Interstate 25 Value Pricing Implementation Pilot Program Plan

Proposal to:
Federal Highway Administration, Value Pricing Pilot Program

Proposed by:
Colorado Department of Transportation

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Introduction

This proposal for the Interstate 25 Value Pricing Implementation Pilot Program, hereafter referred to as the "I-25 Plan", for the Interstate 25 Downtown Express HOV facility has been developed according to guidelines for the Value Pricing Pilot Program (VPPP) authorized by Section 1216(a) of the Transportation Equity Act for the 21st Century (TEA-21). The proposed pilot program would build upon the recently completed Value Express Lanes Feasibility Study conducted by the Colorado Department of Transportation (CDOT). The Value Express Lanes Study examined the potential application of High Occupancy / Toll (HOT) concepts on I-25, among other facilities. The Study's Steering Committee recommended implementation of HOT conversion of I-25 in December 2000.

The proposed I-25 Plan will convert the Downtown Express HOV into a HOT Lane facility, serving additional trips and optimizing the use of the facility. This HOT Lane facility will feature dynamic pricing of single-occupant vehicles (SOV), whereby the toll rate is set based upon the level of demand at-the-given-moment on the facility. Two-or-more-person vehicles will have free access to the facility. As demand for carpool, vanpool, and bus trips increase, the fees for toll-paying SOVs will increase, by virtue of less available space on the facility for toll-payers. Furthermore, toll-payers will be excluded from access to the facility if SOV access is found to depreciate the level-of-service for HOVs and buses. It should be noted that HOT lanes on the Downtown Express would be the first demonstration in the United States of value pricing directly into and out of a large central business district.

The proposed I-25 Plan has four phases for the development and implementation of the project, to be completed within 16 months from the award of the grant from FHWA:

- Phase One: RFP for Private Sector Participation
- Phase Two: Planning and Design
- Phase Three: Construction and Capital Deployment
- Phase Four: Implementation and Operations

The preliminary cost estimate for the conversion of HOV to HOT, including necessary marketing and distribution costs, is $4.32 million ($2.8 million Federal grant, and, $700,000 local match and $820,000 overmatch both provided by the private operator). CDOT proposes to meet all legal and administrative requirements relating to matching funds, selection and remuneration of consultants and contractors, monitoring work, reporting, accounting for funds, and other matters of concern.

The I-25 Plan is contingent upon the satisfaction of concerns regarding the Full Funding Grant Agreement for the I-25 Downtown Express HOV Facility and access concerns by the City of Denver.

Detailed Plan

This detailed plan follows the general guidance as set forth by the Colorado Value Express Lanes Feasibility Study, a cooperative study between CDOT and FHWA's Value Pricing Pilot Program.

The Value Express Lane Study investigated the potential application of High Occupancy Toll concepts in the Denver metropolitan area, with a particular focus on the short-term implementation on North I-25 and U.S. 36 to Pecos Street. Project partners included CDOT, the Regional Transportation District (RTD), the Denver Regional Council of Governments (DRCOG), and the U.S. 36 Transportation Management Organization (U.S. 36 TMO).

1.0 Congestion Problem to Be Addressed

This application for funding from the Value Pricing Pilot Program pertains to the I-25 Downtown Express HOV facility, from downtown Denver to 84th Avenue and Pecos Street. The proposed value pricing program will manage and partially alleviate severe congestion during the peak periods, as well as yield greater utilization of the I-25 HOV lanes.

Regional Growth and Congestion

The I-25 corridor has experienced rapid growth in both population and employment over the past decade. Denver maintains its role as the most significant employment destination for the facility, with an employment base of over 110,000 employees in the Denver central business district (CBD). Besides employment, Denver is also the regional hub for recreational and cultural activities, including four sports stadiums/arenas, the Colorado State Capital, the Auraria Campus, Denver Art Museum, and Six Flags Elitch Gardens.

While Denver continues to create and attract a substantial number of trips, high residential and employment growth along the U.S. 36 Corridor has created additional traffic pressure on I-25.

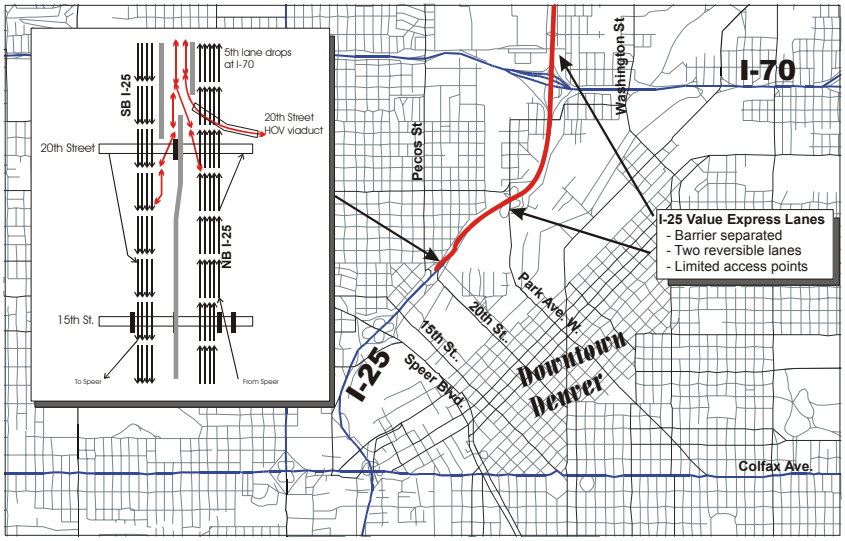
A rapid pace of growth in the corridor is expected over the next five to ten years. Residential, office, commercial, and retail projects constitute the vast majority of development scheduled in the corridor. With most of these projects, travel patterns will become increasingly complex and traffic congestion more severe.

Existing Facility Description

In response to existing and projected traffic congestion, RTD, CDOT, and the Federal Transit Administration (FTA) invested (1988) in a Bus/HOV facility on I-25 to complement the existing Bus/HOV lane on eastbound U.S. 36. An additional westbound U.S. 36 HOV lane and direct connection between the two facilities has recently been completed. The I-25 and U.S. 36 Bus/HOV lanes serve transit, carpool, vanpool, and motorcycle travelers between the northern communities and Denver. Furthermore, travelers to other destinations, such as the Denver

Technological Center, Boulder, and Broomfield, utilize the Bus/HOV lanes to shorten the overall travel time in congested periods.

Minimum Mod I-25 Value Express Lanes: South End



The I-25 Bus/HOV lanes (Downtown Express) consist of a two lane, barrier-separated, reversible facility in the median of I-25 between downtown Denver and 70th Avenue (6.6 miles). The lanes are used by southbound traffic from 5:00 a.m. to 10:00 a.m. and by northbound traffic from 12:00 PM to 3:00 AM. Northern-end access points are at 70th Avenue (from 70th Avenue) and at 53rd Avenue (from the southbound I-25 left lane). The facility will be extended to the north on I-25, moving access from 53rd Avenue to 75th Avenue with a construction project to be completed in 2003 (prior to HOT implementation). Southern-end access points are at 20th Street on I-25 and via a direct Bus/HOV connection to and from downtown Denver. The direct connection merges into general travel lanes at Wynkoop and 19th in the AM, with PM access available at Blake Street and 20th Street. Bus traffic connects between Market Street Station and the Bus/HOV direct connection via a bus only lane along Wewatta between 16th and 20th Streets.

In the segment between I-25 and Pecos Street, a one-lane, barrier-separated reversible Bus/HOV lane has recently opened, connecting the Bus/HOV lanes on US 36 with the Downtown Express Bus/HOV lanes on I-25. Like the I-25 Bus/HOV facility, the new ramp connection between I-25 and Pecos Street only carries vehicles in one direction at a time (inbound toward Denver in the morning and outbound toward Boulder in the evening).

Existing Conditions and Traffic Projections

The I-25 Downtown Express Bus/HOV facility opened for use by carpools and buses on October 2, 1995. Soon after opening day, average daily traffic (ADT) was nearly 3,800 vehicles. As of August 2001, ADT was measured at slightly more than 10,000 vehicles per weekday. RTD buses account for 300 vehicles of that total.

In the AM Peak Hour, an average of 1,050 vehicles use the Downtown Express, as measured in August 2001. Additionally, 1,320 vehicles use the facility in the PM Peak Hour. This utilization of the facility is consistent with the projected HOV use of the Downtown Express, as stated by the Value Express Lanes Study.

See ***Appendix Two*** for detailed information regarding existing traffic on and adjacent to the Downtown Express HOV facility.

Travel Market

I-25 serves a variety of travelers and destination attractors. In the AM Peak Period, southbound I-25 commuters are typically destined from the northwest and northern areas of the metropolitan area to downtown Denver, Colorado Boulevard / Cherry Creek area, the Denver Technological Center, and adjacent offices on I-25. These regional employment hubs, combined, currently attract over 300,000 employees. Northbound commuters in the AM Peak Period are typically destined for either Broomfield or Boulder via U.S. 36 (with approximately 100,000 employees).

Appendix One provides a diagrammatic view of the corridor and the proposed pilot program.

2.0 Nature of the Proposed Pricing Program

The proposed I-25 Plan extends the research of the Value Express Lanes Feasibility Study and brings forward its recommendation for implementation. As such, the proposed pilot program is directly derived from the findings of that Study.

The purpose of the proposed I-25 Plan is to test the operational and technical feasibility of barrier-separated HOT lanes on I-25, which would allow non-HOV vehicles to use the facility in return for a fee. Buses, carpools, vanpools, and inherently low emitting vehicles (ILEV) will continue to use the facility without charge. It will also serve as a gauge for the public's willingness to accept and use variable pricing in the Denver metropolitan area, a precursor to other value pricing efforts on I-70 and C-470. It should be noted that HOT lanes on I-25 would be the first demonstration in the U.S. of value pricing into and out of a large central business district.

All existing barrier separations and operational hours will remain with HOT conversion. One enforcement area will be constructed in a suitable location somewhere in the vicinity of the I-70 overpass. This enforcement zone will apply to both toll and occupancy enforcement. Only electronic toll collection technology will be utilized.

Goals and Objectives of the I-25 Plan

The intent of this proposed pilot program is to demonstrate and evaluate the use of HOT lanes on I-25, in order to better manage and optimize the use of the corridor. The overall intent of the implementation pilot program is to answer the following questions:

- Is value pricing both feasible and desirable in the Denver metropolitan area?
- Can value pricing contribute to regional system synergies – specifically, maximize trip efficiencies on U.S. 36, and, to provide an option to congestion on I-25?

- Are HOT lanes a potential strategy for financing and managing the demand for future transit and carpool facilities?

- Will value pricing on north I-25 help or hinder construction-related and post-construction traffic on southeast I-25?

- Can HOT lanes on I-25 contribute excess revenues to transit and other funding needs?

Potential Facilities to be Included

The proposed I-25 Plan implementation area is the I-25 Downtown Express HOV facility, from downtown Denver to 75th Avenue on I-25 and Pecos Street on U.S. 36 (see ***Appendix One***).

Pricing Schedules

The proposed I-25 Plan will implement dynamic, variable pricing on I-25's Downtown Express. Besides the implementation of electronic toll collection technology compatible with the state's existing toll facilities, as mandated by state statute, the specific parameters for the use of dynamic pricing will be established by the Steering Committee (as specified in Section Six).

The Value Express Lanes Feasibility Study established a hierarchy of use for HOT lanes in Colorado, with a particular emphasis upon transit receiving the highest priority. Regardless of the implemented pricing schedule, all transit vehicles will receive free use of the facility. Lesser priority vehicles (starting with toll-paying vehicles) will be prohibited access to the facility in order to ensure Level of Service C guarantees for transit.

Technology

Colorado Revised Statutes state that:

- Electronic Toll Collection (ETC) systems utilized by the state, municipality, or other entity having jurisdiction over the street or highway are compatible with one another.

- A vehicle owner shall not be required to purchase or install more than one device to use on all toll facilities

- There is compatibility between any ETC system in operation on the effective date of the act and any ETC system designed and installed after said date.

The principal implication of this requirement is that the prospective I-25 ETC and violation enforcement system must be fully compatible with the system currently utilized by the E-470 Public Highway Authority. To ensure compatibility with E-470, it is recommended that the I-25 HOT lane facility operator coordinate their system design with E-470. Initial discussions have already taken place between CDOT and E-470 to this effect. Separate service centers can be created to manage the accounts for any new toll facilities or the existing E-470 service centers

can be utilized. Policies and Procedures, and Memorandums of Understanding need to be put into place to ensure compatibility between systems.

Specific guidelines for technological and administrative implementation will necessarily be developed in this pilot program.

Enforcement

General guidelines for enforcement were established by the Value Express Lanes study and will be implemented on I-25. On this barrier-separated HOT lane facility, video enforcement associated with toll tags, and, fixed observation locations associated with enforcement locations are required.

3.0 Preliminary Estimates of the Social and Economic Effects

Public outreach and statistical analysis conducted during the Value Express Lanes Study did not reveal any particular concerns regarding equity or other social impacts. Equity was defined by the project has having a detrimental effect upon either people of lower income or of local communities that would be negatively affected by HOT lanes. Nonetheless, concerns may come to bear upon the implementation of the HOT lanes on I-25. The proposed pilot program for I-25 will continue to investigate the social and economic effects of value pricing upon the corridor's employment and residential communities as the program evolves over time.

Based upon the findings from the Colorado Value Express Lanes Feasibility Study, the following effects are anticipated:

- The I-25 HOT lanes will be implemented on the existing Downtown Express HOV facility, minimizing impacts on adjacent neighborhoods and employers.

- The Value Express Lanes study indicated positive social impacts as a result of HOT lane implementation for I-25 and U.S. 36. This conclusion was based upon a reduction in overall travel times and a reduction in opportunity cost for corridor travelers.

- I-25 HOT Lanes are expected to contribute excess revenues to the region. These excess revenues are permitted, under state law, to be designated to transportation improvements in the corridor, including transit, vanpool, and carpool services. The Steering Committee will make a determination of the distribution of excess revenue.

4.0 Role of Alternative Transportation

Alternative transportation will play a very important role in the implementation of HOT lanes on I-25. It is often stated that the successful implementation of value pricing is dependent upon the availability of alternatives to driving. Transit alternatives **already** exist on the I-25 corridor, with extensive and frequent service to destinations along U.S. 36 and north I-25, ranking as the number one bus corridor in the state of Colorado. Recent rapid transit investments in the HOT Lanes' adjacent corridors, most notably the Southwest Corridor and Southeast Corridor Light Rail Transit (LRT) systems, help make transit alternatives more viable for I-25-based commuters. A third LRT line, the West Corridor, is currently undergoing an Environmental Impact Statement on the south end of the I-25 HOT lane facility.

Furthermore, the U.S. 36 Transportation Management Organization and Downtown Denver Partnership have implemented substantial Transportation Demand Management (TDM) programs. These TDM programs emphasize the use of buses, carpools, and vanpools throughout the corridor.

Together, all efforts contribute to the potential use of HOT lanes by a sizable number of alternative mode beneficiaries. As mentioned previously, the Value Express Lanes study established a hierarchy of use criteria, so as to ensure a quality level of service, whereby transit and carpools have priority of use on Denver area HOT lanes. This policy would be extended to the application of HOT lanes on I-25.

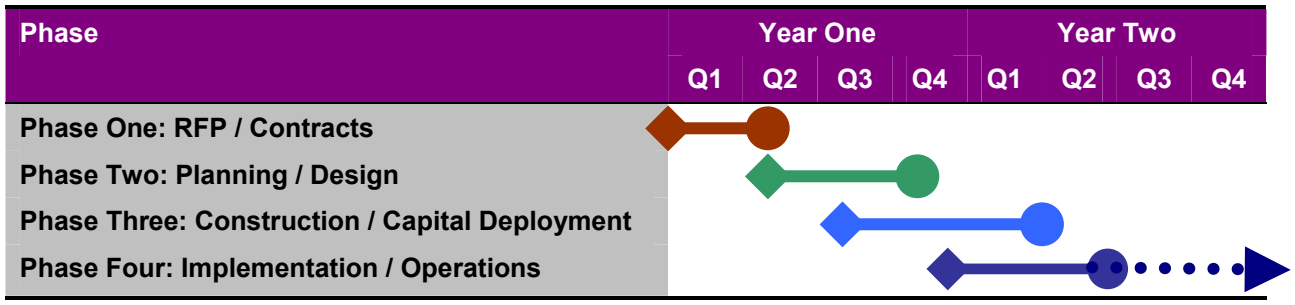
5.0 Time Line for Pre-project Study and Implementation Phases

The proposed I-25 Plan's timeline for implementation is dependent upon two key milestones. The first milestone is the award of Federal Highway Administration Value Pricing grant funding to CDOT. The second milestone is the completion of the pinch point removal project and extension of the I-25 access to the Downtown Express facility to north of U.S. 36. This latter milestone is necessary, in order to ensure quality level of service.

The pinch point removal project eliminates a current barrier to increased traffic on the Downtown Express – either HOV or otherwise. Although a two-lane facility, both lanes currently merge in the vicinity of 58th Avenue. This merge is currently necessary to get around a slip-ramp, allowing traffic from southbound I-25 mainline to access the facility in the AM peak direction. The programmed improvement, to be completed prior to the implementation of HOT lanes on the Downtown Express, will eliminate this merge, allowing two continuous lanes until the diversion from I-25 to U.S. 36, moving the southbound access to the vicinity of 78th Avenue.

Timeline for Study

In all, the proposed I-25 HOT lanes would be open to the public 16 months following the initiation of Phase One, as described below.



- **Phase One:** Year one, first quarter activities begin after the award of funds and contracts between CDOT and FHWA. Additional supporting activities, such as establishment of partnerships and committees, will be finalized during this time.

- **Phase Two:** Phase two begins upon the acceptance of a private bid for design, build, and operate, or if in the case an acceptable proposal is not submitted, a determination by CDOT and/or RTD to pursue HOT conversion.

- **Phase Three:** Phase three activities may occur, in part, in conjunction with Phase Two.

- **Phase Four:** The initial tasks for developing administrative and operational procedures, in addition to pre-testing of electronic equipment, may occur prior to the completion of Task Three. The solid line signifies this time frame. Following the completion of testing, policies, procedures, and the completion of the pinch-point removal project, the facility will be open to customers. The dashed line in the above table depicts this.

6.0 Description of Tasks and Cost Estimates

The CDOT implementation pilot program for I-25 HOT lanes has four principal phases:

- Phase One: RFP for Private Sector Participation
- Phase Two: Planning and Design
- Phase Three: Construction and Capital Deployment
- Phase Four: Implementation and Operations

Phase One: RFP for Private Sector Participation

Colorado State Law requires CDOT to pursue private sector participation for the construction and ongoing operations for HOT lanes on I-25. As such, CDOT will release a Request for

Proposals to design, build, and operate the HOT lanes. The tasks would include construction, tolling and enforcement technology emplacement, administration, monitoring and evaluation, and public involvement / marketing.

According to state law, if an acceptable private sector partner does not come forward, or if no proposals meet the budgetary guidelines of the project, then CDOT and RTD may pursue HOT lane conversion independent of private sector participation. In such a scenario, the public sector cost would be the full $4.32 million project cost.

Phase Two: Planning and Design

The Colorado Value Express Lanes Feasibility Study developed a general recommendation for HOT lane implementation, however, a further level of detail for design and planning purposes is required to construct and operate the facility. It is possible that this phase could overlap slightly with the Construction and Capital Deployment Phase, as existing programmed investments for the removal of the pinch point at 53rd Avenue by CDOT will make use of efficiencies of scale to deploy HOT-related capital.

Project Management

The study will be performed under the purview of the following entities:

- **Grant and Contract Administrator**: The Colorado Department of Transportation (CDOT) Region 6 will administer all grants and contracts for the pursuit of the I-25 implementation pilot program.

- **Project Management and Operations Team**: The interagency Project Management Team (PMT) will provide project direction and technical review for the facility's contractors and operators. This PMT will include, but not be limited to, members of CDOT, the Denver Regional Council of Governments (DRCOG), Regional Transportation District (RTD), Federal Highway Administration (FHWA), Federal Transit Administration (FTA), Adams County, and the City and County of Denver.

- **Steering Committee**: The Steering Committee will provide policy-level oversight of the implementation program. Steering Committee membership will be comprised of elected and/or appointed officials from PMT-participant jurisdictions.

CDOT and RTD staff, under guidance from the PMT and Steering Committee, will be responsible for day-to-day operations of all aspects of the project. This includes planning, design, construction, and operation activities. An important part of this task will be to coordinate the project with local jurisdictions and to present the project to local elected officials. This task also provides for the preparation and completion of interagency agreements outside of the initial CDOT/FHWA agreement associated with this application.

Statement of Work Plan

This Statement of Work will be expanded into a more complete work plan that will reflect the input of the Project Management and Operations Team, Steering Committee, private contractors, and all project partners. The detailed work plan will provide the framework for agency and consultant activities throughout the project.

Environmental, Legal, and Transportation Clearances

This task will include research, preparation of documents, and will address the National Environmental Policy Act (NEPA), the Transportation Improvement Program (TIP)/Statewide Transportation Improvement Program (STIP), the Regional Transportation Plan (RTP), and air quality conformity. This task will also include the appropriate steps necessary to obtain Federal Communications Commission (FCC) approval for the use of electronic transponders in the corridor.

Legal and environmental staff will track key issues pertaining to clearances, provide project design input to ensure desired project parameters, and prepare memoranda discussing and documenting the overall project process.

As the proposed HOT lane is a conversion of the existing Downtown Express HOV facility, and, will not require any additional roadway expansion besides that which is already programmed as HOV-related improvements, it is expected that a Categorical Exclusion (CE) can be obtained.

Baseline Travel Data

Prior to detailed design, baseline travel data will be collected for the I-25 corridor. The Colorado Value Express Lanes Study's data will be compared to data collected, to include traffic counts, occupancy counts, travel speeds, HOV and bus utilization, intersection performance, and travel time/delay. This data will be used when refining initial toll rates and schedules, in development of the marketing plan, and will serve as a baseline for post-implementation comparisons. It will also be used in the development of possible bus or other transportation enhancements that may be implemented in conjunction with the project.

Design

In this task, detailed project designs and an implementation plan will be developed in consultation with FHWA and FTA. This includes developing the sequence and scheduling of activities, developing the appropriate type and location of technology, development of administrative operations processes, and planning of possible bus and other transportation enhancements.

The design of the HOT lanes will include all technology and infrastructure required to implement dynamic pricing. Requirements include, but are not limited to, the selection and location of ETC

readers, determination of appropriate software needs, the location and design of project related signing and marking, and enforcement requirements.

While much of the HOT lane facility design will be determined by the existing Downtown Express facility design, many of the features including extent of access, rate structures, and other design issues have not been finalized. Part of the design process will include the involvement of stakeholders to aid the project partners in understanding the attitudes, values, and preferences that the public hold and why, as it pertains to the actual implementation of HOT lanes (as opposed to simply the feasibility of HOT lanes). This process will aid the design process as well as increase public acceptance and use of the facility upon completion.

The toll rates and potential schedules will be determined based on criteria established by the Steering Committee with input from stakeholders and project partners. Rates will vary by time of day and the dynamic measurement of level of service on the Downtown Express facility. Although the Value Express Lanes Feasibility Study examined potential revenue and use for the HOT lanes, it should be noted that the regional model was not designed to accommodate dynamic pricing effects. As such, this design task will consider a range of prices and will select a rate structure based on more detailed demand analysis.

A number of factors will influence toll rates for the project. Bus fares in the corridor will be analyzed to minimize any incentive for travelers to leave transit in favor of the HOT lanes. This was a concern raised by transit stakeholders for the I-25 facility. Toll rates may also account for the reimbursement of project costs, both for operation and maintenance as well as construction of the facility. Finally, the Steering Committee may consider the establishment of a maximum toll that would be politically acceptable for the facility. The project, through its public outreach efforts, will inform the public that tolls will vary by the level of demand for the facility, as frequently as every five minutes.

Account Administration

Account administration will include user registration, the distribution of transponders, management of user accounts, and the collection of payments. To accommodate these needs, it is anticipated that the project will establish a service center located in downtown Denver, potentially to be located in conjunction with other alternative transportation point-of-presence (such as an RTD information station at Denver Union Terminal). The project will also establish an Internet-based service center where users can obtain transponders, check account status, and replenish account balances over the Internet. This subtask will develop a plan to integrate/coordinate these account administration activities into the E-470 electronic toll collection system, as required by Colorado state law, and to design the website for online account access.

Enforcement Management Plan

The project team will work with the Colorado State Patrol, Adams County Sheriff, and Denver Police to develop an enforcement plan for the HOT lane facility. An examination of the

appropriate level and methods of enforcement will be performed. This plan will also include guidelines for review/modification based on observed/perceived violation rates.

Transit Planning

It is the goal of the project to increase travelers' options in the corridor. Using the data collected, the CDOT, RTD, and their federal partners (FHWA and FTA) will analyze the potential for enhancements to bus and alternative transportation service in the I-25 corridor. Possible enhancements include the addition of bus routes, enhanced frequency, expanded park-n-ride facilities, or other improvements. It is anticipated that any enhancements will be implemented through the use of excess project revenues remaining after covering operating, enforcment, and maintenance expenses.

Public Outreach

Please see ***Section 9.0*** for a detailed account of public outreach efforts.

Phase Three: Construction and Capital Deployment

Conduct Public Outreach and Marketing

The Public Outreach and Marketing Plan developed during the Planning and Design Phase will be implemented prior to the opening of the HOT lanes. This will allow the project team an opportunity to educate the public, elected officials, and decision-makers about the goals and benefits of the project.

Construction

Although improvements to the HOV facility to accommodate HOV and HOT traffic are already programmed in the TIP, there is a considerable amount of infrastructure that must be installed to operate the electronic toll collection system. For the purpose of cost estimation, this proposal has assumed the placement of one transponder reader in each direction over the length of the facility. For this preliminary estimate, it is also assumed that these readers will need to be installed on a new gantry structure. It is expected that static and variable message signs identifying the lane and providing contact information about the program can be added to existing sign structures, however, new variable message signs (in particular) may need to be deployed to augment the existing signage.

Operation of the ETC system will also require the installation of cable throughout the corridor to connect the readers with a host computer and a power supply. It is anticipated that this will require the laying of new cable throughout some portion of the median. A small utility building will also be required to house computers, storage, and communication equipment. A fixed-wireless (microwave) solution will be considered in the Planning and Design Phase as an alternative to cabling.

This task also will include the establishment of an account management system to track charges by users, manage accounts, establish a payment system, and distribute transponders. This will include the implementation of an internet-based service center and/or a walk-in service center in downtown Denver.

Phase Four: Operations and Implementation Phase

Implement Pricing Program

This task will consist of all continual operational activities including distribution and maintenance of transponders, account management and billing, maintenance of the in-lane electronic equipment, and enforcement.

The program must purchase transponders for use by HOT lane participants. It is estimated that the HOT lane facility will have enough capacity to support a minimum of 6,400 vehicles per day across both peak periods. Based on typical usage rates found on other projects, the I-25 HOT lane project would likely need to ultimately provide for the distribution of approximately 19,000 transponders. This accounts for customers who obtain a transponder, but use it on an infrequent basis.

The revenues generated by the tolls will offset all costs for the implementation and operation of the program (public and private sector investments). A preliminary estimate of revenues was developed as part of the Colorado Value Express Lanes Feasibility Study. This scenario assumed a $2.50 AM peak toll (2010) and $1.50 cents per mile PM peak toll (2010) and allowed for a 5-7 percent violation rate. The resulting estimate should be considered preliminary but conservative. This scenario resulted in annual project revenues of at least $700,000 in the first year of operation and $2.4 million in 2010.

Conduct Monitoring and Evaluation

CDOT will continue all monitoring and evaluation activities, as identified by ***Section 7.0***.

Refine Program Parameters

CDOT will use the information gathered through the monitoring and outreach efforts to make refinements to the HOT lane program. Changes will be made in consultation with the Steering Committee.

7.0 Monitoring and Evaluating the Value Pricing Project

The work scope for *Phase Two* will include the preparation of a general monitoring and evaluation plan for the I-25 HOT Lanes, to be enacted during the construction and implementation phases. The purpose of the I-25 Plan will be to assess the effects upon I-25 mainline traffic, I-25 HOV and bus utilization, downtown Denver traffic, the adjacent transportation corridors, employment, demographics, and other issues of interest. All initial data

collection methodology used during the study will provide for replication every couple of years during implementation. Elements included within the data collection:

- Traffic counts on I-25, U.S. 36, I-70, and all arterial interchanges along the corridor. These counts include the mainline of I-25, all HOV/HOT ramps and access facilities (including downtown Denver), and parallel facilities.
- Vehicle occupancy counts
- LRT and bus ridership
- HOT / toll lane user surveys
- Employee and property owner surveys

These surveys will support analyses of usage, impacts to other facilities and demographic groups, effects on behaviors, and general satisfaction with the facility. Although the *Phase One* portion of the study will document the specific monitoring and evaluation schedule, it is anticipated that the following documentation would be prepared within three years of implementation:

- *Initial baseline*: Traffic and transit characteristics; employment characteristics; residential / demographic characteristics
- *Post-implementation*: Traffic effects, transit effects, employment / economic development differences, and cross-utilization of toll facilities.

8.0 Finance and Revenue Plan

Detailed capital cost estimates and revenue planning will be prepared in *Phase Two: Planning and Design*.

Initial cost estimates for the I-25 HOT lanes are approximately $4.32 million ($2.8 million public sector) for the conversion of the facility from HOV to HOT, including initial marketing and distribution costs. Although the facility would be implemented within the existing Downtown Express facility, thereby eliminating right-of-way acquisition needs, the exact extent of cost will be determined by *Phase Two: Planning and Design*.

It should be noted that CDOT has every intention of offering maximum flexibility and minimum intrusion to the eventual operator and customers of the HOT lane facility. To this end, CDOT will construct a substructure for a reader and gantry at 70th Avenue. This will minimize construction intrusion in the future, however, CDOT does not intend to implement a toll zone at this point. Instead, one toll-zone will be implemented on the combined U.S. 36 / 70th Avenue

entrance ramp to the I-25 Downtown Express. This decision supports any future extension of HOT lanes on U.S. 36, where at such time, differing prices must be set for U.S. 36 and 70th Avenue in order to properly manage demand.

Item	Cost	Quantity	Estimate	Notes
Readers for ETC	$340,000	2	$680,000	U.S. 36 and I-25; Parallel estimate: Maryland
Substructure [1]	$20,000	3	$60,000	U.S. 36, I-25, and 70th Avenue
Structure / mast arms [1]	$60,000	2	$120,000	U.S. 36 and I-25
Concrete / construction work	$800,000	-	$800,000	Miscellaneous concrete removal and construction work to accommodate HOT lanes
Utility building (sq. ft.)	$1,600	400 sq ft.	$640,000	Assumes 20 x 20 building for systems, hardware, networking
Planning / Design	$500,000	-	$500,000	Phase two of project; project admin for all four phases
Customer Service Center [2]	$350,000	1	$350,000	Assumes 10 year lease for storefront location downtown
Marketing [2]	$600,000	-	$600,000	$400,000 for year one (pre-implementation, includes survey); $200,000 for year two (post implementation)
Advance transponder purchase [2]	$30	19,000	$570,000	Distribution of 19,000 transponders
Total			$4,320,000	
Total public sector only			*$2,800,000*	

Initial revenue estimates for the facility vary between $700,000 and $750,000 per year in the first year of operations and $2.3 million to $2.4 million in 2010 (2001 dollars). These estimates are based upon revenue projections as conducted by the Colorado Value Express Lanes Feasibility Study.

[1] Assumes standard sign structure

[2] Customer service center, marketing, and up-front transponder purchase costs will be borne by a private contractor, if one is found to be acceptable to CDOT. These estimates are provided here as an illustration of total project costs. As such, the total public-sector portion cost of the project would be $2,800,000.

9.0 Plans for Involving Key Affected Parties / Public Involvement

For the I-25 HOT Lanes Implementation Pilot Program, CDOT intends to intensify public outreach efforts along the north I-25 corridor and its target markets, including the major destination markets of Downtown Denver, Broomfield / Interlocken, Southeast Denver / Denver Technological Center, Cherry Creek / Colorado Boulevard, and, the residential markets of north and northwest Denver metropolitan area. The primary emphasis of CDOT's efforts will be coalition building towards the goal of implementing a viable and long-term value-pricing project in the I-25 corridor. This will require the active participation of representatives from the following communities and agencies:

- ***Regional agencies***: CDOT, Denver Regional Council of Governments (DRCOG), Regional Transportation District (RTD), Northwest Parkway Authority, E-470 Public Highway Authority

- ***Counties***: Adams and Denver

- ***Cities***: Denver, Thornton, Westminster, Northglenn, Broomfield, Boulder, Federal Heights, Louisville, Lafayette, Superior, and Arvada

- ***Other Organizations***: Downtown Denver Partnership, U.S. 36 Transportation Management Organization, MetroNorth Chamber of Commerce, and other similar organizations.

In pursuit of ongoing public participation efforts, both for opinion-setters as well as the public-at-large, CDOT proposes the following actions:

- ***Conduct an information campaign to gain public knowledge about HOT lanes on I-25***. This information campaign builds upon a lesson learned from the Value Express Lanes Study – the more information the public has about transportation financing and other value pricing projects, the more supportive they are of the concepts. This campaign will be directed to both the residential markets in the area as well as the respective employer markets.

- ***Conduct interviews with business owners and employers in downtown, north, and northwest Denver***. This outreach will be conducted in conjunction with the Downtown Denver Partnership and U.S. 36 TMO, in an effort to build support and allay misunderstandings.

- ***Conduct focus groups with north and northwest Denver area residents***. Random focus groups will be conducted of north and northwest Denver area residents on HOT Lane marketing messages and education materials prior to deployment. Furthermore, focus groups will be used to collect information on all relevant developments that require public input.

- ***Public meetings / Open Houses***. In accordance with established CDOT and DRCOG procedures for public involvement, CDOT will conduct open houses in the I-25 corridor to solicit input on value pricing concepts. In addition, CDOT will maintain its website (http://www.valuelanes.com/) and retool it as a "virtual open house" for the project.

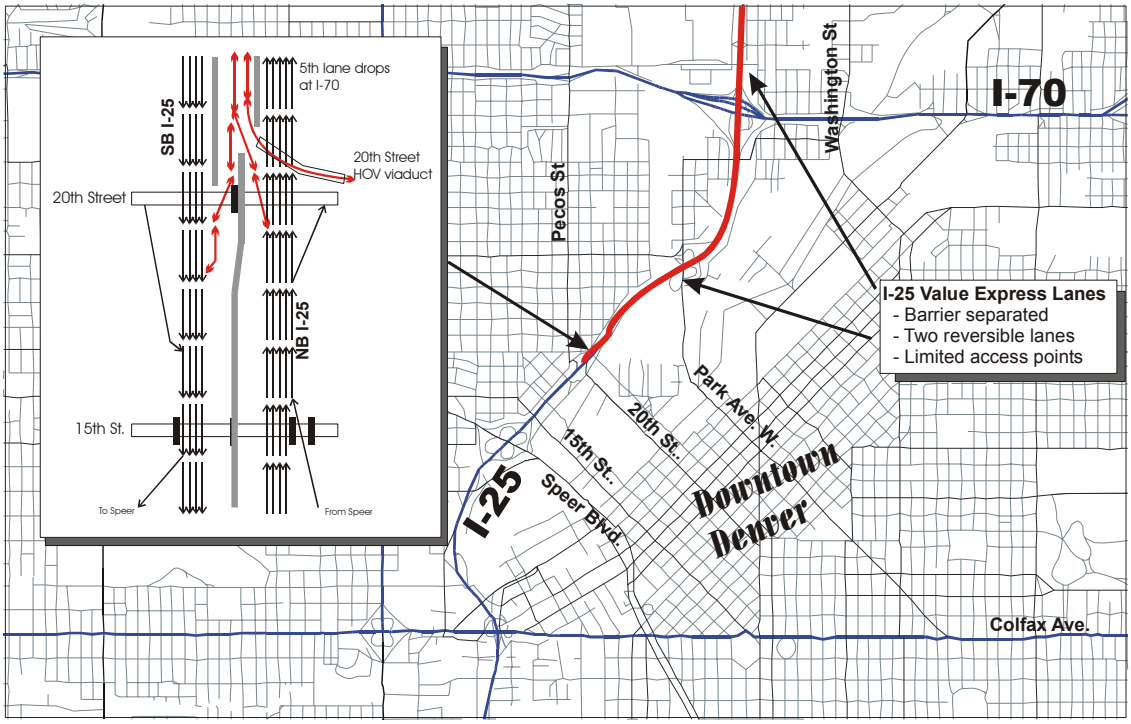
10.0 Plans for Meeting All Legal and Administrative Requirements

CDOT proposes to meet all legal and administrative requirements relating to matching funds, selection and remuneration of consultant, monitoring work, reporting, accounting for funds and any other matters of concern. Required approvals, clearances, and coordination from and with appropriate federal, state, and local agencies will be obtained prior to implementation. At this time there are no known local requirements for implementation of the project, and such state requirements will likely be limited to cost-sharing issues.

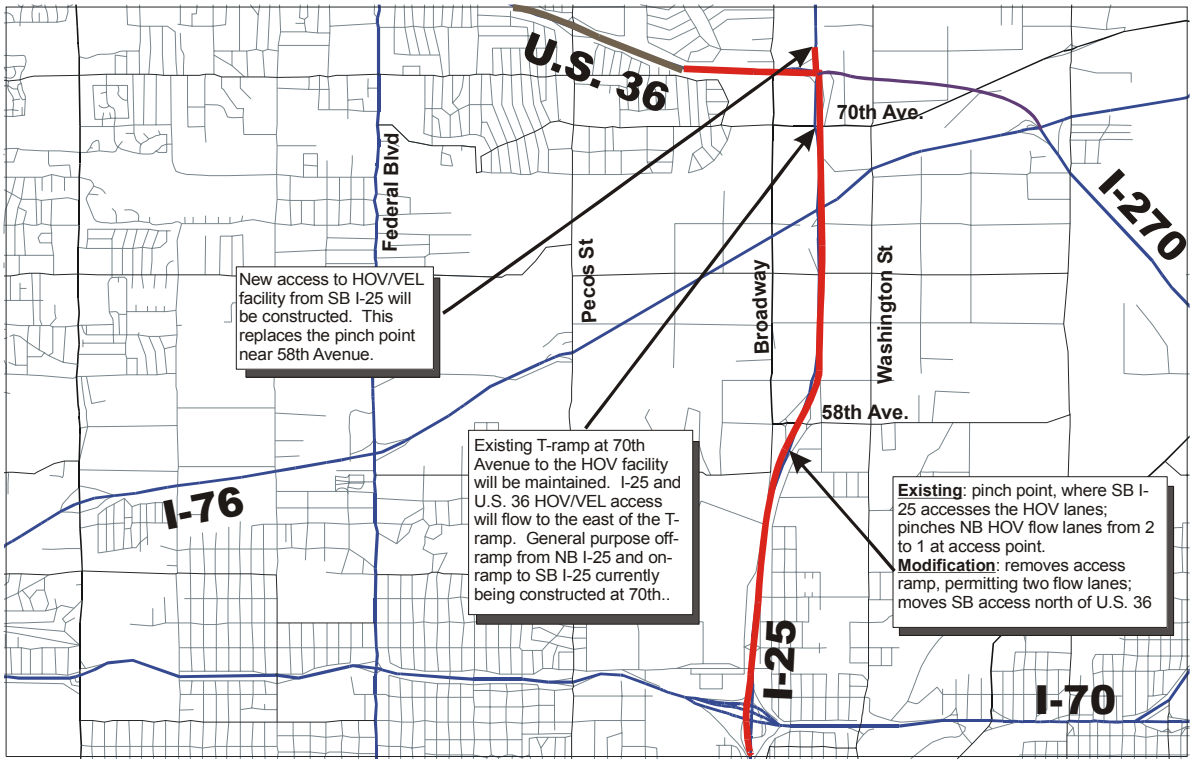
The I-25 Plan is contingent upon the satisfaction of concerns regarding the Full Funding Grant Agreement for the I-25 Downtown Express HOV Facility and access concerns by the City of Denver.

Appendix One

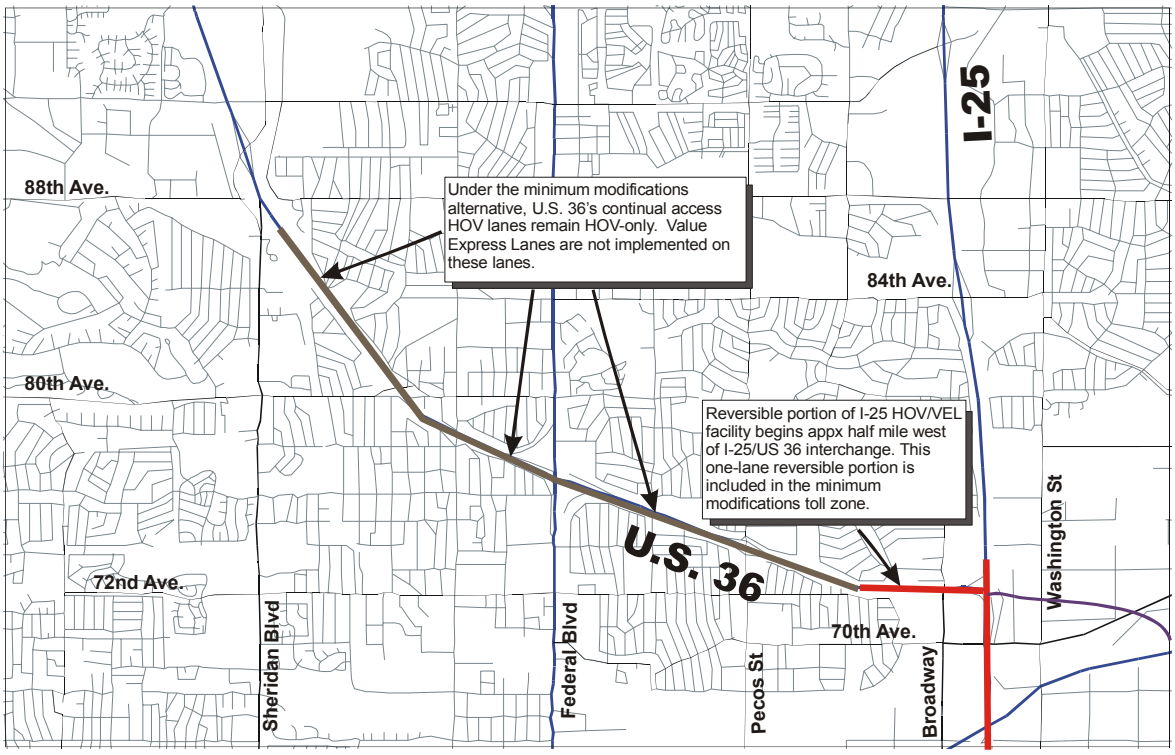
Minimum Mod I-25 Value Express Lanes: South End



Minimum Mod I-25 Value Express Lanes: I-25 Main Portion



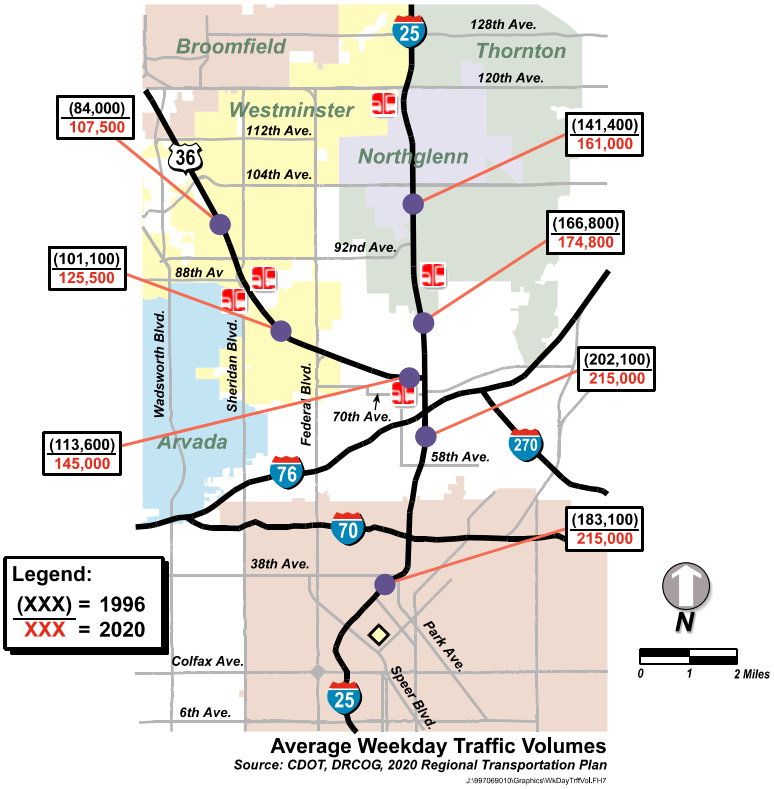
Minimum Mod US 36 Value Express Lanes: U.S. 36 Portion

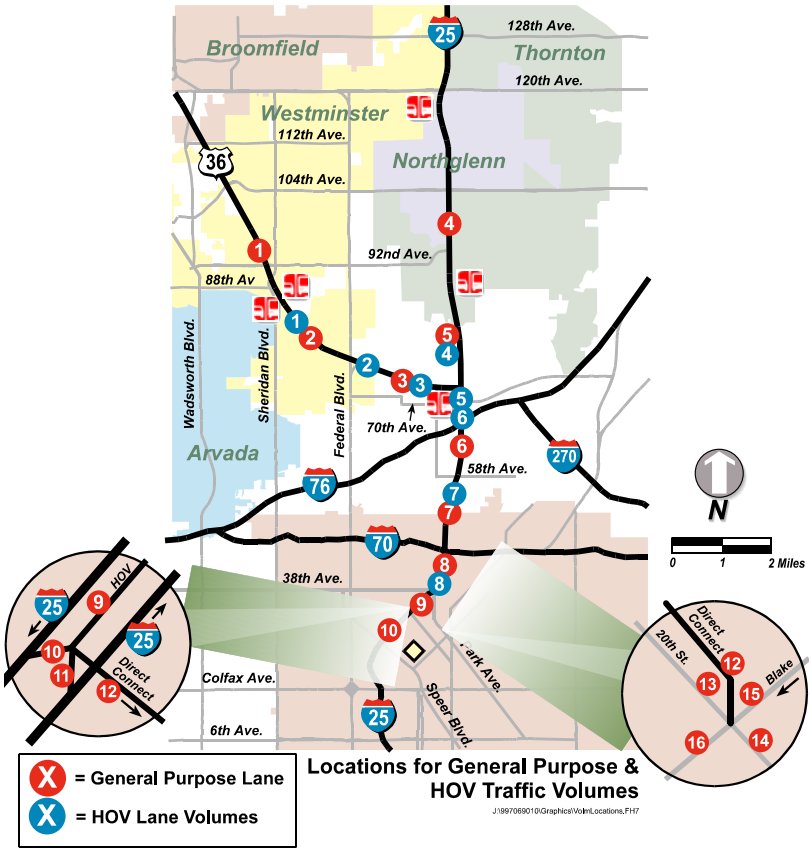


Appendix Two

The graphic below presents average weekday traffic volumes for the years 1996 and 2020. The 1996 Base Year model data, although since replaced by a 2001 Base Year by the Denver Regional Council of Governments (DRCOG), was the most current regional model at the time of the Value Express Lanes Study.

The illustration below notes multiple locations, which correspond to the 1996 and 2020 traffic volumes, listed below:





MAP LOCATION		GENERAL PURPOSE LANE VOLUMES - 1996*						
		ADT			AM Peak per Hour		PM Peak per Hour	
		South	North	TOTAL	South	North	South	North
1	US 36, between 104th and Sheridan	42,785	41,247	84,032	3,805	3,641	3,521	3,684
2	US 36, between Sheridan and Federal	49,645	51,524	101,169	4,121	3,955	3,510	5,043
3	US 36, between Pecos and Broadway	53,280	60,356	113,636	3,834	4,064	3,457	6,105
4	I-25, between 104th & 92nd	71,999	69,375	141,374	6,390	4,670	5,452	6,495
5	I-25, between 84th & US 36	85,360	81,443	166,803	8,016	5,004	6,163	8,080
6	1-25, between I-76 & 58th	101,031	101,000	202,031	9,030	6,053	7,336	9,951
7	I-25, between 58th & I-70	102,041	100,815	202,856	8,416	7,045	7,786	9,274
8	I-25, between I-70 & Park Ave. West	110,543	107,154	217,697	9,297	7,477	8,659	9,377
9	I-25, between Park Ave. West & 20th	92,189	90,919	183,108	7,600	7,169	7,033	9,377
10	I-25, between 20th & Speer	86,571	89,115	175,686	7,985	7,101	7,633	7,842

MAP LOCATION		GENERAL PURPOSE LANE VOLUMES - 2020**						
		ADT			AM Peak per Hour		PM Peak per Hour	
		South	North	TOTAL	South	North	South	North
1	US 36, between 104th and Sheridan	54,310	55,201	109,511	3,762	4,098	4,276	4,478
2	US 36, between Sheridan and Federal	59,750	66,117	125,867	4,220	4,491	4,250	5,495
3	US 36, between Pecos and Broadway	66,573	78,994	145,567	4,762	5,473	4,771	6,910
4	I-25, between 104th & 92nd	80,981	80,380	161,361	6,631	5,123	6,322	7,488
5	I-25, between 84th & US 36	78,994	95,855	174,849	5,473	8,038	6,910	7,218
6	1-25, between I-76 & 58th	107,055	108,167	215,222	9,345	6,420	7,755	10,182
7	I-25, between 58th & I-70	111,185	112,606	223,791	8,875	7,377	8,608	10,554
8	I-25, between I-70 & Park Ave. West	99,940	100,061	200,001	7,032	6,467	7,838	9,233
9	I-25, between Park Ave. West & 20th	105,492	110,161	215,653	7,416	8,012	8,760	9,886
10	I-25, between 20th & Speer	101,855	105,642	207,497	8,516	7,515	8,483	10,367

Referencing the same map location numbers displayed on the previous page, the following table presents traffic volumes on the US 36 and I-25 Bus/HOV facilities:

MAP LOCATION		HOV LANE VOLUMES - 1996*						
		ADT			AM Peak per Hour		PM Peak per Hour	
		South	North	TOTAL	South	North	South	North
1	US 36, between Sheridan and Federal	4493		4493	1,020	0	784	0
2	US 36, between Federal and Pecos	4879		4879	1,109	0	851	0
3	US 36, between Pecos and Broadway	5132		5132	1,190	0	883	0
4	I-25, between 84th & US 36			0	0	0	0	0
5	I-25, between US 36 & 70th			0	0	0	0	0
6	I-25, between 70th & I-76		2206	2206	0	0	0	640
7	I-25, between 58th & I-70	3423	3510	6933	1,951	0	0	1,018
8	I-25, between I-70 & Park Ave. West	3423	5715	9138	1,951	0	0	1,657
9	I-25, between Park Ave. West & 20th	3423	5715	9138	1,951	0	0	1,657
10	HOV Southern Exit Lane	1441		1441	821	0	0	0
11	HOV Southern Entrance Lane		3518	3518	0	0	0	1,020
12	HOV Downtown Direct Connect	1982	2199	4181	1,130	0	0	638
13	20th Street, North of Blake				0	0	0	1,411
14	20th Street, South of Blake				0	0	0	1,674
15	Blake, East of 20th				0	0	0	454
16	Blake, West of 20th				0	0	0	916

MAP LOCATION		HOV LANE VOLUMES - 2020**						
		ADT			AM Peak per Hour		PM Peak per Hour	
		South	North	TOTAL	South	North	South	North
1	US 36, between Sheridan and Federal	6411	5575	11986	1,469	692	1,112	1,265
2	US 36, between Federal and Pecos	6891	6914	13805	1,870	698	1,047	1,650
3	US 36, between Pecos and Broadway	4150	4196	8346	1,861	0	0	1,217
4	I-25, between 84th & US 36	522	2457	2979	298	0	0	713
5	I-25, between US 36 & 70th	3785	6653	10438	2,157	0	0	1,929
6	I-25, between 70th & I-76	4949	7383	12332	2,821	0	0	2,141
7	I-25, between 58th & I-70	5297	8760	14057	3,019	0	0	2,540
8	I-25, between I-70 & Park Ave. West	5297	8760	14057	3,019	0	0	2,540
9	I-25, between Park Ave. West & 20th	5297	8760	14057	3,019	0	0	2,540
10	HOV Southern Exit Lane	2442		2442	1,392	0	0	0
11	HOV Southern Entrance Lane		4493	4493	0	0	0	1,303
12	HOV Downtown Direct Connect	2856	4268	7124	1,628	0	0	1,238
13	20th Street, North of Blake				0	0	0	1,493
14	20th Street, South of Blake				0	0	0	1,831
15	Blake, East of 20th				0	0	0	910
16	Blake, West of 20th				0	0	0	746

Source: * Most current DRCOG/RTD 1996 Base Year model run (GC96)
** SE Corridor Draft EIS Preferred Alternative 2020 model run (VC20)
- Roadway network = recommended 2020 RTP Amendment for region
- Transit network = existing and committed for region + SE Corridor

The I-25 Downtown Express Bus/HOV facility opened for use by carpools and buses on October 2, 1995. Soon after opening day, average daily traffic (ADT) was nearly 3,800 vehicles. As of August 2001, ADT was measured at slightly more than 10,000 vehicles per weekday. RTD buses account for 300 vehicles of that total.

In the AM Peak Hour, an average of 1,050 vehicles use the Downtown Express, as measured in August 2001. Additionally, 1,320 vehicles use the facility in the PM Peak Hour. This utilization of the facility is consistent with the projected HOV use of the Downtown Express, as stated by the Value Express Lanes Study.

Ridership in December 1998, combining carpoolers and bus passengers equaled more than 24,200 people per average weekday. Approximately 10,800 people are RTD bus passengers, with the remaining users accounted for as carpoolers. Bus ridership increased on the Downtown Express by more than 6% between the winters of 1997 and 1998. On the 120x route connecting the Wagon Road and Thornton park-n-rides with Market Street Station, ridership has increased 20% over that same time period.

The following chart displays the historical utilization of the Downtown Express Bus/HOV facility, in terms of vehicles and passengers.

North I-25 Bus/HOV Utilization