

INTRODUCTION

The Federal Highway Administration (FHWA) and Federal Transit Administration (FTA), in cooperation with the Colorado Department of Transportation (CDOT) and the Regional Transportation District (RTD), have jointly prepared this Final Environmental Impact Statement (FEIS) to identify and evaluate impacts of multi-modal transportation improvements in the United States Highway 36 (US 36) corridor, an existing highway alignment between Interstate 25 (I-25) in Adams County and Foothills Parkway/Table Mesa Drive in Boulder (a distance of approximately 18 miles). The U.S. Army Corps of Engineers (USACE) is a cooperating agency.

This executive summary highlights the packages and environmental issues described in the FEIS. This summary provides a general description of:

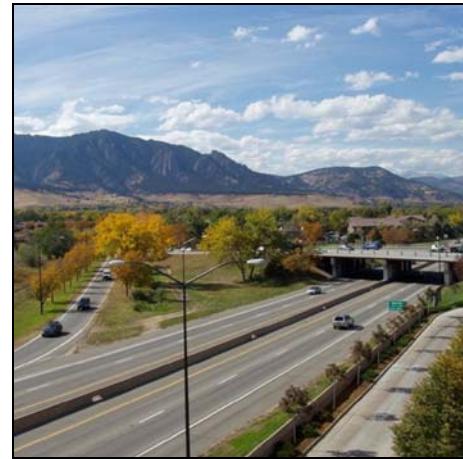
- The National Environmental Policy Act of 1969 (NEPA) process and project history.
- Alternative evaluation process.
- Package development, including transit stations and interchange improvements.
- The Preferred Alternative.
- Comparisons of the environmental impacts of the packages.
- How unresolved issues were addressed.
- Other federal actions required.
- Project phasing.

Several technical terms are used throughout this Executive Summary and the FEIS. A brief description of these terms is included at the end of this Executive Summary and in Chapter 2, Alternatives Considered, of the FEIS.

PROJECT DESCRIPTION

The US 36 corridor considered in this study is an existing highway alignment between I-25 in Adams County and Foothills Parkway/Table Mesa Drive in Boulder, a distance of approximately 18 miles (see Figure ES-1, Location of the US 36 Corridor in Colorado, and Figure ES-2, US 36 Corridor Project Area).

The corridor consists of a number of communities, including the City and County of Denver, the City of Westminster, the City and County of Broomfield, the City of Louisville, the Town of Superior, the City of Boulder, and portions of Jefferson, Boulder, and unincorporated Adams counties. The 18-mile project area is quite large. As a result, the overall corridor area was broken into smaller geographic pieces that are referred to as segments.



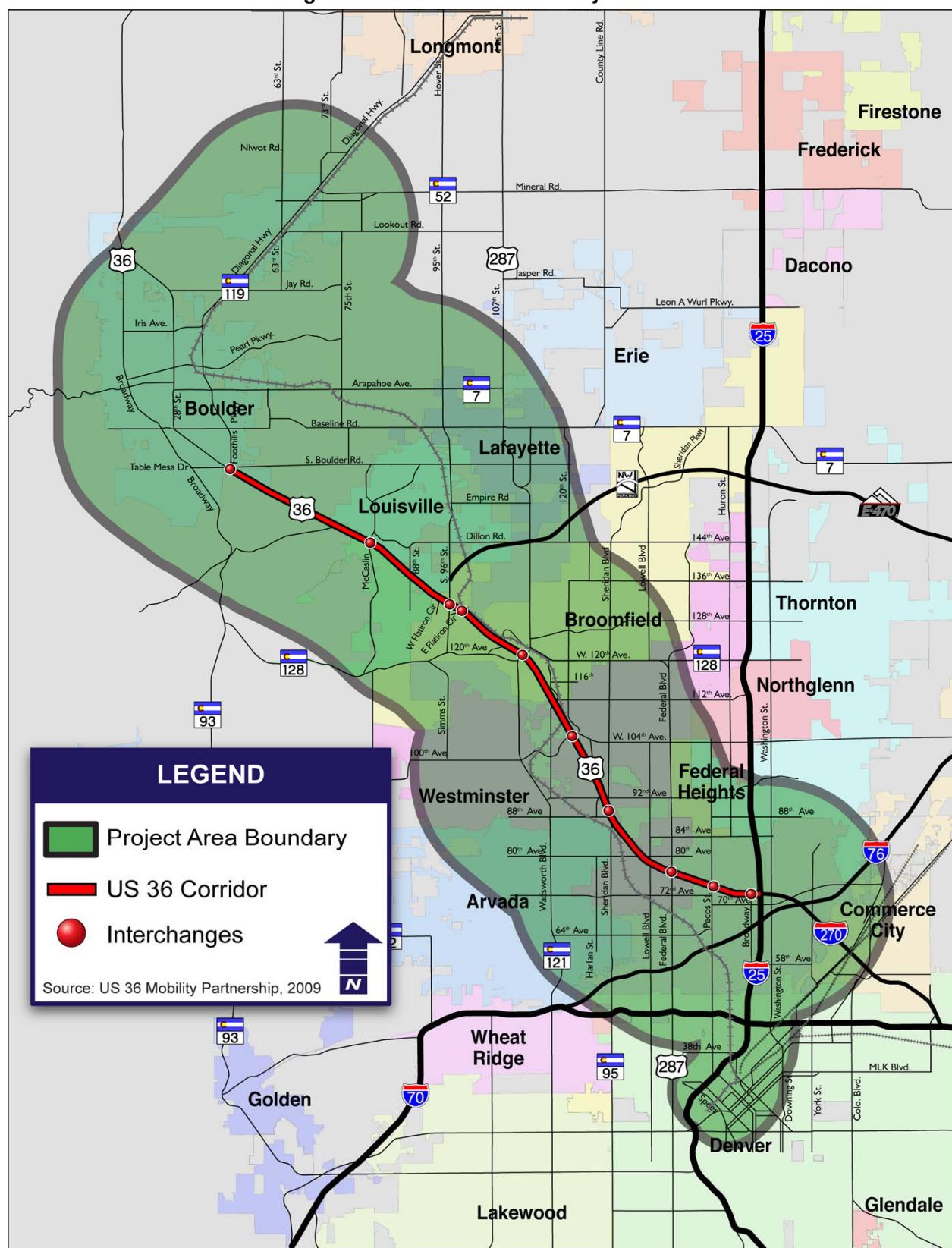
US 36

Figure ES-1:
Location of the US 36 Corridor in
Colorado



Source: US 36 Mobility Partnership, 2009.

Figure ES-2: US 36 Corridor Project Area



The segments generally follow the municipal boundaries for these communities and are shown on Figure ES-2, US 36 Corridor Project Area. These are not intended to represent what could be segments of independent utility or jurisdictional boundaries, but were used for the reader's clarification. The segments are as follows: Denver, Adams, Westminster, Broomfield, Superior/Louisville, and Boulder.

THE US 36 CORRIDOR EIS

NEPA requires an Environmental Impact Statement (EIS) to be prepared when a federal action significantly affects the quality of the human environment. This EIS addresses the impacts that a major transportation project would have on the human and natural environment. The federal actions in this case are the expenditure of federal funds and Section 404 permitting by the USACE. Preparation of an EIS and preliminary engineering design are necessary first steps for the US 36 corridor project to be eligible for federal funds available through FHWA, FTA, and other federal programs.

In 2007, a Draft Environmental Impact Statement (DEIS) was published for public and agency review. During the 45-day comment period, public hearings were held to gather input regarding the packages presented in the DEIS. This FEIS incorporates the input provided and contains responses to comments received during the comment period.

The information in this FEIS is presented to assist with identification of transportation improvements for the US 36 corridor. The NEPA decision process is shown in Figure ES-3, The US 36 EIS Path to Decision-making.

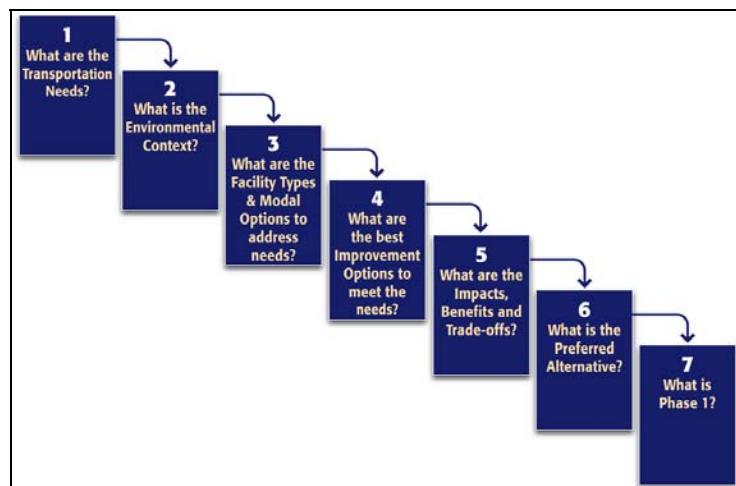
This FEIS has been prepared to document the benefits and impacts of the packages under consideration and identifies the Combined Alternative Package as the Preferred Alternative. This FEIS also identifies the components, costs, and environmental impacts of project phases.

The FEIS is available for review and comment by the public, agencies, and other interested parties. A public comment period and a public hearing will be held to formally record comments.

After consideration of public and agency comments on the FEIS, a Record of Decision (ROD) will be developed to document the lead agencies' decision for the project. The length of the corridor and funding availability requires that improvements be built in phases. Therefore, a series of RODs will be issued for this project as funding is identified.

This document represents a number of methods that have been employed to streamline the environmental process. This project has utilized the NEPA/Section 404 merger process as agreed to and modified by FHWA, CDOT, and the USACE. This process has involved consultation and coordination with the USACE throughout the NEPA process. Recently, the application of the NEPA Section 404 merger process has been modified for this project because of a change in the Section 404 requirements for final mitigation plans. Originally, the plan for this project was to apply for the Section 404 permit with the release of the FEIS to the public. Because of the more stringent requirements for final mitigation plans, all parties involved have agreed to postpone the application for the Section 404 permit until all the requirements can be met and before there are any impacts to waters of the United States (U.S.).

Figure ES-3: The US 36 EIS Path to Decision-making



Source: US 36 Mobility Partnership, 2009.

Additionally, this document satisfies the documentation for Section 106 consultation on effects to historic properties. With this document, comments on effects to historic properties are solicited from the State Historic Preservation Office (SHPO), the Advisory Council on Historic Preservation, and consulting parties. To conclude the Section 106 consultation, CDOT and FHWA are proposing a Programmatic Agreement to manage mitigation and future changes regarding identification and effects to historic properties as the undertaking (transportation solution) is implemented. Included in this FEIS, is the Final Section 4(f) Evaluation for the U.S. Department of the Interior concurrence for Section 4(f) uses of land from parks, historic properties, and wildlife and waterfowl refuges; and the identification of the Preferred Alternative as the alternative with least harm to Section 4(f) properties.

HISTORY OF US 36



Toll booth on US 36 in the 1950s

The highway between Denver and Boulder opened as a toll road in 1951. The toll road bonds were paid off early and the toll facilities removed in 1968. When it was built, this four-lane road had only one interchange between Denver and Boulder. In response to rapid population growth, there are now 10 interchanges along US 36 between I-25 and Boulder. However, the number of main through-lanes has remained at four.

Several studies have analyzed proposed improvements to portions of the US 36 corridor since the late 1960s. The most recent study prior to this EIS was the *US 36 Major Investment Study* completed by RTD in June 2001. This US 36 Corridor

FEIS includes the *Major Investment Study* concepts in the evaluation, as well as others. The FEIS evaluates alternatives, such as highway improvements, bus rapid transit (BRT), managed lanes, and high-occupancy vehicle (HOV) lanes, to ensure maximum multi-modal capacity for the corridor.

REGIONAL TRANSPORTATION PLANS

In November 2004, voters in the Denver metropolitan area approved RTD's *FasTracks Plan* through an increase in the sales tax that is to be used for transit purposes (RTD 2004). FasTracks is a comprehensive 12-year plan that will expand the entire Denver metropolitan rapid transit system, adding six new lines (including the Northwest Rail commuter line), extending existing lines, and expanding the regional bus network. The Denver Regional Council of Governments (DRCOG), an association of 50 cities and counties, has also developed a long-range plan for growth and transportation. Called the *2035 Metro Vision Regional Transportation Plan (2035 MVRTP)*, as amended (DRCOG 2009), the plan includes a network of transit and road projects that create a vision for a balanced transportation system.

PARTICIPANTS IN THE US 36 CORRIDOR EIS

Under NEPA, the federal government works with multiple participants including state, local, and tribal governments; the public; and other stakeholders. These groups participate in scoping the project, developing alternatives, evaluating impacts, and identifying a Preferred Alternative. The process involves striking a balance among mobility, the economy, health and environmental protection, community and neighborhood preservation, and quality of life.

Throughout the course of the project, several committees have been formed to facilitate the NEPA process. Senior-level representatives from the FHWA, FTA, CDOT, and RTD comprise the Executive Oversight Committee (EOC). A Corridor Governments Committee and a Technical Support Committee were created with the purpose of providing recommendations to the EOC decision-makers. To respond to public and jurisdiction comments on the DEIS, a Preferred Alternative Committee (PAC) was formed. The purpose of the PAC was to recommend a Preferred Alternative for inclusion in the US 36 Corridor FEIS. The public and the advisory committees provide input throughout the process and are kept informed about issues as they arise.

The intent of the US 36 corridor Public Involvement Program (PIP) is to provide an interactive process with multiple opportunities and forums for people to learn about the project and offer comments which are considered in the development and evaluation of alternatives. The lead and applicant agencies are committed to involving the public in all phases of the NEPA process. The public involvement effort for this EIS built on and expanded the public involvement done as part of the *US 36 Major Investment Study* (RTD 2001) from 1998 to 2001.

The public involvement process for this EIS was initiated in August 2003 with the development of a dynamic PIP that outlined the strategy for stakeholder input throughout the project. This plan has been updated regularly and includes open houses and workshops, stakeholder meetings, media briefings, a bilingual project website, a project mailing/e-mail list, and distribution of project updates. Comments received from the public to date have been compiled, organized, and summarized for incorporation into the NEPA process.



Meeting of the US 36 Project Team

PURPOSE AND NEED FOR THE US 36 IMPROVEMENTS

The first step in the NEPA process is to evaluate the Purpose and Need for the project. Current and projected travel patterns, level of roadway congestion, and growth in population and employment in the corridor indicate that transportation improvements are needed.

The purpose of improvements in the corridor is to improve mobility along the US 36 corridor from I-25 in Adams County to Foothills Parkway/Table Mesa Drive in Boulder, and among intermediate destinations. The transportation needs of the project are:

- Increase trip capacity.
- Expand access.
- Provide congestion relief.
- Expand mode of travel options.
- Increase efficiency of transit service.
- Update outdated highway facilities.

Substantial residential and employment growth along the US 36 corridor occurred during the late 1990s and continues today, increasing the travel demand placed on the corridor. Additional growth is forecast. By 2035, the population is projected to increase 28 percent in the US 36 project area, and 63 percent region-wide. Areas of high growth are predicted in the middle and eastern portions of the US 36 corridor.

Employment during the same period is expected to grow 53 percent in the project area and 69 percent across the region. Denver and Boulder continue to be the largest employment centers in the corridor. With more than 78,000 employees, the City of Boulder has the region's third-largest employment concentration. The largest growth in employment in the US 36 corridor is expected to be in the middle portion of the US 36 corridor near US 287 in Broomfield. Employment growth is also expected in Adams County, particularly south of US 36.



Increasing development in the US 36 corridor

Level of service (LOS) refers to the amount of traffic congestion on a given section of road at a given time. An A through F rating system describes the degree of traffic congestion. LOS A represents free-flowing traffic, while LOS F denotes traffic at a standstill. Projections of the future peak-hour highway LOS show increased congestion in the US 36 corridor. The traffic analysis in the FEIS indicates that without improvements, traffic along several sections of US 36 in 2035 would be worse than CDOT's LOS D goal for urban area highways. Traffic on US 36 would exceed what the system can accommodate, resulting in traffic backups onto local streets.

ALTERNATIVES EVALUATION PROCESS

After determining the project's Purpose and Need, development and evaluation of alternatives were conducted in several phases with more detail used to develop and to evaluate alternatives. In the final steps, packages were formed, with three packages (Package 1 [No Action], Package 2, and Package 4) evaluated in detail in the DEIS.

Comments received during the DEIS comment period identified public and agency interest in minimizing community and environmental impacts and reducing project costs, while providing increased mobility improvements throughout the US 36 corridor.

To respond to public and agency comments, a PAC, comprised of agency representatives, elected officials, and technical staff from local jurisdictions, was convened in January 2008. The PAC reviewed and addressed DEIS public comments, evaluated corridor elements, identified a Preferred Alternative, and outlined implementation phases.

In July 2008, the PAC recommended a multi-modal transportation solution known as the Combined Alternative Package (Preferred Alternative). The Combined Alternative Package (Preferred Alternative) includes both transit and highway improvements that are responsive to the public and provide long-term transportation benefits. Figure ES-4, Description of the US 36 Corridor Packages, provides the basic elements of the four packages. Descriptions of the packages are also summarized below.

Figure ES-4: Description of the US 36 Corridor Packages

	PACKAGE 1: No Action	PACKAGE 2: Managed Lanes + BRT 	PACKAGE 4: General-Purpose Lanes + HOV + BRT 	COMBINED ALTERNATIVE PACKAGE (PREFERRED ALTERNATIVE): Managed Lanes + Auxiliary Lanes + BRT 
DESCRIPTION	This package includes planned and committed improvements. <ul style="list-style-type: none"> • Evaluation of the No Action package is required by federal law. • Includes improvements to park-n-Rides. • Includes Northwest Rail commuter line from Denver Union Station to Boulder and Longmont. • Transit service expansions and/or adjustments as part of the FasTracks Program. • New transit facilities and services as contained in the FasTracks Program. • 120th Avenue extension over US 36. • 80th Avenue bridge replacement. • Queue jumps at selected locations. 	This package provides additional capacity in the managed lanes. Through the use of dynamic pricing, these lanes would be used for congestion management. Main elements of this package include: <ul style="list-style-type: none"> • Two barrier-separated managed lanes in each direction from I-25 to McCaslin Boulevard; one buffer-separated lane in each direction between McCaslin Boulevard and Cherryvale Road. • Median BRT stations that provide rapid passenger boarding and alighting. • No additional general-purpose lanes. • Bikeway. • Alternative transportation strategies. 	This package resembles the Locally Preferred Alternative from the <i>US 36 Major Investment Study</i> (RTD 2001). Main elements of this package include: <ul style="list-style-type: none"> • One additional general-purpose lane in each direction from I-25 to McCaslin Boulevard. • One buffer-separated BRT/HOV lane from I-25 to Cherryvale Road. • Median BRT stations that provide rapid passenger boarding and alighting. • Bikeway. • Alternative transportation strategies. • Acceleration or deceleration lanes at some locations. 	This package has elements of Package 2 and Package 4. It was developed to maximize transportation operations with reduced environmental impacts. Main elements of this package include: <ul style="list-style-type: none"> • One buffer-separated managed lane in each direction from Federal Boulevard to west of Cherryvale Road. • BRT ramp stations that provide rapid passenger boarding and alighting. • Auxiliary lanes between most interchanges. • Bikeway. • Alternative transportation Strategies.

LEGEND

-  **Alternative Transportation Strategies** – Actions to address transportation needs without constructing significant new capital investments. These may include minor intersection or interchange improvements, bus route structuring, and Intelligent Transportation System (ITS) improvements. This also includes measures to reduce demand on the transportation system, such as telecommuting.
-  **General-Purpose Lanes** – A traffic lane open to all types of vehicles. The number of lanes would vary according to travel demand within the corridor.
-  **Bikeway** – General term that includes bike lanes, bike routes, and multi-use paths. These can range from a portion of the street reserved for exclusive use by bicycles to physically separated pathways designated for multiple non-motorized users, including pedestrians.
-  **High-Occupancy Vehicle (HOV) Lanes on US 36** – An exclusive traffic lane limited to carrying high-occupancy vehicles.
-  **Managed Lanes** – A set of lanes separated from the general-purpose lanes that buses and HOVs use at no cost; any remaining capacity would be used by single-occupant vehicles through dynamic pricing.
-  **Bus Rapid Transit (BRT) Station** – A station that provides enhanced bus service and facilities. A BRT station and the associated platforms could be located in the highway median or highway on- and off-ramps.
-  **Auxiliary Lanes** – Lanes formed at the addition of a highway on-ramp and terminating at the next interchange off-ramp as an exit-only lane.

Source: US 36 Mobility Partnership, 2009.

Package 1: No Action

Although it does not meet the Purpose and Need of the project, Package 1 must be considered throughout the NEPA process for comparison purposes to the build packages, pursuant to Council on Environmental Quality (CEQ) requirements. Package 1 does not propose any new build elements for US 36. However, the package assumes that committed improvements, like the Northwest Rail Corridor Project, bus and park-n-Ride improvements from the locally-funded FasTracks Program, queue jumps at Church Ranch Boulevard and Interlocken Loop, the 80th Avenue bridge replacement, and the 120th Avenue overcrossing of US 36, would be implemented as planned.

Package 2: Managed Lanes/Bus Rapid Transit

In general, Package 2 would add two managed lanes in each direction on US 36. The managed lanes would connect to and be an extension of the existing I-25 express lanes that go to and from downtown Denver. The managed lanes would be in both directions, located adjacent to the median and separated from the general-purpose lanes by a concrete barrier. BRT stations would be located in the median and connected to adjacent parking via pedestrian bridges or underpasses. A barrier-separated facility is proposed due to the potential for large speed differences between traffic in the general-purpose and managed lanes. Access to and from the managed lanes would be provided by a combination of drop- and slip-ramps: one on each end of the corridor and two in the middle. The drop-ramps would provide access to and from the managed lanes at the existing Westminster Boulevard bridge and a new bridge at Midway Boulevard. Rather than exiting the highway to pick up and drop off passengers at park-n-Rides, buses would stop at the median stations for passenger boarding and alighting.

Package 2 would also include a bikeway facility adjacent to US 36. In general, the bikeway is an off-street separated multi-use path adjacent to the US 36 alignment. Where appropriate, the bikeway connects to and makes use of existing on-street and off-street facilities.

Two design options, A and B, were considered for the western terminus of the corridor improvements for BRT service. These options are described in detail in the Resolution of Issues section below.

Package 2 roadway changes would include improvements to intersections with cross streets at interchanges. Those improvements would include upgrading lane transitions of ramp terminals, widening cross streets at the intersection, lengthening turn-lanes and adding turn-lanes. Package 2 would provide BRT improvements including new and more frequent bus service in the US 36 corridor. Package 2 would also include Transportation Demand Management (TDM) improvements throughout the corridor, such as strategies designed to make the most efficient use of existing transportation facilities by reducing the actual demand placed on these facilities.

Package 4: General-Purpose Lanes, High-Occupancy Vehicle, and Bus Rapid Transit

The basic configuration in Package 4 consists of one additional general-purpose lane and one additional BRT/HOV lane in each direction. The BRT/HOV lanes would be located adjacent to the median of US 36 in a buffer-separated configuration similar to the existing condition between Sheridan Boulevard and Pecos Street, with new median BRT stations connected to adjacent park-n-Rides via pedestrian bridges or underpasses. Rather than exiting the highway to pick up and drop off passengers at park-n-Rides, buses would stop at the median stations for passenger boarding and alighting. Access to the BRT/HOV lane would be provided through slip-ramps at seven locations throughout the corridor.

Package 4 includes the US 36 bikeway, cross street and interchange improvements, BRT service, and TDM elements as described in Package 2.

Two design options, A and B, were considered for the western terminus of the corridor improvements for BRT service. These options are described in detail in the Resolution of Issues section below.

Combined Alternative Package (Preferred Alternative): Managed Lanes, Auxiliary Lanes, and Bus Rapid Transit

In general, the Combined Alternative Package (Preferred Alternative) would add one managed lane in each direction on US 36 and auxiliary lanes between most interchanges. The managed lanes would connect to and be an extension of the existing I-25 express lanes that go to and from downtown Denver. The reversible managed lane between Sheridan Boulevard and Pecos Street would remain and traffic would continue to use the existing I-25/US 36 managed lane ramp. The managed lanes from Pecos Street to west of Cherryvale Road in Boulder would be in both directions, located adjacent to the median of US 36, and separated from the general-purpose lanes by a painted buffer. Buses would exit the highway to pick up and drop off passengers at stations located on ramps and adjacent park-n-Rides. Access to the managed lane would be provided at separate ingress and egress points located between each interchange.

Two options were evaluated to provide access from the University of Colorado, Boulder South Campus to Table Mesa Drive in the Combined Alternative Package (Preferred Alternative). This access is currently provided through Loop Drive, which connects to Table Mesa Drive at an intersection with the eastbound US 36 exit to Table Mesa Drive. The Combined Alternative Package (Preferred Alternative) would maintain this connection and require buses to access the BRT station on the south side of US 36 from a ramp located on Loop Drive, but would require cost-sharing from the University of Colorado due to the development-driven features of this option. In the Local Streets Option, this access would be provided from Table Mesa Drive, eliminating direct access from the Boulder South Campus to Table Mesa Drive from Loop Drive. Instead, this access to Table Mesa Drive would be provided through a local street connection (one possible path could be a connection to Tantra Drive; however, this route is not favored by the University of Colorado nor by the City of Boulder). These options are shown in Appendix A, Corridor Reference Maps.

There is a bus-only lane planned in each direction on the west end of the corridor from the top of Davidson Mesa to Table Mesa Drive westbound, and from the top of Davidson Mesa to McCaslin Boulevard eastbound. However, there are operational triggers that must be met prior to this lane being considered for design and construction. These triggers are discussed in detail in Section 2.7, Resolution of Issues.

There is also an outstanding issue on the east end of the corridor at the I-25/US 36 interchange where a system-to-system ramp connection is planned. This connection would remove local access to Broadway from I-25 and US 36/I-270. Adams County and the local community have expressed strong concerns about removal of this access. Prior to any change in local access in this portion of the project, CDOT and FHWA are committed to conducting a separate study to evaluate local access in the area and to re-evaluate the proposed federal action prior to a final determination on local access to/from the interstate(s) for this area.

The Combined Alternative Package (Preferred Alternative) includes the US 36 bikeway, cross street and interchange improvements, BRT service, and TDM elements as described in Package 2.

TRANSIT STATIONS

All of the packages include the construction of transit stations. Table ES-1, US 36 Corridor Transit Station Summary, provides a station overview. Figure ES-5, Location of Stations, shows and lists the station types and locations.

Table ES-1: US 36 Corridor Transit Station Summary

Segment	Station Name	Station Type: Package 1 (No Action)	Station Type: Package 2, Package 4, and the Combined Alternative Package (Preferred Alternative)
Denver and Adams	Denver Union Station (17 th Street/Wynkoop Street)	Multi-modal hub	Multi-modal hub
Westminster and Broomfield	Westminster Center (US 36/Sheridan Boulevard)	park-n-Ride	BRT
	Church Ranch/104 th Avenue	park-n-Ride/rail	BRT/rail
	116 th Avenue (US 36/116 th Avenue) ¹	park-n-Ride/rail	BRT/rail
	Flatiron (US 36/96 th Street)	park-n-Ride/rail	BRT/rail
Superior/Louisville and Boulder	McCaslin (US 36/McCaslin Boulevard)	park-n-Ride	BRT
	Table Mesa (US 36/Table Mesa Drive)	park-n-Ride	BRT
	Boulder Transit Village (30 th Street/Pearl Street)	Super Stop	Super Stop
	Boulder Transit Center (14 th Street/Walnut Street)	Multi-modal transfer center	Multi-modal transfer center

Source: US 36 Mobility Partnership, 2009.

Notes:

¹These rail stations are not a part of the 2004 FasTracks Program. Additional stations were added in the early planning stages of the US 36 Environmental Impact Statement. Exact rail station locations and additional stations may be reconsidered in the U.S. Army Corps of Engineers/Regional Transportation District Northwest Rail Environmental Assessment/Environmental Evaluation.

BRT = bus rapid transit

US 36 = United States Highway 36

Figure ES-5: Location of Stations



Note: The 116th Avenue Rail Station is not a part of the 2004 FasTracks Program. Additional stations were added in the early planning stages of the US 36 Environmental Impact Statement. Exact rail station locations and additional stations may be reconsidered in the U.S. Army Corps of Engineers/Regional Transportation District Northwest Rail Environmental Assessment/Environmental Evaluation.

ACCESS POINTS

Access to and from the managed or BRT/HOV lanes in the build packages would be provided in certain locations. This access would be in the form of drop-ramps, slip-ramps, or breaks in the painted buffer. Access points for the Combined Alternative Package (Preferred Alternative) are shown on Figure ES-6, Combined Alternative Package (Preferred Alternative) Access Points.

Figure ES-6: Combined Alternative Package (Preferred Alternative) Access Points



Note: The 116th Avenue Rail Station is not a part of the 2004 FasTracks Program. Additional stations were added in the early planning stages of the US 36 Environmental Impact Statement. Exact rail station locations and additional stations may be reconsidered in the U.S. Army Corps of Engineers/Regional Transportation District Northwest Rail Environmental Assessment/Environmental Evaluation.

INTERCHANGE IMPROVEMENTS

Interchange improvements along US 36 are key elements in all of the build packages. The successful operation of these improvements is important so that off-ramps do not develop queues that extend back onto the highway. The analysis and evaluation of US 36 interchanges focused first on maintaining acceptable operations at the ramp intersections under the existing geometric configuration. The ramp junction intersections were configured in the basic design of the packages, considering overall intersection LOS and individual traffic movements.

The interchanges analyzed are shown in Figure ES-7, Location of Interchange Improvements.

SUMMARY OF MAJOR TRANSPORTATION AND ENVIRONMENTAL ISSUES

Chapter 4, Affected Environment and Environmental Consequences, examines the US 36 corridor improvements. For each of the resources considered, the affected environment discussion presents the current setting of the project area, while the discussion of environmental consequences describes how that setting is expected to change under each of the packages.

The three build packages have different configurations of highway lanes, which would result in different travel advantages. A summary of the transportation performance and impacts for these packages is included below.

Package Performance

- All build packages would provide a greater amount of person-trip capacity when compared to Package 1. Person-trip capacity would be noticeably greater at the eastern end of the corridor than at the central and western ends of the corridor, and is represented primarily by increased general-purpose and special lane capacity. Package 4 would provide the highest person-trip capacity, followed by the Combined Alternative Package (Preferred Alternative), and then Package 2.
- Package 4 and the Combined Alternative Package (Preferred Alternative) would have consistently higher general-purpose lane volumes than Package 2, because either general-purpose lanes or auxiliary lanes would be added with these packages. More vehicles would use the managed lanes in Package 2 since more managed lane capacity would be provided. Each build package is forecast to serve noticeably more traffic volume on US 36 than Package 1.
- All build packages would provide improvements to many of the US 36 interchanges, with distinct reconfigurations at the Broadway, Wadsworth Parkway, and Sheridan Boulevard interchanges.

Figure ES-7: Location of Interchange Improvements



Package 2 would provide two access points to the managed lanes in the form of drop-ramps, that would relieve some congestion at the existing Wadsworth Parkway and Sheridan Boulevard interchanges.

- All three build packages are forecast to operate at a daily average speed that would be noticeably faster than Package 1. Package 2 is projected to operate at a daily average speed of 48.5 miles per hour, while Package 4 would operate at 51.9 miles per hour. This compares to 41.5 miles per hour for Package 1. The Combined Alternative Package (Preferred Alternative) would exhibit a daily average speed of 48.8 miles per hour.
- All build packages would reduce the number of US 36 general-purpose lane sections operating in a highly congested manner compared to Package 1 conditions. Package 4 would have only four morning (a.m.) peak-hour sections, and one evening (p.m.) peak-hour section operating in a highly congested manner. Package 2 would have eight a.m. peak-hour sections, and eight p.m. peak-hour sections of the general-purpose lanes operating in a highly congested manner. The Combined Alternative Package (Preferred Alternative) would have five a.m. peak-hour sections, and three p.m. peak-hour sections operating in a highly congested manner. The special lanes in all packages would operate at free-flow conditions at all times.
- The forecast a.m. peak-hour travel time from Foothills Parkway to Denver Union Station (DUS) in the general-purpose lane under Package 1 is expected to be 52 minutes. Under Package 2, this general-purpose travel time is predicted to be 46 minutes, while Package 4 would be 43 minutes, and the Combined Alternative Package (Preferred Alternative) would be 44 minutes. Thus, Package 2 is expected to have a 6-minute general-purpose lane travel time savings over Package 1. Package 4 would have a 9-minute general-purpose lane travel time savings, and the Combined Alternative Package (Preferred Alternative) would have an 8-minute general-purpose lane travel time savings compared to Package 1.
- The forecast a.m. peak-hour travel time in the special lanes from Foothills Parkway to DUS is expected to be 32 minutes under Package 1. Under typical conditions, the special lanes in all build packages are anticipated to operate at free-flow speeds. As a result, all build packages are expected to have a special-lane travel time of 24 minutes. However, free-flow speeds may not always be achieved under CDOT's proposed management strategy. Thus, all build packages would have an 8-minute special lane travel time savings compared to Package 1.
- In Package 1, the special lane travel time is estimated at 32 minutes and the general-purpose lane travel time is estimated at 52 minutes. The special lane travel time in Packages 2 and 4, and the Combined Alternative Package (Preferred Alternative) is estimated at 24 minutes. Thus, vehicles traveling in the special lanes in all the build packages would have a 28-minute time savings over vehicles traveling in the general-purpose lanes in Package 1.
- Travel time is expected to be more reliable with Package 2 than with either Package 4 or the Combined Alternative Package (Preferred Alternative) because the types and numbers of vehicles in the managed lanes could be managed by both occupancy and pricing. There is also twice the special-lane capacity with Package 2. Package 2 would provide a physical barrier between the managed lanes and the general-purpose lanes, limiting potential traffic flow conflicts and improving safety. This improved reliability would benefit both automobile travelers and bus patrons. However, access into and out of this managed lane is restricted to just a few locations and would mostly benefit the travelling public that travels between activity centers.
- All build packages would offer expanded bus service and would experience similar total ridership increases over Package 1.
- All build packages would improve overall vehicle safety because highway facilities would be upgraded to current standards. Package 2 is predicted to provide better safety performance and fewer serious crashes than Package 4 or the Combined Alternative Package (Preferred Alternative) because

it would have fewer conflict points, due to the barrier separation of managed lanes from general-purpose lanes.

- The Combined Alternative Package (Preferred Alternative) access to the University of Colorado, Boulder South Campus via Loop Drive is expected to provide better accessibility and have fewer impacts to the surrounding neighborhood compared to the Local Streets Option. All local access intersections are expected to operate at LOS D or better under both options.

Package Impacts

- All build packages would have a lower number of congested intersections at interchanges compared to Package 1. Package 4 would provide slightly better LOS at most intersections compared to either the Combined Alternative Package (Preferred Alternative) or Package 2, although overall traffic operations at Sheridan Boulevard and Wadsworth Parkway would benefit under Package 2 from the inclusion of the two new direct-access drop-ramps to the managed lanes.
- All build packages would include some changes to local circulation patterns that could increase peak-hour congestion in certain areas. Each build package includes the reconfiguration of westbound ramps at the Broadway interchange. The changes may restrict access to Broadway from southbound I-25 and westbound US 36. The build packages also include realignment, extension, and truncation of local streets in the vicinity of some interchanges. Under the Combined Alternative Package (Preferred Alternative), access to the University of Colorado, Boulder South Campus, congestion is likely to increase at the Table Mesa Drive/Loop Drive/US 36 eastbound ramp intersection. The Local Streets Option would likely increase congestion at the Table Mesa Drive/Tantra Drive intersection if partnering with the University of Colorado is not available.
- All of the build packages would experience an increase in a.m. peak-hour traffic by 26 to 50 percent compared to Package 1 on US 36 as the highway approaches Boulder (westbound). However, the increase in vehicle miles traveled to and from Boulder would be less than 5 percent. Some of these trips would be attracted from east-west arterials, and some would be from other parts of the peak period. Overall, the highway capacity could accommodate higher volumes such that the length of the period when volumes are highest during the day could decrease.

Of the social and natural environmental areas evaluated, the resources summarized below have generated the most discussion by stakeholders.

Right-of-Way and Relocations

Property acquisition and relocation of residential dwellings or businesses are a consideration for the build packages. The number of relocations associated with each build package is estimated based on the conceptual level of design. Property acquisition is a result of the need to obtain property for public right-of-way (ROW). Because US 36 originated as a toll road more than 50 years ago, the width of ROW secured at that time was minimal. Since that time, private uses have developed adjacent to the highway, resulting in a constrained ROW.



Example of constrained right-of-way

The total amount of property acquisitions for the corridor would be similar for Packages 2 and 4, and much less for the Combined Alternative Package (Preferred Alternative). Package 2 would require 201 residential relocations and 138 business relocations, while Package 4 would require 202 residential relocations and 135 business relocations. The Combined Alternative Package (Preferred Alternative) would require 65 residential relocations and 24 business relocations.

Executive Summary

Summary of Major Transportation and Environmental Issues

The greatest impact to private property would occur in the Adams Segment due to constrained ROW in that area. All property acquisitions would comply fully with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 United States Code [USC] 4601 et seq.) and Uniform Relocation Assistance and Real Property Acquisition for federal and federally-assisted programs (49 Code of Federal Regulations [CFR] 24 et seq.).

Noise



Example of a highway sound wall

In Package 1, noise levels at their peak would not increase much between existing conditions and 2035. This is because the highway presently reaches its carrying capacity for at least an hour on most days, and no capacity would be added under Package 1.

Package 2 and Package 4 would both affect noise levels at 126 residences and the Combined Alternative Package (Preferred Alternative) would affect noise levels at 125 residences, as defined by locations of residences and parks where the greatest noise levels would exceed 66 decibels. CDOT policy is that all residences or other land uses would be evaluated for noise mitigation if the noise level would exceed 66 decibels. This evaluation includes quantifying the number of properties that would benefit from a substantial noise decrease compared to the cost of the mitigation

proposed. Existing sound walls would be replaced. Additional sound walls would be added in various places, including along the west end of the corridor in the Boulder area.

Parks and Open Space

Parkland resources are those community, regional, and state lands that are used for recreation and open space. Impacts to parks and open space are a consideration for the build packages. Package 2 would require the acquisition of 42.7 to 51.6 acres of parks or open space, while Package 4 would require the acquisition of 43.1 to 51.7 acres. The Combined Alternative Package (Preferred Alternative) would require the acquisition of 42.6 acres.



Park adjacent to US 36

One recreational area in the study area has used Land and Water Conservation Fund/Section 6(f) monies for development: Rotary Park in the Adams Segment. This resource would be impacted by Package 2 and Package 4, but would not be impacted by the Combined Alternative Package (Preferred Alternative). In addition, four trail crossings would be temporarily affected by all of the build packages.

In addition to the parks and open space discussion in Section 4.9, see Chapter 7, Final Section 4(f) Evaluation, for a description of the methods that were used to avoid, minimize, or mitigate impacts to parks and wildlife and waterfowl refuges.

Wetlands and Other Waters



Wetland and riparian area in the US 36 corridor

Wetlands are biological resources that perform important functions such as groundwater recharge, flow attenuation, erosion control, and water quality improvement. Wetlands also provide habitat for plants and animals, including threatened and endangered species. Package 1 would result in no new direct impacts to wetlands and other waters, other than the impacts of urbanization in the project areas. Package 2 would affect 26.84 to 33.19 acres of wetlands and

other waters. This compares to Package 4, which would affect 25.88 to 30.73 acres of wetlands and other waters. The Combined Alternative Package (Preferred Alternative) would affect 23.99 acres of wetlands and other waters. All impacted wetlands and other water features would be mitigated in accordance with current USACE mitigation policies and the conditions of the USACE Section 404 permit, as well as through working with local jurisdiction requirements as practicable. Although the Clean Water Act (CWA) requires compensatory mitigation only for those wetlands and other water features considered jurisdictional by the USACE, it is CDOT policy to mitigate all wetland impacts at a 1:1 ratio or as negotiated with the USACE.

Historic and Archaeological Resources

Significant cultural resources or historic properties include those that are listed on or eligible for the National Register of Historic Places (NRHP). An intensive cultural resources survey of the US 36 corridor was conducted. The combination of the previously recorded sites and the sites found during the survey resulted in the identification of one NRHP eligible prehistoric archaeological site, 26 NRHP historic resources, and one site eligible for the Colorado State Register of Historic Properties.



Example of an historic structure

Package 2 and Package 4 would result in adverse effects to five resources, while the Combined Alternative Package (Preferred Alternative) would result in adverse effects to four resources. There would be a direct adverse effect to the archaeological site in Package 2 and Package 4. The Combined Alternative Package (Preferred Alternative) would avoid this resource.

In addition to the historic and archaeological resources discussion in Section 4.7, see Chapter 7, Final Section 4(f) Evaluation, for a description of the methods that were used to avoid, minimize, or mitigate impacts to historic and archaeological resources.

Environmental Justice

Environmental Justice refers to social equity in sharing the benefits and the burdens of specific projects or programs. Executive Order 12898, as well as the President's February 11, 1994 Memorandum on Environmental Justice, are intended to ensure that federal departments and agencies identify and address disproportionately high and adverse human health or environmental effects of their policies, programs, and activities on minority and low-income populations who have experienced the most challenges in defending their communities against federal decisions because of language, cultural, educational, or financial barriers. The Adams Segment, where the most residential relocations would be required, has high percentages of minority and low-income populations that would experience impacts from all the build packages.

In making a determination of disproportionately high and adverse impacts, it is important to balance the impacts with the benefits. In the case of the Combined Alternative Package (Preferred Alternative), the number of relocations would be reduced to 65 residential displacements, in comparison to 201 in Package 2 and 202 in Package 4. Although this reduces the inconvenience of being relocated for many, the remaining residents would experience increased impacts from construction. For the relocated residences there may be some benefits realized, such as not living adjacent to US 36, that probably would not be considered adverse.

The Combined Alternative Package (Preferred Alternative) alignment follows the existing US 36 facility. The additional elements of the Combined Alternative Package (Preferred Alternative), such as interchange improvements and managed lanes, are uniform throughout the corridor and do not focus on any specific land use or population. CDOT and RTD went through many design iterations to avoid and minimize impacts to communities near the highway. Extensive public involvement activities were conducted throughout the EIS process to gather input on impacts and mitigation measures from affected communities.

Executive Summary

Summary of Major Transportation and Environmental Issues

The inclusion of mitigation measures such as the relocation, mitigation, enhancement plan, and early construction of the sound walls, where practical, and where other corridor work is planned at that time will help to offset the majority of the impacts to these communities. Other benefits to the project, including reduced travel time and increased reliability through the use of managed lanes, outweigh the impacts to these communities. Impacts to a relatively small number of people in these communities are balanced by the overall benefit to the populations in this segment.

Taking into consideration all of these impacts and benefits, FHWA and FTA have determined there are no disproportionately high and adverse impacts to low-income and minority populations as a result of this project.

The Combined Alternative Package (Preferred Alternative) will continue to be modified during further design stages to avoid and minimize impacts to minority persons and low-income households. A focused Environmental Justice outreach program is ongoing to keep the public informed and to incorporate their ideas into designs. As a result of design refinements, the Combined Alternative package (Preferred Alternative) would have the least overall impacts to the low-income and minority communities and individuals as compared to Package 2 and Package 4.

Mitigation measures for impacts include compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 USC 4601 et seq.) and Uniform Relocation Assistance and Real Property Acquisition for federal and federally-assisted programs (49 CFR 24 et seq.), parkland and open space replacement, context-sensitive design, sound walls, continued outreach, final design efforts to further minimize impacts, and a Construction Management Plan.

Threatened and Endangered Species

There are two federally-listed threatened and endangered species that would be directly impacted in the study area. The habitat for both of these species (Preble's meadow jumping mouse and Ute ladies'-tresses orchid) would be impacted on the west end of the corridor. Habitat loss for Package 2 would range from 43.3 to 52.8 acres for the Preble's meadow jumping mouse and 37.9 to 45.6 acres for Ute ladies'-tresses orchid, for Options A and B, respectively. Habitat loss for Package 4 would range from 50.5 to 54.6 acres for the Preble's meadow jumping mouse and 41.0 to 46.9 acres for the Ute ladies'-tresses orchid, for Options A and B, respectively. Habitat loss with the Combined Alternative Package (Preferred Alternative) would be 41.7 acres for the Preble's meadow jumping mouse, and 35.9 acres for the Ute ladies'-tresses orchid. In addition, there may be indirect impacts to the Colorado butterfly plant.

The U.S. Fish and Wildlife Service (USFWS) has been consulted on the project. A Programmatic Biological Assessment, including mitigation, has been prepared to begin the Section 7 consultation process as required by the Endangered Species Act of 1973, as amended, 16 USC §§ 1531 through 1544, and is included in Appendix D, Programmatic Biological Assessment.

Costs

Preliminary cost estimates were prepared for each of the packages. Capital costs, including both transit and roadway costs, as well as pre-construction activities and construction items, for each of the packages are presented in Table ES-2, Project Build Cost by Package and Component.

Table ES-2: Project Build Cost by Package and Component

Component	Package 2 ¹	Package 4 ¹	Combined Alternative Package (Preferred Alternative) ¹
Highway Lanes	\$876	\$752	\$657
Interchanges	\$456	\$392	\$384
BRT Stations	\$210	\$213	\$55
Bikeway	\$19	\$19	\$19
Right-of-Way	\$220	\$200	\$160
Cost Expended to Date	\$21	\$21	\$21
Total Project Cost	\$1,802	\$1,597	\$1,296

Source: US 36 Mobility Partnership, 2009.

Notes:

¹Values are in 2008 dollars – millions of dollars

Implementation of BRT service in the corridor would also require expenditure of an additional \$56 million for BRT vehicles, which would be purchased using local transit funds. This would apply to all the build packages.

BRT = bus rapid transit

Additional annual operations and maintenance (O&M) costs were also calculated for each of the packages. Both transit and roadway costs were developed. The annual O&M costs for highway and bus improvements in 2008 dollars is estimated as follows:

- Package 1 – \$49,048,000
- Package 2 – \$69,560,000
- Package 4 – \$69,560,000
- Combined Alternative Package (Preferred Alternative) – \$62,504,000

Transit fare box revenue could be used to off set the annual O&M costs for bus operations. RTD does not directly apply fare box revenue received to each corridor operation; however, some amount of fare box revenue would likely be used to off set the annual O&M costs. RTD's transit fare box revenues make up approximately 15 to 20 percent of RTD's annual budget. District sales tax and other sources cover the balance of operating costs for the RTD system.

Package 2 and the Combined Alternative Package (Preferred Alternative) also present an opportunity for revenue generation through an expansion of the current tolling system. Toll collection from the managed lanes would generate a revenue stream that could be used toward operating and maintaining the managed lanes, bonding, and/or some portion of the capital construction costs. If excess toll revenues are generated beyond what is needed for O&M costs, other corridor benefits could be funded, such as TDM initiatives (i.e., funding to encourage single-occupant vehicle [SOV] users to bike, bus, rail, or car-pool instead.)

MITIGATION MEASURES

During the development of the EIS, numerous engineering refinements were made in project team meetings and public workshops to avoid or minimize impacts expected from implementation of the build packages. Further design refinements and modifications have reduced impacts to private properties, businesses, parklands, wetlands, threatened and endangered species habitat, and historic properties. These refinements included shifting the alignment away from environmentally sensitive areas and using retaining walls to reduce the construction footprint.

A summary of mitigation measures is provided in Section 4.26, Mitigation Summary.

RESOLUTION OF ISSUES

The following list briefly itemizes and addresses the issues that needed resolution in the DEIS. These issues have been resolved in the FEIS.

Bikeway Alignments

Two alternatives were considered for the proposed bikeway in the Boulder Segment, from Cherryvale Road to the Table Mesa Station. The US 36 alignment would parallel US 36 from Cherryvale Road to Foothills Parkway/Table Mesa Drive, where it would access the Table Mesa Station. The Cherryvale Road/South Boulder Road off-street bikeway alignment would follow an existing trail along Cherryvale Road and South Boulder Road, then access the Table Mesa Station via existing on-street bike lanes from Manhattan Drive west to the station. Also considered in the Cherryvale Road/South Boulder Road alignment was a second design option. This option would extend the off-street path on the south side of South Boulder Road, west of Manhattan Drive, to the Table Mesa Station. Drawings of these alternatives are shown in Appendix A, Corridor Reference Maps.

As part of the PAC process, the US 36 bikeway alignment was chosen for inclusion in the Combined Alternative Package (Preferred Alternative). With this alignment along US 36, there is a Section 4(f) use of land in Boulder Open Space, but it avoids the use of other historic properties that are also protected under the Section 4(f) statute. This alignment offers a more direct route for commuters and responds to the needs identified early in the NEPA process better than the Cherryvale Road/South Boulder Road alignment. In addition to support from the City of Boulder and Boulder County, many of the comments received on the DEIS in reference to this issue supported the US 36 bikeway alignment.

Design Options A and B

Two design options were considered for the western terminus of the corridor improvements for BRT service. In Option A, the managed lanes or BRT/HOV lanes would merge into the general-purpose lanes just west of Cherryvale Road. Traffic could exit to Foothills Parkway or South Boulder Road, or could continue on to 28th Street.

In Option B, a bus-only lane would be provided directly into the Table Mesa Station via a new bridge to and from the managed lanes or BRT/HOV lanes located adjacent to the median. All westbound vehicles in the managed lanes or BRT/HOV lanes, except for buses, would be required to exit the lanes just west of Cherryvale Road and merge into the general-purpose lanes.

As part of the PAC process, Option A was identified for inclusion in the Combined Alternative Package (Preferred Alternative) and was modified slightly to improve its performance for this package. While Option B would provide improved transit travel time, it would be more expensive and have more environmental impacts.

Access to Special Lanes (Managed or BRT/HOV)

Drop-ramps connecting the barrier-separated managed lanes and the arterial street network are proposed at Westminster Boulevard and Midway Boulevard in Package 2. The drop-ramps would consist of one or more separate lanes in each direction that would transition from the managed lanes up to bridges, providing access to and from the existing Westminster Boulevard bridge and a new bridge at Midway Boulevard. The drop-ramps would provide access in and out of the managed lanes in both the eastbound and westbound directions.

Refinement of access treatment (type and location) was suggested by corridor jurisdictions because of the limitations created by the drop-ramps required by the barrier-separated special lanes. The Combined Alternative Package (Preferred Alternative) includes managed lanes located in the median of US 36 and separated from the general-purpose lanes by a painted buffer. Access to the managed lanes would be

provided at many more separate ingress and egress points for this package, located between each interchange because of the ease of access across the painted buffer. For more information on the Combined Alternative Package (Preferred Alternative) configuration, see Chapter 2, Alternatives Considered.

Boulder Floodplain Study

The City of Boulder recently completed and adopted an initial study of the South Boulder Creek floodplain. Flood control maps under consideration in draft form until the Federal Emergency Management Agency (FEMA) accepts the new delineation show that a portion of the existing US 36 highway would be in the 100-year floodplain.

Removing US 36 from the 100-year floodplain map or the latest City of Boulder study map would require the mainline profile of US 36 to be elevated by at least 4 feet for a distance of nearly 5,000 feet; a 1,000-foot long, 20-foot high levee to be built in Boulder open space; and construction of a large upstream reservoir.

Due to these requirements, the complexity surrounding this issue, and the current difference in definition for the 100-year floodplain limits between the City of Boulder and FEMA flood control maps, US 36 at this location would remain in the 100-year floodplain.

National Register of Historic Places Eligibility for Post World War II Residential Development

In addition to the properties identified in this FEIS as eligible for the NRHP, the eligibility of 10 post World War II residential developments was evaluated. Analysis of these subdivisions after publication of the DEIS indicated that no individual structures, sites, or historic districts in these areas were eligible for the NRHP. SHPO concurred with this analysis on February 2, 2009 (see Appendix B, Consultation and Coordination).

Since this study was conducted, three more residential developments were included in the evaluation. Two on the west end of the corridor along US 36 are under evaluation by the City of Boulder. Therefore, this FEIS is assuming these neighborhoods are eligible until this evaluation is concluded. The other neighborhood is just northeast of the Foothills Parkway/Table Mesa Drive interchange and has been evaluated and submitted to SHPO as no individual structures, sites, or historic districts in these areas are eligible for the NRHP. SHPO concurred with this determination in correspondence dated September 15, 2009.

Auxiliary Lane between McCaslin Boulevard and Foothills Parkway/Table Mesa Drive

During the planning process, corridor stakeholders, including the City of Boulder and Boulder County, requested that the project team consider two variations of Package 4 that would modify the westbound auxiliary lane between McCaslin Boulevard and the Foothills Parkway/Table Mesa Drive interchange. The concern expressed by stakeholders was that the amount of westbound capacity that would be provided by Package 4 would be greater than the amount of traffic the intersections in Boulder could reasonably accommodate.

In response to this request, one variation of Package 4 was developed that would shorten the auxiliary lane between McCaslin Boulevard and the Foothills Parkway/Table Mesa Drive interchange. Another variation of Package 4 was developed that would eliminate the auxiliary lane altogether. These two variations of Package 4, referred to as the “Reduce Auxiliary Lane Variation,” and the “Eliminated Auxiliary Lane Variation,” were not carried forward in the DEIS based on the results from traffic impact analysis for the year 2030 but were left as unresolved issues in the DEIS. This issue was discussed at

length as part of the PAC process to develop the Combined Alternative Package (Preferred Alternative). For the Combined Alternative Package (Preferred Alternative) agreement in July 2008, one new climbing lane in each direction, extending westbound from McCaslin Boulevard and eastbound from Foothills Parkway/Table Mesa Drive to the top of Davidson Mesa, was agreed upon for inclusion in the Combined Alternative Package (Preferred Alternative). At that time, the PAC also agreed to evaluate the extension of climbing lanes on US 36 between McCaslin Boulevard and Table Mesa Drive to bus-only lanes, as well as the use of shoulders for transit during peak travel periods.

Further traffic analysis for the year 2035 indicated that the general-purpose lanes between McCaslin Boulevard and Foothills Parkway/Table Mesa Drive would operate at LOS E with the climbing lane as described above. With the climbing lane extended as an auxiliary lane (westbound to Foothills Parkway/Table Mesa Drive and eastbound to McCaslin Boulevard), it was estimated that the general-purpose lanes would operate at LOS D. Therefore, the extension of the lane was determined to be a necessary element of the Combined Alternative Package (Preferred Alternative). However, only buses would be permitted to use this portion of the lane. While the traffic analysis indicates a need for this lane by 2035, it is unclear at what point in the future the lane would become necessary. Therefore, “triggers” to assist in establishing the appropriate time for implementation of this lane have been established and agreed upon by the PAC. These triggers are discussed in detail in Chapter 2, Alternatives Considered. During this analysis, it was also determined that the use of shoulders for transit operations or bus travel cannot be included in the FEIS, since FHWA typically does not allow the long-term use of shoulders for buses or other vehicles because shoulders are intended to be used for emergencies.

OTHER FEDERAL ACTIONS REQUIRED

The following other federal actions, opinions, or agreements are required to support the Combined Alternative Package (Preferred Alternative):

- Issuance of a Section 404 permit from the USACE will be required prior to impacting any waters of the U.S. See Appendix C, Section 404(b)(1) Evaluation, for more information.
- Issuance of a Biological Opinion from the U.S. Fish and Wildlife Service will be included with the ROD.
- If a Conditional Letter of Map Revision (CLOMR) and Final Letter of Map Revision for 100-year floodplain encroachments from FEMA are required, the CLOMR will be prepared during final design. The Final Letter of Map Revision will be prepared after construction is completed.
- Concurrence on the Final Section 4(f) Evaluation from the Department of the Interior will be requested during the FEIS comment period. For more information see Chapter 7, Final Section 4(f) Evaluation.
- The Programmatic Agreement among CDOT, SHPO, and FHWA regarding adverse resolution of adverse effects and procedures for future evaluations during project design will be included with the ROD.

OTHER ACTIONS REQUIRED

Approval of the 1601 process by the Colorado Transportation Commission would also be required prior to construction.

The I-25/Broadway interchange is depicted in this FEIS as having a system-to-system ramp from southbound I-25 to westbound US 36. This would eliminate the existing ramp from southbound I-25 and the westbound US 36/I-270 off-ramp to Broadway that currently exist. This interchange configuration is based on a 1985 Environmental Assessment, which was updated in 1998, and an Interstate Access Request (IAR) for the I-25/US 36/I-270/I-76 interchange, which was prepared in 1990. During the FEIS

and the PAC process, Adams County and local stakeholders raised concerns about the elimination of local access at Broadway. Impacts associated with this proposed closure are presented in Chapter 4, Affected Environment and Environmental Consequences. Based on public comments, potential impacts, and the length of time that has elapsed from the Finding of No Significant Impact (FONSI) and IAR for this action, the FEIS recommends that prior to any construction occurring at the I-25/Broadway interchange, a separate study be undertaken. This study would evaluate local access in the area and re-evaluate the proposed federal action of closing access, prior to a final determination on local access to the interstate(s) for this area. See Chapter 2, Alternatives Considered, for more information.

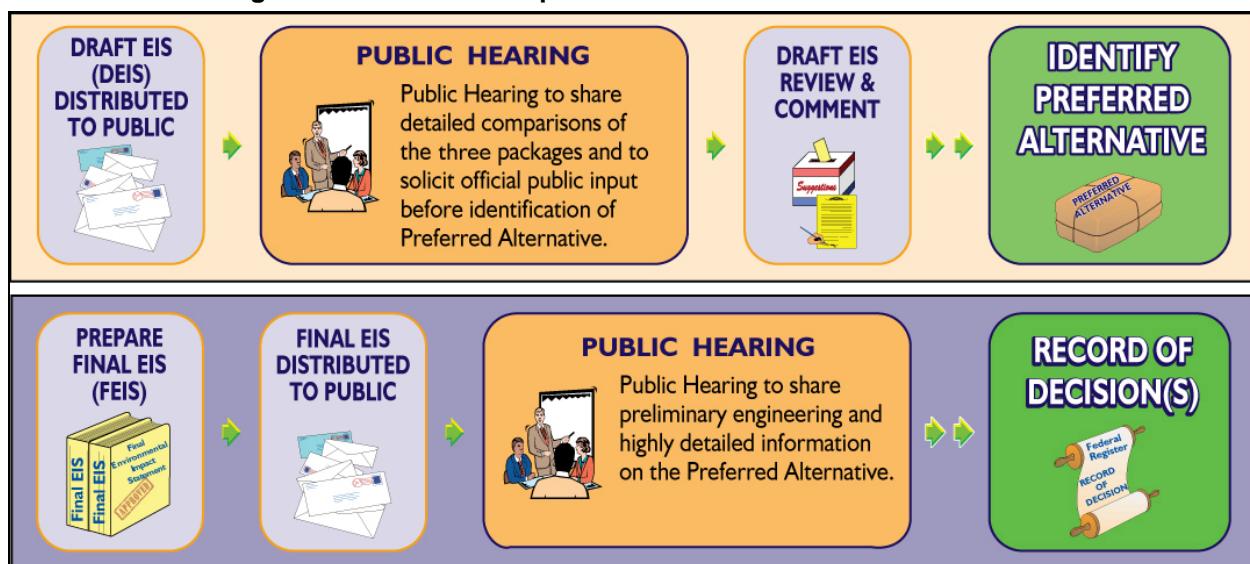
At the Table Mesa Drive interchange, access to the University of Colorado, Boulder South Campus property was to be provided through a new connection to the local street network. Objections to this proposal have been made by the City of Boulder and the University of Colorado due to future development ideas for the area. As a result, two alternatives are being considered. Both the Preferred Alternative and a Local Streets Option are shown on the Combined Alternative Package (Preferred Alternative) maps in Appendix A, Corridor Reference Maps. Approval of these alternatives through CDOT's 1601 process and participation in cost sharing for the Preferred Alternative would be required prior to these alternatives being constructed. In the future, when the ROD for this phase of the improvements is being prepared and the South Campus Master Plan (to be prepared by the University of Colorado) is more fully developed, these alternatives will be re-evaluated. A Memorandum of Understanding (MOU) among CDOT, the City of Boulder, Boulder County, and the University of Colorado will be developed to document the process and participation in cost sharing. This MOU will be developed when funding for this phase has been identified and prior to a ROD. See Chapter 2, Alternatives Considered, for more information.

NEXT STEPS IN THE NEPA PROCESS

This FEIS has been prepared in compliance with the CEQ regulations for implementing NEPA (40 CFR 1500 et seq.), FHWA, and FTA environmental impact and related procedures (23 CFR 771); the FHWA Technical Advisory T 6640.8A (Guidance for Preparing and Processing Environmental and Section 4[f] Documents); and other applicable laws. This FEIS is available to interested parties for review and comment for 45 days. During the FEIS review period, a public hearing will be held and the comments recorded.

The next step in the NEPA process, following the FEIS review period, is preparation of the Phase 1 ROD, as shown on Figure ES-8, General Steps in the US 36 Corridor NEPA Process. The ROD will document the federal agencies' decision for the project and identify funding for the approved action consistent with the *2035 MVRTP*, as amended (*Fiscally-constrained Element*) (DRCOG 2009). A phased approach is being taken because the solution to the identified transportation problems cost more to implement than is available in the fiscally-constrained *2035 MVRTP*, as amended. The Clean Air Act (§176[c]) limits what FHWA and FTA can approve in a ROD to what is included in a conforming, fiscally-constrained regional transportation plan.

Figure ES-8: General Steps in the US 36 Corridor NEPA Process



Source: US 36 Mobility Partnership, 2009.

The identification of a Preferred Alternative for the entire project in this FEIS is consistent with FHWA's/FTA's objective of analyzing and identifying transportation solutions on a broad enough scale to provide meaningful analysis and to avoid segmentation. The identification of an initial phase for implementation is consistent with FHWA and FTA requirements to have funding for projects identified before final decisions are made. As funds become available, it is the intent of FHWA/CDOT and FTA/RTD to work toward implementation of the Combined Alternative Package (Preferred Alternative) in its entirety through this phased approach.

The first phased ROD will be consistent with projects currently identified in the *Fiscally-constrained Element* of the 2035 MVRTP, as amended (DRCOG 2009). Projects required to implement the Combined Alternative Package (Preferred Alternative) not included in the first phased ROD will be identified in future RODs, which will be prepared as funding is identified. These projects will be designed to minimize interim pieces and to build to the ultimate configuration.

The following general considerations will be taken into account when determining the scope of future RODs: CDOT will consider equity issues in the corridor and will be cognizant of the need to balance the construction of improvements throughout the corridor. If funding becomes available to local agencies, such as earmarks or private funds, projects may be identified for inclusion in future RODs. Circumstances in the corridor may change so that agreements developed during the FEIS process would impact the decision as to which projects advance. These circumstances could include the realization of triggers as identified in this FEIS.

If state and/or federal funds become available, CDOT will identify projects to include in future RODs. First priority will be given to replacing aging infrastructure and/or addressing safety issues. The replacement of aging infrastructure will be given priority when the infrastructure deteriorates to such an extent its conditions affect operations of the corridor or safety of the traveling public. Projects arising from safety considerations may be given priority when safety data indicate higher than average crash rates at a particular location, or when a substandard area or pinch point has been identified which adversely impacts the public. Second priority will be given to projects that improve traffic operations of the managed lanes and/or the general-purpose lanes. These types of projects will be prioritized based on the degree to which they will positively impact transit and HOV/SOV functions, maximize travel time savings, and relieve congestion.

In determining the scope of future phased RODs, stakeholder input will be considered via the standard DRCOG planning process. Additionally, as a project is advanced through the design process, input will

be sought from those local agencies affected. Stakeholder input would also be sought in accordance with agreements that were developed during the FEIS process. These agreements are detailed in several parts of the FEIS, including Chapter 8, Phased Project Implementation.

PHASED PROJECT IMPLEMENTATION

To accommodate current funding limitations, the Combined Alternative Package (Preferred Alternative) has been separated into three phases. The first phase would cost approximately \$536 million and would be constructed with the funding available in the *2035 MVRTP*, as amended (DRCOG 2009). Phase 2 would cost approximately \$449 million, and Phase 3 would cost approximately \$290 million. These later phases would be constructed over time as funding is available and may not actually follow exactly as discussed for Phase 2 and Phase 3, depending on the funding and transportation need at the time the funding is identified.

To determine what elements of the Combined Alternative Package (Preferred Alternative) would be included in Phase 1, CDOT, RTD, FTA, and FHWA collaborated on a process to determine the overall philosophical approach. The engineering team developed six scenarios for consideration. These scenarios were evaluated in comparison to the amount of funding in the *Fiscally-constrained Element* of the *2035 MVRTP*, as amended (DRCOG 2009), the project Purpose and Need, and input from the local jurisdictions, which prioritized the managed lane, the bikeway, and the Wadsworth Parkway interchange. Scenario 3 best met the recommendations and provided benefits to the whole corridor sooner than the other scenarios. The phasing of Scenario 3 was guided by principles that were agreed upon, maintaining a focus on safety, operations, maximizing the investment, and meeting the Purpose and Need. This scenario is described below.

Phase 1 consists of first focusing on the managed lane to be built starting from Federal Boulevard at the end of the existing express lanes and working westward to just east of the Foothills Parkway/Table Mesa Drive interchange. These managed lanes would be built in Phase 1 with certain pinch points affecting shoulder width and buffer width caused by existing bridge limitations that would be brought up to full width in future phases. Then, working east to west, the improvements to the Sheridan Boulevard and Wadsworth Parkway interchanges; replacement of four bridges; pavement rehabilitation; shoulder widening; and BRT station enhancements would occur. Construction of the bikeway would occur from west to east or as local funding is identified for different segments of the bikeway. Other improvements would occur throughout the corridor earlier in the phased implementation and would include intelligent transportation system elements related to the managed lane and BRT operations. Bridge, retaining wall, and sound wall elements built as a part of Phase 1 would generally be built to their ultimate Combined Alternative Package (Preferred Alternative) size and location. However, some elements of the Combined Alternative Package (Preferred Alternative) are in an interim location and would need to be reconstructed as future phases are completed, which would result in irretrievable losses of labor, funding, energy, and materials. These interim pieces of the first phase have been minimized where possible. The decision to proceed in phases was made due to existing funding limitations. The decision of what to include in the first phase was based on funding constraints, the project Purpose and Need, recommendations of the local jurisdictions, and the guiding principles of safety, operations, and maximizing the investment. The elements of Phase 1, including managed lanes, intersection improvements, and the bikeway, are anticipated to provide a substantial benefit to corridor users and would offset the irreversible impacts. A list of specific elements in Phase 1 and the cost by segment is provided in Chapter 8, Phased Project Implementation. Detailed figures for Phase 1 are provided in Appendix A, Corridor Reference Maps.

For the remaining phases, remaining project elements would then be generally implemented from west to east to complete the ultimate Combined Alternative Package (Preferred Alternative) but would depend on the safety needs, funding, and transportation needs as discussed under “Next Steps” above.

DEFINITIONS

Several project-specific terms are defined as follows:

Station Types

- **BRT station** is a station that provides enhanced bus service and facilities. A BRT station and the associated platforms could be located in the highway median or highway on- and off-ramps.
- **park-n-Ride** is a station that provides both a parking and a loading area for bus service. Buses access the park-n-Ride from the arterial street network or via highway bus pull-outs. A pedestrian bridge or underpass connects parking on both sides of the highway.
- **Rail station** is a station that provides a boarding location for rail service.
- **Transit station** is a general term used to refer to any combination of the above station types. This term also includes multi-modal hubs, such as DUS.

Lane Types

- **BRT/HOV lanes** are lanes designated for use by buses and HOVs (including carpools and vanpools). SOVs are not allowed in these lanes.
- **Express lanes** are the existing managed lanes on I-25 and US 36.
- **Managed lanes** are toll lanes designated for use by buses and HOVs at no cost. Any remaining capacity would be sold to SOVs through variable or dynamic pricing. CDOT intends to manage the high-occupancy toll lanes with the goals of optimizing their use, maximizing travel time savings, and keeping traffic flowing in the managed lanes at 45 miles per hour or faster, even when the general-purpose lanes are congested. To accomplish this goal, CDOT will employ dynamic pricing in which the toll rate is increased or decreased depending on the levels of congestion needed to meet the goals. The definition of HOV is another tool that could be used to manage the lane. The current definition of HOV requires vehicles to have two or more occupants. Revising the HOV definition to require more than two occupants per vehicle would also reduce HOV demand for the managed lane.
- **Special lanes** is a general term used to refer to BRT/HOV lanes, the US 36 managed lanes, and the I-25 express lanes.



Other

- **Bus pull-outs** are designated areas located on highway on- and off-ramps for use by transit vehicles only. The bus pull-outs allow buses to leave the highway and to stop at transit stations to pick-up and drop-off passengers.
- **Bypass lanes** are lanes located at on-ramps that allow HOVs and buses to avoid or “bypass” the ramp meters.
- **Drop-ramps** provide access to the special lanes via a grade-separated structure.
- **Queue jumps** are additional lanes at signalized intersections. These lanes are restricted to buses. The intent of these lanes is to allow buses to be at the front of the queue, reducing delay caused by the signal and improving the operational efficiency of the BRT system.
- **Ramp meters** are traffic signals located at on-ramps to control the volume of traffic entering the highway. Ramp meters are typically active during peak periods.

- **Slip-ramps** provide access between the special lanes and the general-purpose lanes at the same elevation.

CONTACTS

If you have questions or comments or would like to request additional information about the FEIS, please contact one of the following individuals:

FHWA

Monica Pavlik, PE
Senior Operations Engineer
Federal Highway Administration – Colorado Division
12300 West Dakota Avenue, Suite 180
Lakewood, CO 80228
Office: 720-963-3012

FTA

David Beckhouse
Team Leader for Planning and Program Development
Federal Transit Administration
12300 West Dakota Avenue, Suite 310
Lakewood, CO 80228
Office: 720-963-3306

CDOT

Jane Hann
Environmental Program Manager/US 36 Environmental Project Manager
CDOT Region 6
2000 South Holly Street
Denver, CO 80222
Office: 303-757-9397
Fax: 303-757-9036

Irena Motas, PE
US 36 Engineering Project Manager
CDOT Region 6
4670 North Holly Street
Denver, CO 80216
Office: 303-398-6732
Fax: 720-398-6781

RTD

Gina McAfee, AICP
US 36 Project Manager
RTD FasTracks Team
707 17th Street, Suite 2300
Denver, CO 80202
Office: 303-820-5232
Fax: 303-820-2401

US 36 Mobility Partnership

Kelsey Johnston, PE
Project Manager — Consultant Team
URS Corporation
999 18th Street, Suite 900
Denver, CO 80202
Office: 303-299-7832
Fax: 303-293-8585