

## 2.0 ALTERNATIVES CONSIDERED

### 2.1 ALTERNATIVES EVALUATED IN THE US 36 CORRIDOR FEIS

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 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 Preferred Alternative. The Preferred Alternative includes both transit and highway improvements that are responsive to the public and provide long-term transportation benefits. Figure 2-1, Description of the US 36 Corridor Packages, provides the basic elements of the four packages. For more detail on these packages, see Chapter 2, Alternatives Considered, of the *US 36 Corridor FEIS* (US 36 Mobility Partnership 2009a).

No new transit station locations will be added but all of the park-n-Rides in Package 1 (No Action) become BRT stations for the packages. Interchange improvements along US 36 are key elements in all of the build packages.

### 2.2 PACKAGE PERFORMANCE

All build packages would provide a greater amount of person-trip capacity, operate at a daily average speed noticeably faster, and provide interchange improvements when compared to Package 1 (No Action). 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 Preferred Alternative, and then Package 2.

Package 4 and the 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 (No Action).

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.

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 (No Action). The Preferred Alternative would exhibit a daily average speed of 48.8 miles per hour.

Package 4 would have 4, Package 2 would have 8, and the Preferred Alternative would have 5 a.m. (morning) peak-hour sections operating in a highly congested manner. Package 4 would have 1, Package 2 would have 8, and the Preferred Alternative would have 3 p.m. (evening) peak-hour sections operating in a highly congested manner. The special lanes in all packages would operate at free-flow conditions at all times.

Figure 2-1: Description of the US 36 Corridor Packages

	<b>PACKAGE 1:</b> No Action	<b>PACKAGE 2:</b> Managed Lanes + BRT 	<b>PACKAGE 4:</b> General-Purpose Lanes + HOV + BRT 	<b>COMBINED ALTERNATIVE PACKAGE (PREFERRED ALTERNATIVE):</b> Managed Lanes + Auxiliary Lanes + BRT 
<b>DESCRIPTION</b>	<p>This package includes planned and committed improvements.</p> <ul style="list-style-type: none"> <li>• Evaluation of the No Action package is required by federal law.</li> <li>• Includes improvements to park-n-Rides.</li> <li>• Includes Northwest Rail commuter line from Denver Union Station to Boulder and Longmont.</li> <li>• Transit service expansions and/or adjustments as part of the FasTracks Program.</li> <li>• New transit facilities and services as contained in the FasTracks Program.</li> <li>• 120<sup>th</sup> Avenue extension over US 36.</li> <li>• 80<sup>th</sup> Avenue bridge replacement.</li> <li>• Queue jumps at selected locations.</li> </ul>	<p>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:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Median BRT stations that provide rapid passenger boarding and alighting.</li> <li>• No additional general-purpose lanes.</li> <li>• Bikeway.</li> <li>• Alternative transportation strategies.</li> </ul>	<p>This package resembles the Locally Preferred Alternative from the <i>US 36 Major Investment Study</i> (RTD 2001). Main elements of this package include:</p> <ul style="list-style-type: none"> <li>• One additional general-purpose lane in each direction from I-25 to McCaslin Boulevard.</li> <li>• One buffer-separated BRT/HOV lane from I-25 to Cherryvale Road.</li> <li>• Median BRT stations that provide rapid passenger boarding and alighting.</li> <li>• Bikeway.</li> <li>• Alternative transportation strategies.</li> <li>• Acceleration or deceleration lanes at some locations.</li> </ul>	<p>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:</p> <ul style="list-style-type: none"> <li>• One buffer-separated managed lane in each direction from Federal Boulevard to west of Cherryvale Road.</li> <li>• BRT ramp stations that provide rapid passenger boarding and alighting.</li> <li>• Auxiliary lanes between most interchanges.</li> <li>• Bikeway.</li> <li>• Alternative transportation Strategies.</li> </ul>
<p><b>LEGEND</b></p> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <p> <b>Alternative Transportation Strategies</b> – 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.</p> <p> <b>General-Purpose Lanes</b> – A traffic lane open to all types of vehicles. The number of lanes would vary according to travel demand within the corridor.</p> <p> <b>Bikeway</b> – 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.</p> </div> <div style="width: 50%;"> <p> <b>High-Occupancy Vehicle (HOV) Lanes on US 36</b> – An exclusive traffic lane limited to carrying high-occupancy vehicles.</p> <p> <b>Managed Lanes</b> – 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.</p> <p> <b>Bus Rapid Transit (BRT) Station</b> – 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.</p> <p> <b>Auxiliary Lanes</b> – Lanes formed at the addition of a highway on-ramp and terminating at the next interchange off-ramp as an exit-only lane.</p> </div> </div>				

Source: US 36 Mobility Partnership, 2009b.

## 2.3 ENVIRONMENTALLY PREFERRED ALTERNATIVE

The Combined Alternative Package became the environmentally Preferred Alternative as detailed by resource discussion in Chapter 4, Affected Environment and Environmental Consequences, of the *US 36 Corridor FEIS* (US 36 Mobility Partnership 2009a). The summary of the distinguishing resource impact results and a cost comparison is listed below that support the selection of the environmentally Preferred Alternative. The details of Phase 1 environmental impacts are included in Chapter 8, Phased Project Implementation, of the *US 36 Corridor FEIS*.

- ROW and relocation impacts (and associated minority and/or low-income community impacts) were 137 less residential and 114 less business relocations for the Preferred Alternative than for the other packages (reductions in impacts mostly in the Adams County segment).
- Parks and open space impacts were slightly less for the Preferred Alternative than for the other packages.
- Wetlands and other water impacts were 3 to 6 acres less for the Preferred Alternative than for the other packages. This was important for the Section 404/NEPA merger with the USACE.
- Historic and archaeological resource impacts were less by two for the Preferred Alternative than for the other packages.
- Threatened and endangered species impacts were about 2 to 10 acres of habitat per species less for the Preferred Alternative than for the other packages.

Preliminary cost estimates were prepared for each of the packages. Capital costs, included both transit and roadway costs, as well as pre-construction activities and construction items. The Preferred Alternative cost was estimated to be \$1,296 million. In comparison, Package 2 cost \$506 million more and Package 4 cost \$301 million more to construct. Additional annual O&M costs were also calculated for each of the packages. Both transit and roadway costs were developed. The Preferred Alternative would cost about \$7 million less per year to operate than the other packages.

The Proposed Action (Phase 1) is a subset of the Preferred Alternative. Not only will it contain the lesser impacts than the other packages, as described above, but it will also provide corridor-wide multi-modal transportation improvements through the implementation of the managed lane and bikeway the entire length of the corridor. This will benefit communities and commuters all along the corridor. It will also generate toll revenues that will help fund and maintain the managed lane for the future. Impacts will continue to be refined and minimized where possible during final design, further reducing the effect of this project on the environment. The impacts of the Proposed Action (Phase 1) are quantified in Chapter 8, Phased Project Implementation, of the *US 36 Corridor FEIS* (US 36 Mobility Partnership 2009a).

## 2.4 LEAST ENVIRONMENTALLY DAMAGING PRACTICABLE ALTERNATIVE

The Preferred Alternative has fewer impacts to aquatic resources and threatened and endangered species than Packages 2 and 4. The Preferred Alternative would result in an impact of 21.40 acres of wetlands and 2.59 acres of other waters, for a total impact to jurisdictional waters of 23.99 acres. Although the wetland impacts represent approximately 30 percent of the wetlands identified in the study area (71.69 total acres), avoidance and minimization modifications were incorporated into the development of the Preferred Alternative in an effort to reduce wetland and other water impacts compared to Packages 2 and 4.

The Preferred Alternative would result in an impact of 41.71 acres of Preble's meadow jumping mouse habitat, and 35.94 acres of Ute Ladies'-tresses orchid habitat. Similar to wetlands, avoidance and

minimization modifications were incorporated into the development of the Preferred Alternative in an effort to reduce impacts for these two species compared to Packages 2 and 4.

For these reasons, the Preferred Alternative has been identified as the Least Environmentally Damaging Practicable Alternative (LEDPA). The USACE has agreed with this assessment, as shown in correspondence dated May 20, 2009 (see Appendix C, Agency Correspondence). Concurrence from the USACE that the Preferred Alternative is the LEDPA and that the mitigation meets the regulatory requirements will be granted when a Section 404 Permit is issued. The application for the Section 404 Permit will be made before any waters of the U.S. are impacted.