Morning:** 6:00 to 9:00 a.m. – 60 minutes
- **Sunday/Midday:** 9:00 a.m. to 9:00 p.m. – 60 minutes
- **Holidays/Late Evening:** 9:00 p.m. to 12:00 midnight – 60 minutes

The commuter rail operating plan requires 6 train sets for peak period operations. Three-car trains are proposed in the peak period. This provides a peak hour, peak direction seated capacity of 1,260 passengers (140 seats per passenger car). Thus, a total of 18 peak and 22 fleet passenger cars are required.

**6.3.10 Attainment of Goals and Objectives**

The LPA meets many of the goals and objectives established early in the study. A discussion of how the LPA serves the three categories: Land Use Vision for the US 36 Corridor; Travel Markets; and Transportation Objectives is provided below.

**Land Use Vision for the US 36 Corridor**

- Focus future infill development in the corridor within the current activity centers.
- Encourage transit compatible land use and design within the activity centers.
- Encourage appropriate densities and land use mixes within the activity centers to promote use of alternatives modes.
- Preserve views and strategic open space along the corridor.

BRT and Rail Stations will be located at identified activity centers in the corridor. The BRT stations are envisioned to accommodate retail and service amenities to encourage transit oriented development around stations, and provide a better transit experience which will encourage the use of alternative modes.

**Travel Markets**

- Serve regional markets and trips
- Serve trips between activity centers
- Serve trips within activity centers

By providing multiple transportation options; BRT, local bus, HOV lanes, general purpose lanes, a Bikeway, and Regional Rail, the improvements will
Improvements. The LPA can be phased

Applications:
- Alleviations with minimal redundancy for this
- HOT lanes on I-25 and US 36
- The LPA
- CDTA Value Express Lane Study is
- Occupancy Toll lanes (OTL) lane
- The improvements along US 36 do not
- Network reliability require additional
- Hot lanes can also be enhanced to
- HOT lane policies, and corridor data. The
- BRT/Hot lane networks will be in place for both
- Service can be improved through
- BRT and/or regional rail service
- Stages, by providing a mix of modes,
- Regional rail service can be improved through
- Regional rail and the BRT service
- That are needed.

Locally Preferred Alleviations

Chapter 6

policy does not inhibit local use,

retraining and regional rail service

The BRT and Regional Rail Stations

in a way that is

existing activity centers. It has an

remained consistent with the


Broomfield, and Boulder.

In addition to Denvor, Westminster,

BRT and Regional Rail Stations will

elsewhere in a strategic

facilities for rail, bus, carpool, single

The LPA is truly multi-modal. It includes

- Alternatives must be converted to

- Congestion

- Alternatives should minimize future
time between activity centers.

- Alternatives should maintain existing

- Recommended improvements

- Must be able to implement

- Options:

- Alternatives are critical

- Alternatives must be supportive of

- Solutions must be multi-modal,

Transportation Objectives

Drive access.

Stations will include parking facilities for

expanded circulation within

- The Travel Demand Management

- Local facilities will accommodate bus

work and non-work purposes will be

serve varying trip types and markets.
implemented initially with less frequent service and then phased into more frequent peak service after an additional track has been constructed.

Travel times between activity centers are projected to be significantly lower compared to the No-Build scenario. Travel time savings compared to No-Build will be realized for all modes.

Highway congestion will be lessened compared to the No-Build scenario. Widening of US 36 and increased transit patronage will have the effect of reducing congestion on many arterials by 10 to 15 percent.

The LPA will provide convenience to users by:

- Providing a high level of connectivity between modes;
- Increasing transportation choices by enhancing many modes of travel; incorporating traveler conveniences such as retail services at stations; and
- Utilizing ITS technologies such as real time traveler information that will allow travelers to make better transportation decisions, and minimize delays.

**Evaluation Measures**
Quantitative and qualitative evaluation measures were developed to assess the impact of the LPA. Cost, mobility, and natural resource and community impacts and benefits are discussed in this section.

**Capital Costs**
Capital costs were developed using 1998 dollars. Costs can be inflated to year of expenditure dollars once a phasing plan is established.

Rail construction costs were based on actual cost estimates provided by the BNSF. Rail lease vehicle costs are included in O&M Costs.

For the roadway elements, the cost estimating procedure focused primarily on US 36 mainline roadway elements and any modifications that might be needed at interchanges. Excluded were costs of rebuilding interchanges that are planned to be reconstructed before the US 36 LPA is implemented, including:

- Sheridan (Westminster)
- Wadsworth (Broomfield)
- McCaslin (Superior)

Roadway construction unit costs were based on input from CDOT-Region 6 staff.

The estimated capital cost for the LPA is $635 M. A breakdown of capital costs by LPA component is shown in Table 6-6.

<table>
<thead>
<tr>
<th>Table 6-6 LPA Capital Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Rail</td>
</tr>
<tr>
<td>Roadway Widening/Bus HOV Lanes</td>
</tr>
<tr>
<td>BRT Stations</td>
</tr>
<tr>
<td>Bikeway</td>
</tr>
<tr>
<td>ITS</td>
</tr>
<tr>
<td>TDM</td>
</tr>
<tr>
<td>Parking</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
</tr>
</tbody>
</table>
Operating & Maintenance Costs (O&M)
The RTD Regional Unit Cost Model was utilized to develop system-wide transit operating & maintenance costs in 1998 dollars. Cost estimates for the LPA include the provision of feeder bus service to planned BRT and Regional Rail Stations. Strict HOV enforcement, roadway maintenance, and ITS operations were also accounted for.

O&M costs, based on the forecast 2020 operating plan, are estimated at $35.6M annually, including the lease of rail vehicles, estimated at $2.44 M per year. A detailed breakdown of O&M costs is provided in Table 6-7.

| Regional Rail | $18.0 M |
| BRT | $13.7 M |
| Roadway/HOV | $1.4 M |
| ITS | $1.9 M |
| TDM | $0.6 M |
| Total | $35.6 M |

Travel Demand Forecasting
The horizon year 2020 was used to assess future travel demand characteristics. As a point of comparison, measures were assessed for both a No-Build scenario and the recommended alternative. The No-Build scenario includes Planned and Programmed improvements outside of the US 36 Corridor and only Programmed (funded) improvements within the corridor. The Denver Regional Council of Governments (DRCOG) Regional Travel Demand Forecasting model maintained by the Regional Transportation District (RTD) was utilized to estimate future demand for roadway and transit facilities.

6.3.11 Users
Ridership for bus and rail in the US 36 Corridor and users of new roadway and BRT/HOV facilities were estimated in the regional travel demand forecast model. Table 6-7 presents transit and carpool usage for the year 2020. Total transit ridership is estimated at 23,000 persons per day in year 2020. Of these 23,000 transit users, 7,000 are anticipated to ride the Regional Rail service and 16,000 are expected to use Express, Limited, and Regional bus service in the corridor. Carpool usage is estimated at 35,000 to 40,000 users per day. Daily volumes on general purpose auto lanes is estimated at 100,000 to 200,000 vehicles depending on the location. The highest volume of carpool and general purpose lane users is anticipated east of Sheridan Blvd.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Persons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus</td>
<td>16,000</td>
</tr>
<tr>
<td>Regional Rail</td>
<td>7,000</td>
</tr>
<tr>
<td>Carpool</td>
<td>35,000 to 40,000</td>
</tr>
</tbody>
</table>

6.4. Potential Benefits
6.4.1 Mobility
Travel Time
The LPA provides significant travel time benefits for all modes in the corridor for travel between Boulder and Denver, as shown in Table 6-9. The most significant reduction in travel time is
exhibited for the buses which use the BRT facility, a savings of 30 minutes during the AM peak. Drive-alone vehicles and Carpoolers are estimated to save 15 minutes. The total travel time in year 2020 for Regional Rail is estimated at 45 minutes, including dwell times at stations in the corridor. No US 36 rail service was included in the No-Build. Longer Regional Rail travel times, compared to the other modes, reflect a longer alignment: 28 miles for rail versus 25 miles for the other modes.

Table 6-9
LPA vs. No-Build – Corridor Peak Hour Travel Times in Year 2020

<table>
<thead>
<tr>
<th></th>
<th>No-Build</th>
<th>LPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive-alone</td>
<td>70 minutes</td>
<td>55 minutes</td>
</tr>
<tr>
<td>Carpoolers</td>
<td>45 minutes</td>
<td>30 minutes</td>
</tr>
<tr>
<td>Bus (w/stops)</td>
<td>65 minutes</td>
<td>35 minutes</td>
</tr>
<tr>
<td>Rail (w/stops)</td>
<td>—</td>
<td>45 minutes</td>
</tr>
</tbody>
</table>

Mode Split
The year 2020 peak hour mode shares for the US 36 Corridor are shown in Table 6-9. This represents activity at the maximum use location, west of the Pecos interchange. Mode share for alternative modes is projected to reach 43% of trips in the corridor.

Table 6-10
LPA vs. No-Build – Corridor Peak Hour Mode Shares in Year 2020

<table>
<thead>
<tr>
<th>Mode</th>
<th>No-Build %</th>
<th>LPA %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive-alone</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>HOV</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Bus</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Regional Rail</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

Congestion
Congested lane miles (greater than 1 hour per day) are anticipated to decrease on both US 36 and other roads in the corridor with the implementation of the LPA shown in Table 6-11 presents LPA and No-Build comparisons.

Table 6-11
LPA vs. No-Build – Corridor Congested Lane Miles in Year 2020

<table>
<thead>
<tr>
<th></th>
<th>No-Build</th>
<th>LPA</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway</td>
<td>155</td>
<td>153</td>
<td>-1.3 percent</td>
</tr>
<tr>
<td>Other Roads</td>
<td>438</td>
<td>392</td>
<td>-10.5 percent</td>
</tr>
<tr>
<td>Total</td>
<td>593</td>
<td>545</td>
<td>-8.1 percent</td>
</tr>
</tbody>
</table>

As a result of reduced congestion, auto person hours of delay are also forecast to decrease. Table 6-12 shows the reduction in delay for highway users.

Table 6-12
LPA vs. No-Build - Auto Person Corridor Hours of Delay Year 2020

<table>
<thead>
<tr>
<th></th>
<th>No-Build</th>
<th>LPA</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway</td>
<td>46,400</td>
<td>35,000</td>
<td>-24.6 percent</td>
</tr>
<tr>
<td>Other Roads</td>
<td>58,400</td>
<td>53,500</td>
<td>-8.4 percent</td>
</tr>
<tr>
<td>Total</td>
<td>104,800</td>
<td>88,400</td>
<td>-15.6 percent</td>
</tr>
</tbody>
</table>

Vehicle Miles Traveled
Vehicle miles traveled, shown in Table 6-13, indicate a net increase in corridor VMT as a result of increased highway capacity with the addition of lanes to US 36. Traffic on other roads in the corridor is reduced as more trips are attracted to the highway.

Table 6-13
LPA vs. No-Build – Corridor VMT Year 2020

<table>
<thead>
<tr>
<th></th>
<th>No-Build</th>
<th>LPA</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway</td>
<td>5,046,700</td>
<td>5,463,900</td>
<td>+8.3 percent</td>
</tr>
<tr>
<td>Other Roads</td>
<td>7,183,600</td>
<td>7,072,300</td>
<td>-1.5 percent</td>
</tr>
<tr>
<td>Total</td>
<td>12,230,300</td>
<td>12,536,200</td>
<td>+2.5 percent</td>
</tr>
</tbody>
</table>
Vehicle Hours Traveled
Vehicle hours traveled on roadways in the corridor are shown in Table 6-14. Despite a net increase in VMT, VHT is reduced due to decreased travel times resulting from LPA improvements.

Table 6-14
LPA vs. No-Build – Corridor VHT Year 2020

<table>
<thead>
<tr>
<th></th>
<th>No-Build</th>
<th>LPA</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway</td>
<td>121,900</td>
<td>120,500</td>
<td>-1.1 percent</td>
</tr>
<tr>
<td>Other Roads</td>
<td>260,800</td>
<td>253,900</td>
<td>-2.6 percent</td>
</tr>
<tr>
<td>Total</td>
<td>382,700</td>
<td>374,400</td>
<td>-2.2 percent</td>
</tr>
</tbody>
</table>

6.4.2 Community Benefits
Potential benefits to different sub-areas of the corridor are listed below:

Northeastern Boulder County and Longmont

- Allows northeast residents to avoid driving through Boulder to access transit with the addition of service to the proposed Boulder Intermodal Facility.
- Residents of communities will have BRT and rail options for regional transit connections at 30th and Pearl Street.
- Commuters can access rail service via bus, bike or automobile at 30th and Pearl Streets.
- Regional bus routes will provide faster service by using the extended US 36 HOV lanes.
- Regional rail provides the opportunity to extend rail service to Longmont.
- Extension of HOV lanes will provide a faster carpool trip.

- Supports planned multi-modal facility at 30th and Pearl Streets.
- Regional rail and bus connections.
- Provides connections to local bus service (HOP, LEAP, and Bound) for access to activity centers in Boulder.
- BRT service will extend into the 28th Corridor and serve “Superstop” stations at CU and the Boulder Valley Regional Center.

Central and Southern Boulder

- Bus and rail service will connect to a planned intermodal facility near 30th and Pearl Streets.
- Redevelopment opportunities will be enhanced with intermodal station near 30th and Pearl Streets.
- Access to the University of Colorado enhanced by BRT service.
- BRT service will access Table Mesa park-n-Ride to serve residents of south Boulder.
- Extension of BRT/HOV lanes to Foothills Parkway will accommodate carpoolers from South Boulder.
- An eastbound climbing lane on Davidson Mesa will allow for the bypass of slow moving vehicles leaving Boulder.

Louisville/Lafayette/Superior

- Rail station in downtown Louisville will provide new/convenient access to regional rail and bus service.
- Rail service will connect to BRT stations for access key US 36 destinations.
Economic development/ redevelopment opportunities will be created in downtown Louisville at the Regional Rail Station.

A Superior/Louisville BRT station will provide improved access to transit for local residents.

**Broomfield**

- A multimodal (BRT, rail) station at Interlocken Loop/Storage Tek Drive will become a key transfer facility.
- Regional Rail and BRT service will connect with local transit service to Interlocken Business Park and Flatirons Mall.
- Broomfield BRT station will improve connections between local and regional transit service.
- Extension of HOV lanes will provide faster trips for carpoolers.
- Additional roadway lanes will provide improved capacity between Broomfield, Boulder and Denver.

**Westminster**

- BRT station at Westminster park-n-Ride will provide enhanced regional transit service.
- BRT station located at Church Ranch will provide additional access to regional bus service.
- Regional rail station at Church Ranch will enhance redevelopment opportunities consistent with City goals.
- Transit connections at Church Ranch will provide alternative access to transit patrons, allowing them to avoid congestion at Sheridan Interchange.

Regional rail service will connect Westminster to Denver, Boulder, Broomfield and Louisville.

Additional travel lanes in each direction will provide improved roadway capacity from Westminster to Broomfield and I-25.

**Denver**

- Denver Union Terminal (DUT) will offer regional rail connections to Westminster, Broomfield, Louisville and Boulder.
- BRT will enhance access between downtown Denver and all communities in the US 36 Corridor.
- Transit users from the US 36 Corridor can transfer to the programmed Central Platte Valley light rail line for connections to the Denver region.
- The extension of HOV lanes to Boulder will encourage carpool trips from US 36 to downtown Denver.
6.5. Community & Natural Resource Impacts

Environmental analysis for the US 36 MIS study area is unique because both alignments being proposed for the Locally Preferred Alternative (LPA) are located within existing transportation corridors.

The LPA requires changes to the current roadway configuration along US 36 and the addition of a second track along the BNSF alignment. While both the reconstruction of US 36 and addition of a track may have minor impacts to sensitive resources, areas of larger impact are expected to occur at the new BRT stations, rail stations and park-n-Rides.

Environmental analysis was undertaken during the Conceptual Alternatives Analysis phase of the project. The results were used as part of the general screening criteria. In September of 1998, an inventory of sensitive environmental and community resources along the US 36 and BNSF alignment was conducted.

Eleven conceptual alternatives were qualitatively evaluated against a number of criteria including impacts to environmental resources. These impacts were documented and used to rank various alternatives:

Resources evaluated during the conceptual analysis included:
- Hazardous Materials
- Sensitive Noise Receptors
- Water Resources/Water Quality
- Historic Properties (4(f))

Differences in the eleven alignments were nominal. There were no environmental impacts substantial enough to preclude any of the conceptual alternatives from moving forward into the Final Alternatives Analysis.

Further environmental analysis has been conducted since the selection of the LPA. The analysis was separated into two parts:

- Assessment Areas – park-n-Ride, BRT station, and rail station locations.
- Corridor Improvements – mainline improvements to US 36 and the rail alignment.

6.5.1 Assessment Areas

Additional areas identified by the LPA for construction must be evaluated for the potential to incur environmental impacts. Most notably are areas of acquisition required for the BRT stations, rail stations and/or park-n-Rides. Since these will fall outside of existing transportation corridors, there is an increased probability that they may impact some sensitive areas.

BRT Stations

Proposed BRT stations will be located at Westminster, Broomfield, Church Ranch, Interlocken/Storage Tek Drive and Superior/Louisville. Although the layout may vary at each individual station, the general program requirements will remain the same. This includes pedestrian over/underpass,
shelters, park-n-Rides, and possible Transit Oriented Development (TOD).

Park-n-Rides already exist in the vicinity of the following stations:

- Westminster
- Broomfield
- Superior/Louisville
- Church Ranch/104th

A park-n-Ride has been planned by RTD in the vicinity of Interlocken Loop/Storage Tek Drive, a planned BRT and Regional Rail station.

Park-n-Rides have been programmed for these areas prior to finalization of the LPA in response to the significant growth along the corridor. Structures should minimize impacts to nearby sensitive resources by limiting the amount of land required for parking.

Regional Rail Stations
Regional Rail stations will be located at Denver Union Station (DUT) Westminster, Storage Tek/Interlocken Loop Drive, Louisville and 30th/Pearl. Layouts will vary at each individual station and will generally include: parking areas, American Disabilities Act (ADA) accessible station platforms, ticket vending machines, passenger shelters, lighting and benches. There is also a possibility that TOD will occur at or in conjunction with several of the rail stations.

Most rail stations will be constructed at or near existing and planned park-n-Rides with the exception of two stations; 30th and Pearl in Boulder and the City of Louisville. The City of Boulder is currently planning for an intermodal facility at 30th and Pearl to accommodate bus and future rail service. The planning concept also includes TOD located around the station. The City is currently evaluating locations for train layover facilities and parking. Both stations will be evaluated and environmental impacts fully assessed in the US 36 EIS. The City of Louisville is currently studying development alternatives in the downtown areas. The EIS will need to evaluate station sites in downtown Louisville that are consistent with ongoing planning efforts by the City.

Potential impacts related to the construction of the BRT and Regional Rail stations are documented below. Impacts that would occur at a rail station or a BRT station are differentiated.

All of the potential impacts described below need to be fully addressed during the EIS phase of project development.

**Hazardous Materials**

**BRT Stations**
Potential exists to encounter hazardous materials during construction of the BRT stations. An Initial Site Assessment should be conducted prior to construction of any new transportation facilities to locate areas of potential concern.

**Regional Rail Stations**
Potential exists to encounter hazardous material during construction of the Regional Rail stations. An Initial Site Assessment is recommended prior to construction.
Recommendations will be made during the EIS phase of the project regarding areas of contamination to avoid during Final Design. Where avoidance is not possible, corrective action would be taken to manage the waste so as to not pose a threat to workers or the general public during construction of the LPA.

**Visual Impacts**

**BRT Stations**
Surrounding neighborhoods may experience visual impacts in the locations where the BRT stations contain elevated structures. These locations have not been selected.

The proposed BRT design concept was selected based partially on visual impacts. Direct ramp connections were originally explored as an option for the BRT but eliminated because there were not viewed as aesthetically pleasing. Some of the conceptual BRT station designs that were forwarded still contain elevated structures. The elevated structures could potentially be visually intrusive to the surrounding community.

**Regional Rail Stations**
Surrounding neighborhoods may experience visual impacts in the vicinity of the Regional Rail stations.

In the EIS Phase, efforts will be made to coordinate with both public agencies and the neighborhoods to ensure that the design for the stations are visually pleasing and to address aesthetic concerns of the neighborhood.

**Air Quality**

**BRT Regional Rail Stations**
There is a potential for air quality impacts associated with increased emissions around the locations of park-and-Rides. As motor vehicles and local feeder buses congregate in the parking areas, concentrations of increased emissions (carbon monoxide, fine particulate) are likely. Analysis will need to occur during the EIS process to determine where CO “Hot Spot” modeling is warranted.

**Noise and Vibration Impacts**

**BRT Stations**
Noise and vibration impacts for BRT improvements will be addressed as part of the roadway construction program which include noise walls or other effective measures to minimize noise and vibration impacts to adjacent properties.

**Regional Rail Stations**
Noise and vibration impacts associated with the Regional Rail element are likely. There may be increased noise associated with trains near at-grade roadway crossings and possibly at stations. Trains also will generate noise while the train stops at station platforms, idles and then accelerates.

Vibration may also be a concern in the vicinity of rail stations that are within 150 feet of residential uses.

Different vehicle technology options will be explored in an effort to keep station-related noise and vibration impacts minimized.
**Historic Properties**

**BRT Stations**
Only one historic property is located within a half mile of a proposed BRT station. Impacts to the historic property are not anticipated.

**Regional Rail Stations**
Historic properties within the US 36 Corridor were located from information provided by the State Historic Preservation Officer (SHPO). These properties were mapped in order to identify potential impacts. Because exact locations of the rail stations have not been determined, it is not possible to specify whether any historic properties will be directly affected. There are two known historic properties located within 0.5 mile of planned locations for the rail stations. There may also be more historic or archaeological properties that are eligible for inclusion on the National Register of Historic Places that could be impacted.

**Wetlands**

**BRT Stations**
BRT stations will be constructed partly in existing CDOT ROW. Wetlands, as shown in Figure 6-10 are present near BRT stations.

Long-term and short-term impacts may occur as a result of the construction of the stations. All efforts will be made to avoid and minimize any permanent impacts during design and construction of the US 36 LPA. Coordination will occur with the US Army Corps of Engineers to determine design and location of any mitigation sites needed for permitting requirements.

**Regional Rail Stations**
Wetlands currently exist in the general vicinity of proposed rail stations, see Figure 6-13.

Short-term and long-term impacts may occur as a result of the construction of stations. All efforts will be made to avoid and minimize any permanent impacts during design and construction of the US 36 LPA. Coordination will occur with the US Army Corps of Engineers to determine design and location of any mitigation sites needed for permitting requirements.

**Floodplains**

**BRT**
Portions of the proposed stations are located within the FEMA designated 100-year floodplain. There is a potential for floodplain encroachment as a result of the implementation of the LPA. Efforts will be made during final design and construction to minimize encroachment. During design, government criteria for floodplain and water resource management would be followed.

**Regional Rail Stations**
Portions of the proposed stations are located within the FEMA designated 100-year floodplain. There are several floodplains associated with Boulder Creek and other water bodies are located within the project area.

There is a potential for floodplain encroachment as a result of the implementation of the LPA. Efforts will be made during final design and construction to minimize encroachment. During design, government criteria for floodplain and water resource management would be followed.
Figure 6-13
Natural Resources within US 36 and BNSF Corridors
**Threatened or Endangered Species and Wildlife Habitat**

Threatened or Endangered Species habitat is present in the vicinity of the proposed Regional Rail according to maps provided by the Colorado Division of Wildlife. These include:

- Ute Ladies Tresses' Orchid
- Bald Eagle
- Colorado Butterfly Plant
- Preble's Meadow Jumping Mouse

There is a potential to directly impact wildlife and wildlife habitat as a result of implementation of the LPA. Conversion of habitat will occur while constructing the Regional Rail stations. This may affect prairie dog towns, burrowing owls and other wildlife using riparian areas.

The regional rail stations will need to be surveyed for the presence of appropriate habitat and/or individual species. These areas will be avoided if at all possible. Coordination with the US Fish and Wildlife Service (USFWS) and the Colorado Division of Wildlife (CDOV) will occur.

**6.5.2 Corridor Improvements**

Although most corridor improvements would occur within the existing US 36 right-of-way, there is potential for impacts to occur to the following resources:

**Air Quality**

Although mobility would be expected to improve and congestion would decrease as a result of the LPA, there may still be a potential for air quality impacts. An increase in vehicle miles of travel is expected as a result of the additional general purpose lanes and BRT lanes. Speeds will increase which will increase nitric oxide (NOx) emissions.

Even with improvements it is difficult to achieve Level of Service D or better in an urban area during peak hour volumes. Accordingly, it is anticipated that CO Hot Spot modeling may be required near most interchanges and at many intersections in the project area.

**Wetlands**

Wetlands have been identified within the right-of-way. There are over 10 acres of wetlands within the US 36 right-of-way and an additional 1 acre within the BNSF right-of-way, see Figure 6-13.

Short term impacts to these wetlands may occur as a result of the construction required by the LPA. Efforts will be made to avoid and minimize permanent impacts during design and construction of the US 36 LPA. Should there be any wetland impacts as a result of the construction, on site mitigation opportunities adjacent to the corridor would seem feasible.

Coordination will occur with the US Army Corps of Engineers should wetlands be impacted and to consult on design and location of any mitigation sites needed for permit requirements.

**Sensitive Noise Receptors**

There are a number of established neighborhoods adjacent to the
There is a potential to directly impact wildlife and wildlife habitat with implementation of the LPA. Conversion of habitat within the right-of-way will have impacts on wildlife. Efforts will occur during construction to minimize impacts as much as possible and coordinate with the USFWS and CDOW to mitigate impacts that occur. The open space along the corridor contains large tracts of potential habitat for these species and other species of concern.

**Environmental Justice**

Presidential Executive Order 12898 mandates that all federal actions take the appropriate and necessary steps to identify and address disproportionately high and/or adverse effects on the health and/or environment of minority or low income populations to the greatest extent possible.

Using DRCOG Travel Analysis Zone (TAZ) data and 2000 Census Data, low income and minority areas were mapped within the Study Area. A cursory analysis revealed large areas of minority concentrations within the study area and one area of low income adjacent to the corridor, see Figure 6-14.

It does not appear that any low-income areas will be disproportionately impacted. One area located south of I-70 and directly east of the corridor may be an area of concern.

Minority areas are located throughout the Study Area. These areas will not be disproportionately impacted.

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**Threatened and Endangered Species**

Endangered species may exist within the project area.

There are also numerous prairie dogs towns located along the corridor, which indicates a potential for habitat for both the Black Footed Ferret and the Burrowing Owl. The prairie dogs also serve as important prey for the bald eagle.

Elemental occurrences of the following threatened and endangered wildlife species have occurred throughout the Study Area:

- Ute Ladies Tresses' Orchid
- Bald Eagle
- Colorado Butterfly Plant
- Preble's Meadow Jumping Mouse

alignment. High-density communities located close to the corridor are most susceptible to incurring noise and vibration impacts.

The greatest potential for noise impacts will occur in the following areas:

- Baseline Rd. to Empire Rd. along the BNSF rail corridor in Boulder and Louisville
- From 86th Ave. to 64th Ave. along the rail corridor in Westminster

Noise measurements and subsequent modeling will occur during the EIS portion of the project. Any noise impacts predicted which exceed FHWA Noise Abatement Criteria or FTA noise impact criteria would warrant further investigation resulting in an exploration of mitigation options.
Figure 6-14
Low Income and Minority Populations

Legend
- Environmental Justice Areas of Concern
- Bus Rapid Transit Station
- Commuter Rail Station
- Bus Rapid Transit and Roadway Improvements
- Commuter Rail Alignment

Legend
- 0 - 50%
- 50 - 100%

[Map showing Minority Census Tracts (2000), Hispanic Census Tracts (2000), and Low Income TAZ for Denver and surrounding areas.]
**Neighborhood Disruption/Community Cohesion**
Contact with neighborhoods and businesses will be made during the EIS process in an effort to identify areas of concern. An outreach program will be conducted in these communities in order to ensure they have equal representation in the public involvement program for the EIS. Tools used for outreach may include but are not limited to Public Meetings, workshops held with a translator and the provision of bi-lingual newsletters. Further analysis of minority, low income, and transit dependent populations will be conducted during the EIS. This will include identification of negative effects and benefits which would occur as a result of this project.

Houses adjacent to US 36 and the rail corridor could be inconvenienced due to construction noise or diverted traffic to/from US 36. Consideration being given to phasing of the construction. Requests have been made that the rail component be completed first. This could lessen construction-related mobility impacts to surrounding communities by providing an option to auto travel while US 36 is under construction.

**Visual Impacts and Aesthetics**
Visual impacts will occur associated with the highway improvements.

Motorists using the corridor may be visually impacted with the addition of new pavement, removal of vegetation and removal in cut and fill slopes which would change the visual character of the highway.

**Historic Properties/Section 4(f) Resources**
Section 4(f) of the DOT applies to publicly owned lands which are managed as park and recreation areas, wildlife or waterfowl refuges and to historic sites regardless of ownership.

Open Space, park and recreation areas were surveyed and located during the MIS conceptual analysis, see Figure 6-15. Any alternatives that would impact open space and/or park and recreation areas were not forwarded for consideration.

There are a number of registered historic properties located within the study area. Based on conceptual design there are no acquisitions of properties associated with implementation of the corridor improvements.

Impacts to Section 4(f) resources must be avoided if possible. If avoidance is not feasible or prudent, then all possible planning to minimize harm to resources will be included in the EIS and PE portion of the project.
Figure 6-15
Community Issues
Chapter 7

OUTSTANDING ISSUES AND NEXT STEPS

The next step in project development would usually be to begin Preliminary Engineering (PE) and prepare an Environmental Impact Statement (EIS). The National Environmental Policy Act (NEPA) requires that environmental clearances be obtained whenever federal funds are used for major transportation investments. Preparation of an EIS will enhance the potential pool of funds for construction of the LPA and also satisfy the requirements of the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA). The Preliminary Engineering activities will refine the cost estimates and provide more detailed design plans for the transit and roadway elements as well as the stations and park-n-Rides. The following issues will need to be addressed as part of the PE/EIS phase:

- Determination of which projects, such as planned interchange improvements, to include in the EIS assessment.

- The MIS identified conceptual station locations and a general station footprint. The EIS will need to evaluate specific BRT and rail station locations as well as provide the design details for platforms, parking, access and other station elements. These items will require significant input from the communities and public.

- Assessment of environmental impacts such as noise, vibration, wetland impacts, presence of hazardous materials, visual impacts, historic and archaeological resources, construction impacts and other community concerns. Additionally, cumulative impacts and environmental justice will need to be addressed.

- Identification of parking requirements at park-n-Rides, BRT and rail stations, including identification of areas where parking structures may be needed. This should also include the development of a parking management plan which outlines techniques and strategies to manage transit related parking demand.

- Continuation of discussions with the BNSF regarding acquisition/lease of track and ROW for Regional Rail service. Coordinate planned improvements to structures, including Utah Junction, to ensure that current and planned railroad improvements will accommodate passenger rail service in the future.

- Further development of the Bikeway option including alignment, connections, design standards, ROW impacts and costs.

- Update the travel forecasts and transportation impacts of the LPA with the DRCOG regional travel
demand model using 2025 land use forecast data.

- Evaluate the need for and feasibility of a connection between southbound I-25 and westbound US 36 lanes.

- Develop refined cost estimates for all elements of the LPA.

- Assess compatibility of technologies with the East Corridor from DUT to Denver International Airport.

- Confirm alignment options through the Central Platte Valley and at the Boulder Terminus near 30th and Pearl Streets.

- Prepare a financial analysis demonstrating financial capacity to build and operate the transit components (required as part of the FTA EIS process).

Figure 7-1 illustrates subsequent steps that are required prior to construction.
APPENDIX

PROJECT DOCUMENTS
Numerous documents were created throughout the study and provide more detailed information on a number of topics. Reports include:
- Compilation of US 36 MIS Conceptual Alternatives Workshop, August, 1998
- US 36 MIS initial Alternatives Screening Report, August 1998
- US 36 MIS Purpose & Need, September 1998
- Summary of US 36 MIS Focus Groups, February 1999
- US 36 MIS O&M Costs Results Report, August, 1999
- US 36 MIS Transit Operations for Initial Alternatives, Final Report, August 1999
- US 36 MIS Detailed Evaluation Report, September 1999
- Intelligent Transportation Strategies for US 36, November, 1999
- Existing Commuter Rail Systems, February 2000
- US 36 MIS Travel Demand Management Plan (TDM), February 2001
- US 36 MIS Corridor Transit Operations Report, April 2001
- Summary of US 36 MIS Public Involvement, April 2001
- US 36 MIS Analysis of Roadway Alternatives, June 2001

WORKSHOP & PRESENTATION SCHEDULE

Public Agencies
- Boulder City Council
- Boulder Elected Official and Staff
- Boulder League of Women Voters
- Broomfield Elected Officials and Staff
- CDOT Commission
- CDOT Intermodal Committee
- CDOT Region 6 Briefing
- DRCOG, Presentation to TAC
- DRCOG, Presentation to RPAC
- DRCOG, Presentation to Board
- Federal Agency Briefing
- Louisville City Council
- RTD Board Briefing
- Superior Town Staff
- Superior Town Council
- US 36 TMO
- Westminster Elected Officials and Staff
- Westminster Transportation Commission

Business Community
- Boulder Chamber of Commerce
- Denver Chamber of Commerce
- Martin Acres Neighborhood Association
- Plan Boulder
- Perl Mack Neighborhood Center
- Town and Golf Club
- Wright Kingdom Realtors

Special Interest Groups
The following groups met with the US 36 Study Team at least one time to discuss the project and "work" through solutions. Workshops which often had multiple participants are also noted.
- Bicycle Colorado
Boulder Economic Council
Boulder City Council Transportation Symposium
Boulder Commuter Rail Group
Boulder Economic Council
Boulder Leadership Forum
Boulder Tomorrow
Colorado Motor Carriers Association
MIS Coordinating Committee
RTD Coordination Meeting
Media Sub-Committee Meeting
Guidance Manual Subcommittee
Burlington Northern Santa Fe Railroad
Downtown Denver Access Sub-Committee
TSM Sub-Committee
Go Boulder
CBD Access and RR Data Needs Sub-Committee
Union Pacific Railroad
Colorado Motor Carriers Association
CDOT
Boulder County
Town of Superior
Westminster
Boulder County
Denver Regional Council of Governments

Workshops
- Conceptual Alternatives Development Workshop
- Environmental Screening Workshop
- MIS Freight Workshop
- CDOT Region 6 Cross-Section Workshop
- RTD Board workshop
- Hirailer Tour with Burlington Northern Santa Fe (2)
- TDM Workshops
- Federal Agency Briefing
- RTD Board Workshop
- RTD/ Glenn Scott Commuter Rail Workshop
- CDOT Workshop—Roadway Alternatives Cost
RESOLUTIONS & LETTERS OF ENDORSEMENT

RESOLUTIONS
✓ City of Broomfield
✓ Sierra Club, Rocky Mountain Chapter
✓ City of Westminster
✓ City of Arvada
✓ Colorado Department of Transportation

LETTERS OF ENDORSEMENT
✓ City of Louisville
✓ City of Boulder
✓ Adams County
✓ US 36 Transportation Management Organization
✓ CoPIRG
✓ League of Women Voters
✓ US 36 Mayor's and Commissioners Coalition
RESOLUTION NO. 2001-27

A RESOLUTION EXPRESSING SUPPORT FOR “OPTION A+” OF THE US 36 MAJOR INVESTMENT STUDY

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF BROOKFIELD, COLORADO

Section 1. The mayor and the city council are in full support of “Option A+” as recommended by the Policy Committee of the US 36 MIS.

Section 2. The mayor and the city council directs the city manager to prepare a letter for signature of the mayor and the city council in support of “Option A+”, and send this letter to the US 36 Policy Advisory Committee, the RTD Board, and the CDOT Commission.

Section 3. This resolution is effective upon its approval by the City Council.

APPROVED on February 13, 2001.

CITY OF BROOKFIELD, COLORADO

________________________________________
Mayor

ATTEST:

________________________________________
City Clerk

APPROVED AT TO FORM:

[Signature]
City Attorney
Sierra Club, Rocky Mountain Chapter
1410 Grant Street, Suite 200-B
Denver Colorado 80203
January 17, 2001

The Honorable Doug Aden, Chairman,
Members of the Colorado Department of Transportation Commission
Mr. Tom Norton, Executive Director, Colorado Department of Transportation

It is with pleasure that I submit for your consideration, and for the consideration of other agencies involved in the decision-making processes regarding the US 36 Corridor transportation planning, the attached Resolution from three of the Groups of the Rocky Mountain Chapter, Sierra Club, pertaining to the US 36 Corridor and the “Locally-Preferred Alternative” for the US 36 Corridor.

Respectfully submitted,

[Signature]
Albert G. Melcher
Transportation Chairman, Rocky Mountain Chapter, Sierra Club,
RESOLUTION ON THE "LOCALLY-PREFERRED ALTERNATIVE" FOR THE US 36 CORRIDOR

Approved by: Indian Peaks Group (Boulder), Rachel Carson Group (Northwest Metro Denver suburbs) and Enos Mills Group (Denver), of the Rocky Mountain Chapter, Sierra Club

WHEREAS, the many proposals for traffic capacity improvements for the US 36 corridor between Boulder and I-25 have been narrowed down to a "Locally Preferred Alternative" that includes:
1) two additional general purpose highway lanes,
2) bus rapid transit lanes and associated passenger bridges and loading/unloading facilities,
3) a basic, one-track commuter rail system along the existing Burlington Northern freight line,
4) the possibility of high occupancy toll (HOT) lanes in conjunction with the bus rapid transit, and
5) extended acceleration/deceleration lanes between some intersections,
and;
WHEREAS, the Sierra Club has strongly supported mass transit solutions to highway congestion problems, and;
WHEREAS, given the lack of immediate funding to cover ANY major improvement in US 36, the cost-effectiveness of any proposal is paramount,

THEREFORE, the Indian Peaks Group advocates to all government entities (and other entities within the Sierra Club that may have a say in the Club's policy) that may influence the final corridor configuration that the "Locally Preferred Alternative" be generally supported, with the following exceptions:

1) the extra general purpose lanes should be eliminated as a way to increase the cost-effectiveness of US 36 improvements;
2) possible HOT lanes should be eliminated since they might interfere with the proposed bus rapid transit system if used on the same lanes;
3) the alternative should include an off-highway bike lane, at least from Boulder to Wadsworth;
4) the commuter rail proposal should be upgraded to a dual-track system allowing an increase in passenger traffic without competing with the present freight rail function, and;
5) all aspects of the project must be built concurrently, so that automobile-oriented parts of the project do not dominate over time.

Submitted by: Albert G. Melcher, Transportation Chairman, Rocky Mountain Chapter, Sierra Club,
January 17, 2001
RESOLUTION

RESOLUTION NO. 10

SERIES OF 2001

INTRODUCED BY COUNCILLORS

Kaufman - Merkel

US 36 MAJOR INVESTMENT STUDY "LOCALLY PREFERRED ALTERNATIVE"

WHEREAS, US 36 is a vital transportation corridor within the City of Westminster; and

WHEREAS, the Westminster City Council is concerned with the efficient movement of people and goods on US 36, now and in the future; and

WHEREAS, the City of Westminster has participated in the preparation of the Regional Transportation District (RTD)-sponsored Major Investment Study (MIS) for the US 36 corridor with all appropriate governmental entities and agencies; and

WHEREAS, the Management Committee for the US 36 MIS, which included representation from the City of Westminster, recently reached a unanimous agreement on the recommendation of a "Locally Preferred Alternative" for the implementation of future transportation improvements to the corridor; and

WHEREAS, that recommended "Locally Preferred Alternative" includes components of regional rail service, roadway improvements, high occupancy lanes, bus rapid transit stations and bikeway improvements along the US 36 corridor.

NOW, THEREFORE, the Westminster City Council hereby resolves that the City of Westminster endorses the "Locally Preferred Alternative" for the US 36 Major Investment Study that has been recommended for approval by the Management Committee of that study group and urges all appropriate governing bodies, including the Colorado Department of Transportation Commission and the Regional Transportation District Board of Directors, to approve this plan.

Passed and adopted this 12th day of February, 2001.

ATTEST:

[Signature]
City Clerk

[Signature]
Mayor
RESOLUTION NO. R 01-012

A RESOLUTION SUPPORTING RTD'S MAJOR INVESTMENT STUDY
FOR THE U.S. 36 CORRIDOR

WHEREAS, traffic congestion in the Denver metropolitan area is increasing, including along the
U.S. 36 corridor, and accommodations for alternate modes of travel are necessary to relieve
congestion and minimize pollution; and

WHEREAS, RTD has authored a major investment study for the U.S. 36 corridor which includes
recommendations for road widening, bus rapid transit, regional rail and off-road bike lanes; and

WHEREAS, this major investment study is indicative of the transportation needs throughout the
Denver metropolitan area; and

WHEREAS, Arvada adjoins the U.S. 36 corridor at our northeastern border, and a significant portion
of our resident travel within the corridor each day; and

WHEREAS, the communities along the U.S. Hwy 36 corridor have identified the locally preferred
alternative within the major investment study; and

WHEREAS, the Arvada City Council wishes to establish its position relative to this major
investment study.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL FOR THE CITY OF
ARVADA, COLORADO.

Section 1. The Arvada City Council supports the draft locally preferred alternative (LPA) package
identified within major investment study, and urges that implementation of this solution be
considered within the context of transportation needs region-wide.

Section 2. Arvada strongly requests that the draft LPA be modified to include a rail station in the
vicinity of 88th & Sheridan to provide service for more than 25,000 residents in close proximity to
this location.

Section 3. Arvada encourages flexibility in implementing the rail component in order to maximize
efficiencies with the other rail corridors, while maintaining economic feasibility.

Section 4. Arvada requests note of, and will work energetically to assure that appropriate attention is
paid to noise and visual impact mitigation of the heavy, diesel-powered rail cars near residential
neighborhoods. This is particularly important in those areas where the right of way abuts the lot
lines of private homes such as in the Lake Arbor and Far Horizon subdivisions.
APPROVED AND ADOPTED this 22nd day of January, 2001.

[Signature]
Ken Fellman, Mayor

ATTEST:
[Signature]
Deputy City Clerk

[Signature]
City Attorney

APPROVED AS TO FORM.
RESOLUTION TO ACCEPT THE LOCALLY PREFERRED ALTERNATIVES FOR THE REGIONAL TRANSPORTATION DISTRICT'S US 36, I-225, AND I-25 NORTH METRO MAJOR INVESTMENT STUDIES

WHEREAS, the Colorado Transportation Commission (the Commission) has statutory authority pursuant to §43-1-106, C.R.S. to approve, accept, and amend various planning documents resulting from Section 135 Title 23 of the U.S.C., and §43-1-1101 through 1105 C.R.S.; and

WHEREAS, the major investment studies (MIS) prepared by the Regional Transportation District (RTD) for US 36, I-225 and the I-25 North Metro corridors are considered part of the state and federally required metropolitan planning organization (MPO) and statewide transportation planning processes; and

WHEREAS, the Commission has interest in state highways within these study corridors regarding the recommended improvements and effective integration with other solutions recommended improvements and effective integration with other modal solutions recommended in these corridors; and

WHEREAS, the MIS grew out of the public demand to influence the decisions relating to the need for the project and long term vision for the corridor in response to the substantial growth experienced in this corridor over the last few years; and

WHEREAS, RTD presented their methodology and locally preferred alternatives for the MISs on I-225, U.S. 36, and the North Metro corridors to the Intermodal Committee; and

WHEREAS, the Commission believes the impacts to the regional transportation system require further technical analysis of the locally preferred alternatives, to assure adequate operation of the State Highway network; and

WHEREAS, the Commission agrees that these impacts can be addressed as part of the National Environmental Policy Act (NEPA) analysis for these corridors and do not necessarily require a substantial change in the identified locally preferred alternatives.

NOW THEREFORE BE IT RESOLVED, the Commission believes the locally preferred alternatives identified for the U.S. 36, I-225 and I-25 North Metro corridor provide a basis for project specific NEPA evaluation in these corridors.
FURTHER, the Commission supports working in partnership with RTD, specifically affected local governments, and DRCOG to conduct additional system analysis, establish priorities (within and among corridors), and explore potential funding options as part of the Regional Transportation Planning process.

FINALLY, the Commission, in adopting this resolution, neither endorses nor limits the range of alternatives to be considered under NEPA for these corridors and therefore this action should not be considered a predetermination of a NEPA decision.
COUNCIL COMMUNICATION

TO: MAYOR AND CITY COUNCIL
FROM: WILLIAM A. SIMMONS
      CITY ADMINISTRATOR
DATE: December 19, 2000
SUBJECT: Adoption of the US 36 Major Investment Study (MIS) Locally Preferred Alternative (LPA)
ORIGINATING DEPARTMENT: Administration

SUMMARY:

A Major Investment Study is a process to identify transportation problems and needs in a major transportation corridor and to identify and evaluate potential alternative solutions to overcoming those problems or meeting those needs. The MIS uses public input to identify the problems, needs and potential solutions.

The US 36 MIS process has been ongoing for approximately 3 years. Two advisory committees, policy and technical, were established to provide overall guidance for the US 36 MIS. The policy committee is primarily comprised of elected or appointed officials from municipalities and agencies within the corridor, while the technical committee includes staff members from the same organizations. In phase 1 of the US 36 MIS, a wide range of travel modes and alignments were developed to address the long term transportation needs in this corridor. After much discussion, the individual alternatives were refined and narrowed down to four “packages” of alternatives. The packages of improvements were multi-modal, combining roadway, bus and rail options into comprehensive transportation solutions.

Phase 2 of the US 36 MIS explored the four packages of alternatives. The packages of improvements underwent further evaluation in mid 2000. A consortium of mayors, along with City Council members, the Transportation Department and Regional Transportation District leaders selected a locally preferred alternative at the November 30, 2000 US 36 MIS meeting. Please find attached Option A+, the Draft Locally Preferred Alternative. The proposed package of improvements is considered a draft as it has yet to go to the RTD Board for approval.

Highlights of the package include:

- 15 miles of new Bus/HOV lanes in median of US 36
- Adding five bus rapid transit stations along the route and four bus "Superstops."
- Starting a commuter-rail system on one new track and one track shared with BNSF, the rail line would have five stations between Denver and Boulder, to include Louisville.
- Building one new US 36 traffic lane in each direction from Lowell Boulevard to 96th Street
- Adding acceleration and deceleration eastbound and westbound between McCaslin and Sheridan
- Building a bikeway from Boulder to Westminster.

SUBJECT
Adoption of the US 36 Major Investment Study (MIS) Locally Preferred Alternative (LPA)

AGENDA ITEM
7G
SUBJECT: Adoption of the US 36 Major Investment Study (MIS) Locally Preferred Alternative (LPA)

DATE: December 19, 2000

RECOMMENDATION:

Approve the adoption of the US 36 MIS Locally Preferred Alternative.
CITY OF BOULDER
CITY COUNCIL AGENDA ITEM

MEETING DATE: December 19, 2000
Agenda Item Preparation Date: December 7, 2000


REQUESTING DEPARTMENT:
City Manager’s Office
Ron Sechrist, City Manager
Chris Andersen, Deputy City Manager for Environmental Services
Amy Mueller, Intergovernmental Affairs Coordinator

Public Works Department
Joseph Perone, Transportation Director (Presenter)
Mike Gardner-Sweeney, Transportation Planning and Operations Coordinator
Tracy Winfree, GO Boulder Manager
Micki Kaplan, Transportation Planner

FISCAL IMPACT: The packages for consideration range from approximately $960 Million for Option A Plus to over $1.2 Billion for Option B. Determining financing for the options will be in future stages of the US 36 process, once the consensus on the long-term solution package is finalized.

PURPOSE:
The purpose of this City Council item is to further consider and take action to support a final “locally preferred alternative” for the US 36 Major Investment Study (MIS). The City of Boulder’s position will be expressed along with other corridor jurisdictions at the next Policy Advisory Committee (PAC) Meeting in January or February 2001.

BACKGROUND:
The US 36 MIS has been underway for almost three years. For the duration there has been a Technical Advisory Committee (TAC) and a Policy Advisory Committee (PAC) which have helped guide the analysis and development of preliminary and final alternatives. The City of Boulder has representation on each of the advisory committees.

Council has been briefed on the US 36 MIS process several times over the last year. Most recently, a public open house was held and Council and the Transportation Advisory Board had a joint meeting on November 21 to discuss the analyses of the four final alternatives. At the same time, Council and TAB discussed a promising consensus developing within the US 36 corridor.
that would create a package of transportation solutions that would work for each community and for the corridor.

Leading up to the technical analysis and the growing political agreement, the Transportation Subcommittee of the City Council and the Mayor have been hard at work reviewing information and talking with neighboring communities on US 36. Attachment A contains the comprehensive approach to working on the US 36 effort that the Transportation Subcommittee previously developed and forwarded to City Council and TAB. The Subcommittee has consistently pursued this outlined approach.

On November 21, Council and TAB reviewed and discussed four options requested previously by the PAC/TAC to have a deeper level of analysis as compared to preliminary alternatives. The Colorado Department of Transportation (CDOT) had requested, with the support of some corridor constituents, that a general-purpose lane expansion be included in the additional analyses. City Council and TAB also reviewed these general-purpose lane analyses in November. Prior to the Council/TAB joint meeting, the PAC/TAC had requested that two of the four final options be modified to include some general-purpose lane expansion, but not for the full length of the corridor. While the work on developing these two final options was underway, the consultant’s product was not complete and available for Council / TAB review in November. These two options are known as Option A and Option B.

PAC Recommendation
At the last PAC meeting on November 30, Option A and Option B were reviewed and discussed including a recent addition of a bikeway on or parallel to US36. At the meeting, consensus was reached to more fully develop one preferred alternative: Option A Plus. Option A Plus and Option B are included in Council’s packet for its review, consideration, and position on the “locally preferred alternative” for the US 36 MIS. Please refer to Attachment B for more information on Option A Plus and Option B.

Decision Process and Timeline
Once Council establishes its “locally preferred alternative”, it will be shared with the PAC at its next meeting, along with input from other jurisdictions, before the PAC will make its final recommendation. The PAC’s final recommendation will go before the RTD Board for its final vote on the “locally preferred alternative” in January or February. Following RTD Board approval, the locally preferred alternative will go to the Transportation Commission and the Denver Regional Council of Governments (DRCOG) Board for approval. The DRCOG Board action will include amending the 2025 Regional Transportation Plan (RTP) to include the US 36-transportation package. In order for the final, multi-modal transportation package to be supported throughout the approval process it is important that strong consensus within the corridor continue. See Attachment C for an illustration of the decision making process and timeline.

When the multi-modal package is formally included in the amended RTP, then work can begin on the Environmental Impact Statement (EIS), Finding of No Significant Impact (FONSI), and the all-important financing approaches. If the project is not included in the RTP, then these next
crucial steps cannot occur.

ANALYSIS:
The Options
Options A Plus and B are two multi-modal packages that would be applied to the US 36 long-term transportation solution. Please refer to Attachment B for the maps and components of Options A Plus and B. Option A Plus consists of a package of regional rail service, bus rapid transit (BRT)/high occupancy vehicle (HOV) lanes, roadway improvements, and a bikeway. Option A Plus costs approximately $960 Million, with close to $600 Million being new to the Regional Transportation Plan (RTP). Option B consists of a package of inter-urban rail service, HOV lanes, roadway improvements, and a bikeway. Option B costs approximately $1.2 Billion, with close to $850 Million being new to the RTP.

Travel times on the rail between the two options is virtually identical at 46 and 47 minutes. The frequencies of the rail service in Option A Plus are every 15 minutes in the peak hour and every 30 minutes in the non-peak. Option B rail frequencies are every 7½ minutes in the peak and every 15 minutes in the off-peak. Travel time for the non-stop bus service is the same, but the "all-stop" bus travel time along US 36 has a 10-minute improvement in Option A Plus over Option B. Option A Plus bus service frequencies would be every 3 to 6 minutes during peak hours, and every 5 to 8 minutes during non-peak hours. Option B bus service frequencies include significantly less bus service with buses operating 8 to 14 minutes during peak hour and every 13 to 22 minutes during non-peak hours.

Both options include six total general-purpose lanes, where there are currently four, from 96th Street to I-25. There is strong support in the southern section of the corridor for the general-purpose lane expansion. Other roadway improvements include acceleration and deceleration lanes, a climbing lane on Davidson Mesa, and ramp metering and ramp improvements.

Both options also include a bikeway along US 36 from Table Mesa to Sheridan. While this element came up later in the process there seems to be little opposition to the idea. The cost of the bikeway relative to other corridor components is relatively low.

The Differences
The major differences between Options A Plus and B are based on the differing levels of rail and bus/BRT service, cost, and political support. Option B has a higher level of rail service and a lower level of bus service and no bus rapid transit (BRT) stations. The new costs to the RTP for Option B are approximately 35% higher than Option A Plus, while the ridership increase over Option A Plus is 20% higher. As noted earlier Option A Plus all-stop bus service has a 10-minute improvement over Option B.

Importantly, there is strong consensus in the corridor for both BRT and a rail transit solution to work together. Since the rail serves a different alignment than the BRT/ HOV lanes, there are two different, complementary transit markets that are served well by the two forms of transit. The rail component is also a step up from the original Option A, which is why it is referred to as Option A Plus. There is clear support within the corridor for a package that contains BRT/HOV,
regional rail and the general-purpose lanes as far north as 96th Street. There is also support for the bikeway. Removing BRT, and/or overbuilding the rail component, as some perceive, would substantially weaken or break down the consensus that has been built in the corridor.

Boulder Transportation Policies and Conditions
The Transportation Master Plan (TMP) recognizes the importance of regional transit solutions and regional cooperation in order to solve our long-term transportation problems. Travel projections reflect that the most travel growth impacting Boulder is and will occur regionally. While it is important that we have an enhanced local transportation system, we need to provide for efficient travel in and out of Boulder. The TMP’s focus for regional travel is for enhanced transit service on US 36 and other regional corridors connecting to the northeast and east. Bringing people into town on high quality transit and connecting them to a local-transit grid with pedestrian and bicycle connections is our foundational approach to regional travel. The TMP establishes a goal of no long-term growth in traffic levels, emphasizing the importance of the regional transit connection without regional roadway expansion to Boulder.

Given current Transportation policy and regional travel trends Option A Plus would create a comprehensive transit solution to and from Boulder on US 36, without bringing the general-purpose lane expansion to Boulder. The regional bikeway is a bonus to the multi-modal package. The TMP also would support Option B as a transit solution, although staff believes that the regional transit element will function better with the combination of BRT and the new rail service at the Option A Plus levels.

STAFF RECOMMENDATION:
Staff recommends that City Council support Option A Plus, which has a corridor consensus rallying around it and provides significant enhancements for regional transit service that will greatly benefit Boulder and the entire corridor.

TRANSPORTATION ADVISORY BOARD RECOMMENDATION:
At the December 11 TAB meeting, TAB conducted a public hearing on the US 36 MIS. Approximately 19 members of the public attended the meeting and seven people provided testimony at the hearing. The vast majority of the public testified in support of a multi-modal alternative. It should be noted that there was significant public support for including a bikeway. TAB unanimously voted to support Option A Plus with the following additional input for Council to share with the PAC:

- To ensure that BRT service has provisions for connectivity with bicycle connections, local transit service and transit-oriented development around the stations;
- That the recommendation should include a provision for starting rail service on existing track before any lane expansions;
- That funding for a bikeway is important to include in the project, but that they would support alternatives for other locations of a bikeway paralleling or nearby US36;
- To ensure that the technology used does not obviate interlining in the future;
- To incorporate the integration of aesthetic quality in the corridor;
- To support TDM principles in management and design of the corridor.
COUNCIL ACTION REQUESTED:
City Council is requested to consider supporting Option A Plus as the locally preferred alternative for the US 36 MIS.

Attachments:
A: Transportation Subcommittee Approach to US 36 MIS
B: Option A Plus and Option B
C: Decision-Making Process and Timeline
ATTACHMENT A

Transportation Subcommittee Approach to US 36 MIS Effort
Excerpted from 11/21 Council/TAB Joint Meeting Memo

Comprehensive Approach
The Transportation Subcommittee recognizes that political, technical and financial efforts are required to successfully implement these projects. Boulder has one vote on the PAC, along with the other jurisdictions in the corridor. The PAC is advisory to RTD, who will ultimately select the preferred option for inclusion in the Regional Transportation Plan (RTP). Selecting the preferred MIS alternative is one of the early steps in a long continuum, with several future opportunities for participation and public input before the project can ultimately be funded and built.

The following chart illustrates the comprehensive approach required for political, technical and financial efforts on each of the two projects identified.

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<th>Project</th>
<th>Political</th>
<th>Technical</th>
<th>Financial</th>
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Political:
The political decision-making process and timing for the US 36 MIS is attached (Attachment A and B). Please note that at the same time that we are developing our community’s official position on the US 36 MIS, we also are building coalitions with others in the corridor to create a unified voice. Looking at the example of the Southeast I-25 transportation improvements project, it will be important for the corridor to maintain its unified voice in order to maintain the integrity of the corridor final solution and to obtain federal funding. It will be important that the unique desires and qualities of the US 36 corridor be carried throughout the full process.
Following support of the RTD Board, there will be involvement from the Colorado Department of Transportation (CDOT) and the Denver Regional Council of Governments (DRCOG).
Decision-Making and Coalition Building:
Given the tight schedule regarding the release of information and the need for providing timely input to the overall US 36 MIS process, the Transportation Subcommittee believed it was necessary to schedule a joint meeting with TAB and Council in November 2000. Following the joint meeting, there will be a public hearing held at TAB with results forwarded to the City Council. The City Council is scheduled to establish its final position on the "locally preferred alternative" on December 19, 2000. Refer to attachment B for a timeline of the US 36 MIS Decision-Making Process.

The Mayor and the Transportation Subcommittee also have been invited to a set of meetings in the corridor to help establish a consensus. We will need to assure that as the consensus is solidified and our local position is established that there is room for the consensus to continue now and over the long-term.

Technical:
The technical process includes an analysis from Carter-Burgess, the US 36 MIS consultant, (see Attachment C). Jennifer Heisler, from Carter-Burgess will be present at the meeting to provide an overview of the technical information provided to date and to respond to questions. In addition, staff members have participated in and monitored the technical information ensuring Boulder's interests are represented.

Financial:
Subcommittee members have emphasized that all of the communities need to agree on the best package of solutions and will ultimately need to determine how to fund them. The more likely financing sources are any one or combination of:

- US 36 corridor as a whole,
- Denver/Boulder region,
- State of Colorado,
- And/or federal funding.

Currently, there is no funding for the US 36 MIS comprehensive transportation solution. The corridor needs to rally to agree on and pursue a financing package. For the solution and funding to hold together the corridor needs to maintain a unified voice over time.
MEMORANDUM

TO: Jennifer Heisler, Carter & Burgess
    Dave Shelley, RTD

CC: Nicki Stoner, Planning Manager
    Rob Coney, Director

FROM: Aaron B. Willis, Transportation Coordinator

SUBJECT: US36 LRT Stations in Adams County

DATE: January 23, 2001

After reviewing the US36, Major Investment Study draft locally preferred alternative, the combination of bus rapid transit and regional rail service will enhance regional mobility and is an appropriate multi-modal solution for the corridor.

In earlier draft alternatives, a regional rail station was shown at approximately 72nd Avenue and Lowell Street along the BNSF rail line. The current draft regional rail proposal does not show this station. Adams County staff considers a possible regional rail station within this area to be a valuable community asset, and could possibly provide the County with a major redevelopment opportunity.

Due to the close proximity of the US36 M&I LPA, and the proposed stations recommended from the I-70 West M&I LPA, Adams County is presented with a unique opportunity by proposing a rail station that could possibly service both corridors. This future station would take advantage of the I-70 LRT light rail alternative as well as the commuter rail service proposed within the US36 corridor.

The Adams County Planning department would strongly recommend the consideration of a rail station that could serve both the US36 and I-70 West regional corridors. Please consider this request at the upcoming February 21, 2001 joint TAC/PAC Meeting. Attached is a photo of the current rail lines being considered from both major investment studies within unincorporated Adams County.
The I-70 West Major Investment Study has proposed light rail transit using the Gold Line. A total of eight new stations are anticipated for Phase I of the locally preferred alternative including Downtown Union Terminal, West 38th Avenue, Pecos Street, Federal Boulevard, Sheridan Boulevard, Olde Town Arvada, Ridge home Arvada, and Ward Road.
February 15, 2001

Mr. Dan Stuart
Chairman, Transportation Commission of Colorado
4201 East Arkansas Avenue, Room 270
Denver, Colorado 80222

Dear Chairman Stuart:

I am writing on behalf of the U.S. 36 Transportation Management Organization to express our support for the Locally Preferred Alternative of the U.S. 36 Major Investment Study (MIS). We are a public-private partnership created in 1998 to address traffic congestion and air quality problems in the U.S. 36 Corridor. Our members include the local governments and the major private businesses located in proximity to the Boulder/Denver Turnpike:

Boulder County
City of Boulder
City of Broomfield
City of Louisville
City of Westminster
Town of Superior

Broomfield Economic Development Corporation

Ball Corporation
Catellus Commercial Group
ccgenesiis/gaiam
Centura Avista Adventist Hospital
Church Ranch Corporate Center
Xcel Energy
Earthcab
Flatiron Crossing
Geneva Pharmaceuticals
Hunter Douglas Inc., Window Fashions Division
Level (3)
Omni Interlocken Resort
Storage Technology Corporation
Sun Microsystems
Wells Fargo Bank
Westfield Development Company, Inc.
Yellow Transportation

The TMO has been represented on the Technical Committee for the MIS since its inception and worked to build common ground for a Locally Preferred Alternative. We are fully in support of the package recommended by the Policy Committee of the MIS. The multi-modal components will support conventional as well as traditional ways of travel. We urge your support for the US 36 MIS Locally Preferred Alternative.

Sincerely,

Debra A. Baskett
Executive Director

Cc: Members of the Transportation Commission of Colorado
    Members of the U.S. 36 TMO
    Tom Norton, CDOT Executive Director
January 24, 2001

Jennifer Heisler  
Carter and Burgess

Dave Shelley  
RTD

Dear Ms. Heisler and Mr. Shelley:

On behalf of the Colorado Public Interest Research Group (CoPIRG), I would like to submit a few comments on the Draft US 36 Locally Preferred Alternative.

BRT/HOV Lanes:  
We support expanded bus service in the US 36 corridor to reduce the number of single occupant vehicles on the road and to reduce VMTs. Coupled with the new Federal diesel emissions standards this component will significantly reduce air pollution in the corridor, a key concern of CoPIRG.

Regional Rail:  
CoPIRG would like to see a rapid implementation of a low-cost start up rail service before other construction begins in the corridor. This will serve to reduce the impact of construction on those travelling US 36 and will build momentum and support among new rail riders for expanded service in the area. We would like to see a larger rail component in the package to fully realize the potential of the technology, and less emphasis on increased general purpose lane expansion. Rail configurations should include bicycle carrying capacity so that folks could continue their trip from rail termini on bikes.
Roadway Improvements:
CoPIRG does not support highway expansion beyond climbing lanes and accel/decel lanes, that do not directly support the functionality of alternative modes of transportation. As has been demonstrated time and again throughout the country, we can't continue to widen highways and expect it to solve our congestion problems. The lanes fill up with induced traffic in a few years and we are right back where we started, only poorer and breathing dirtier air. The solution to traffic lies in real, fully implemented options to automobile travel, tele-work and intelligent trip planning, not more pavement. We would also like to see the cost estimates of this option include the external costs of driving, including health effects, air pollution, local road maintenance, police service, noise, and gas subsidies.

Bikeway
We fully support the inclusion of the bikeway in the LPA. The patway would provide thousands of employees in the US 36 corridor the opportunity to choose a clean, healthy and enjoyable mode of transportation to and from work each day. By cycling to work just two days a week, commuters will reduce their carbon dioxide emissions by 1,590 pounds a year. The Bikeway enjoys tremendous support among bicycle commuters as evidenced by the massive attendance at the Jeffco Airport meeting and the barrage of letters and e-mails in support of the plan. If you build it, they will come.

We appreciate your hard work on this project and understand your difficult task of balancing the desires of all the parties involved. We believe our opinions represent the ideal mix of real solutions to the corridor's transportation needs for everyone.

Sincerely,

Jody Flemming
Transportation Advocate, CoPIRG
January 16, 2001

The Honorable Governor Bill Owens
Colorado State Capitol
200 East Colfax
Denver CO 80203-1784

Re: U.S. Highway 36 Corridor

Dear Governor Owens:

As chief elected officials along the US 36 Corridor, we are asking for your assistance and leadership on behalf of the State of Colorado. Our cities of Boulder, Broomfield, Louisville, Superior, and Westminster as well as Boulder County have recently reached an unprecedented agreement on a multi-modal plan for the US 36 Corridor. We are told that not only is there no money available from the state but that not even a long range plan exists to meet our needs. This is of grave concern to us. We all believe it is time for the State, as well as the Regional Transportation District, to begin planning for the multi-modal needs of US 36.

We are asking you to use your leadership to fund the entire package which includes rail, bus rapid transit, roadway, and bikeway improvements. We understand that the state does not currently have a plan, but that is not an excuse. This corridor is clearly one of the most critical in the state, and will soon approach - and surpass - the level of problems that the Southeast Corridor suffers. We witnessed your leadership to ensure that multi-modal improvements were funded on the Southeast Corridor and are now asking for your help on the US 36 multi-modal package.

The improvement of US 36 is a state responsibility. The immediate need for improvement is unquestionable. To have the issue dismissed because no plan currently exists for funding is not acceptable. We believe it is time for the Colorado Department of Transportation to prepare a timetable and examine the strategies for funding roadway and transit improvements in the corridor. Although regional funding options may ultimately be a part of the solution, it is time for the state to assume a leadership role in funding transportation improvements on US 36.

Together, we look forward to our scheduled meeting on February 8, 2001, in order that we may communicate our concerns directly and discuss our next steps. This is the first time in the last 30 years that our communities have agreed on a plan for US 38. Our agreement is a measure of solidarity and we are ready to move forward.

Respectfully,

William R. Torr, Mayor
City of Boulder

Tom Davidson, Mayor
City of Louisville

Nancy Hess, Mayor
City of Westminster

William M. Berens, Mayor
City of Broomfield

Susan Spence, Mayor
Town of Superior

Jena Mendez, Chair
Boulder County Board of Commissioners
Statement on the US 36 MIS Preferred Option

The League of Women Voters of the Boulder Valley believes that the final MIS locally preferred alternative for the US 36 corridor should be multi-modal, including rail, bus and bicycle.

Commuter rail should be one part of the final preferred option. "Starter" rail that would use the single existing Burlington Northern track and provide thirty-minute peak and sixty-minute off-peak service is all that is needed until rider ship proves that additional rail service is warranted. Most established commuter rail lines across the country provide only thirty, or at most, twenty-minute peak hour service. Money does not need to be spent on a second track until rider ship on the line has been proven. It is more important to get a rail service up and running as quickly as possible to help relieve the congestion in the corridor than to provide more frequent service.

Commuter rail is not bus. Commuter rail is meant to complement bus service in the corridor, not compete with it. If necessary, rider ship can be expanded easily and less expensively by adding cars to a train rather than increasing the frequency of service. Most importantly, commuter rail service should be started quickly so that commuters in the US36 corridor have an option while the highway is being improved. Rail service could be operating within 18-24 months after a contract is signed with the BNSF. Funding could come from federal CMAQ (Construction Mitigation Air Quality) funds, from the $67 million earmarked by DRCOG for implementation of the locally preferred alternative for the US36 Corridor, as well as a RTD ballot issue in the near future.

The League supports the Bus Rapid Transit (BRT) concept for bus service in the corridor because it will decrease bus travel time and allow for reliable travel schedules. In addition, we would like to see transit oriented development at both the BRT and rail stations.
Feeder or circulator buses should be an integral part of both the BRT and rail systems. Where possible, the BRT overpasses should be designed to allow buses to travel across them to pick up and discharge passengers to allow convenient transfers and encourage local transit rider ship.

The League supports a bikeway in the corridor, but we would like to see options other than the path immediately adjacent to the highway considered. We understand that the US36 TMO is conducting a study of existing bike paths and their possible connectivity. We support this approach.

If HOT lanes are considered as a source of revenue in the corridor, we would like to see the money collected used for all modes of transit in the corridor, not just the highway improvements.

Thank you for your consideration of our views.

Anne S. Norwood, President
League of Women Voters of Boulder Valley

Sue Anderson, Chair
Transportation Committee, LWVBV