

3.0 BACKGROUND

This chapter provides background into the development of the Colorado Tolling Enterprise (CTE) and the selection of C-470 as one of the final candidate corridors in the statewide screening of candidate tolling corridors. The theory behind managed lanes and existing corridors that use the managed lane operating strategies is also discussed in this chapter.

3.1 COLORADO TOLLING ENTERPRISE

During its 2002 session, the Colorado State Legislature created the CTE as a division of CDOT under House Bill 1310 (C.R.S. 43-4-801), which authorized the State Transportation Commission to create a Statewide Tolling Enterprise allowed to finance, construct, operate, and maintain toll facilities on highways in Colorado. CTE facilities can be constructed either in existing corridors or in new corridors, so long as the tolls are charged on new roadway capacity only. The non-profit CTE is governed by a board elected by the Colorado Transportation Commission (CTC).

Soon after its formation, the CTE screened of candidate toll corridors around the state. Initially, 79 corridors were identified as having potential to be tolled. cursory evaluation by the CTE resulted in 39 corridors being selected for further study in the Statewide Tolling Feasibility Study.

The CTE then contracted with a consulting engineering firm to conduct a Statewide Feasibility Study to further evaluate the 39 candidate corridors and recommend those with the highest potential for financial feasibility. The study was conducted in two phases. Phase I narrowed corridors to 14, and Phase II further narrowed the list to 7. The DRCOG regional travel demand model, detailed capital costs, and operation and maintenance (O&M) costs were all used in evaluating the financial feasibility of the projects. C-470 was one of the seven final candidate corridors showing the most promise to be financially feasible.

The evaluation included several scenarios using various growth rates. All scenarios assumed the C-470 express lanes would be composed of two express lanes in each direction separated by a concrete barrier. Scenarios 1 and 1A extended from Wadsworth Boulevard to I-25. Scenario 1 assumed the land use and traffic growth projections in DRCOG's 2025 regional travel demand model, which equated to an approximate 1 percent annual growth. Scenario 1A was a hypothetical variation of Scenario 1 in which the traffic growth rate was arbitrarily doubled to determine the sensitivity of the feasibility to traffic growth rates. Scenarios 2 and 2A extended from I-70 to I-25. Again, Scenario 2 assumed the DRCOG land use and traffic growth rates, and Scenario 2A was a hypothetical case with doubled growth rates. The other notable characteristic of Scenarios 2 and 2A is that they both assumed a hypothetical situation of only four free lanes as opposed to the existing six-lane segment between I-70 and Morrison Road. The

Statewide Tolling Feasibility Study concluded that the eastern segment was approximately 70 percent feasible with the alternative growth rate (Scenario 1A), while the same segment with the adopted DRCOG growth rate (Scenario 1) was not feasible. The study further concluded that the entire corridor alternatives (Scenarios 2 and 2A) were also approximately 70 percent feasible when connected to the eastern segment and given the hypothetical assumption of only four free lanes. The criteria used to determine feasibility in the Statewide Feasibility Study is as follows. A Senior Lien Coverage Rate of 1.75 was used in combination with a 10% state and local contribution and a 20% Federal contribution. If this combination could cover 70% of the capital cost, the project was deemed feasible.

Though the CTE Statewide Tolling Feasibility Study was performed independent of the ELFS, both study teams collaborated throughout the process and exchanged assumptions and approaches on financing, cost estimates, construction, traffic volumes, and toll structure. This collaboration ensured that both studies were using the same basis for their evaluations. Ultimately, it was found that the two studies yielded similar findings. As described later in this report, this ELFS produced consistent results with the Statewide Tolling Feasibility Study, considering the slightly differing assumptions of each study. The ELFS found that the western segment was not feasible, given the existing traffic growth rate of 1.5 percent annually and the capacity associated with the current six-lane section. This is consistent with the Study's finding that express lanes are only feasible given the assumptions of a higher traffic growth rate, constrained capacity to four free lanes, and a contiguous facility throughout the corridor length. Both studies concluded that the eastern segment was approximately 70 percent feasible. The ELFS had a somewhat different method of determining the feasibility – its target was to achieve 70% coverage of the initial capital cost solely through issuing bonds. The combination of senior lien and subordinated debt should amount to at least 70% of the capital cost.

3.2 MANAGED LANES

The theory behind managed lanes is to set aside certain freeway lanes and use a variety of operating strategies to move traffic more efficiently in those lanes. Managed lanes maximize existing capacity, manage demand, offer choices, improve safety, and generate revenue. Implementation strategies include time-of-day restrictions, vehicle type restriction, value pricing, and occupancy requirements. Benefits of managed lanes include a built-in funding source, improved safety, and improved air quality. Value pricing is managed lane strategy being considered for an evaluation along the C-470 corridor, as described below.

3.2.1 Value Pricing Lanes

The concept of value pricing, also known as congestion pricing and peak-period pricing, is a way to harness the power of the market and reduce the waste associated

with congestion. While the concept may be relatively new to the toll road market, the general idea has been applied to other sectors of the economy for centuries. It is the same concept of assessing higher prices to respond to peak-use demands. This concept is commonly applied in the airline industry, where a ticket costs more during peak travel times. The concept is applied when one attends a matinee movie at a reduced fee compared to prime time. As applied to toll roads, value pricing means that as the demand for the facility increases, so too does the toll price. As congestion eases and there is lane demand lessens, the toll price would decrease accordingly.

Value pricing is a technique used to manage the volume in a facility. It has been estimated on some corridors across the country that approximately 25 percent of vehicles on the road during peak hours are not commuters. By varying the toll rate based on the level of congestion, drivers are provided incentives to shift some trips to off-peak times, less-congested routes, or alternative modes.

3.2.2 Value Pricing Pilot Program (VPPP)

In 1991, the United States Congress mandated the VPPP as part of the Transportation Equity Act for the 21st Century (TEA-21). Congress's goal for the experimental program was to study the different value pricing approaches to reducing congestion. The grant program supports efforts by state and local governments or other public authorities to establish, monitor, and evaluate value pricing projects and to report on their effects. With the goal of assessing the design, operation, financial feasibility, and public acceptance of implementing potential value pricing options on C-470, CDOT submitted a proposal to FHWA's VPPP in April 2001 and was awarded a grant to study the C-470 Corridor. Currently, 15 states are participating in the VPPP, evaluating value pricing strategies that include:

- Converting high-occupancy vehicles (HOV) lanes to high-occupancy toll (HOT) Lanes
- Cordon tolls
- Fast and intertwined regular lanes (FAIR)
- Priced new lanes
- Pricing on existing toll facilities
- Usage-based vehicle charges
- "Cash-out" strategies
- Regional pricing initiatives

In addition to the C-470 ELFS, the CDOT is also participating in a VPPP to convert the existing I-25 north HOV lanes into HOT lanes from downtown Denver to the US 36 interchange. The conversion is scheduled for 2005.

3.2.3 Value Pricing Corridors Currently in Operation around the Country

Several facilities across the United States use peak-period pricing as a congestion management tool. These corridors fall into two types: HOT lanes and variable pricing on existing tolled facilities. The section below describes how value pricing corridors currently operate.

SR-91, Orange County, California

The State Route 91 (SR-91) express lanes facility opened in 1995 as the first privately financed toll road in the United States in more than 50 years. It was the world's first fully automated toll facility and was also the first application of value pricing in America. Tolls are collected via automated vehicle identification (AVI) transponders and vary by time of day and vehicle occupancy. All automobiles and motorcycles equipped with a transponder and a pre-paid account are eligible to use the lanes. Although the AVI transponder does not require a deposit, a minimum balance of \$40 is necessary to establish an account. Interoperability agreements are established between all California toll facilities offering electronic/AVI toll payment options under the single brand, "FasTrak." Vehicles with three or more occupants can travel toll-free on express lanes. The current toll rate to travel the 10-mile roadway varies from \$1.05 to \$7.00, depending on the time of day and congestion levels.

I-15, San Diego, California

The I-15 express lanes are two reversible lanes, located in the freeway median, that flow southbound in the morning and reverse in the afternoon. The lanes were initially opened as an HOV facility in January 1988 but did not fill to capacity. In an effort to overcome these constraints, the San Diego Association of Governments Board passed a resolution and applied for a grant under the VPPP that would allow the conversion of the HOV lanes into HOT lanes. Since March 1998, users of the express lanes have been charged tolls that vary dynamically with the level of congestion. Several dynamic messages signs identifying the toll rate in effect are posted in the areas prior to the express lanes entrance. These signs indicate the highest toll users should expect to be charged, with tolls ranging from 50 cents to \$4 per one-way trip under regular conditions, and sometimes as high as \$8. Traffic flow is monitored in the express lanes to ensure that service on the HOV lanes is maintained at free-flow conditions (LOS C). Media response thus far has generally been positive. Some of the program's revenue is being used to fund a new express bus service.

US 290, Houston, Texas

HOT lanes were implemented on US 290 in November 2000. The reversible HOT lanes restricted to vehicles with three or more persons during peak hours of peak periods. The pricing program allows a limited number of two-person carpools to buy into the lanes during peak hours. Participating two-person carpool vehicles pay a \$2.00 per trip

toll, while vehicles with more occupants continue to travel free. Single-occupant vehicles are not allowed to use the HOT lanes. The QuickRide toll collection system is automated, and no cash transactions are conducted on the facility.

I-10 (Katy Freeway), Houston, Texas

In January 1998, the Texas Department of Transportation (TxDOT), Houston Metro, and FHWA funded a feasibility study of an HOT on the Katy Freeway, which resulted in a value pricing demonstration called QuickRide. By allowing HOV-2 vehicles to buy in to the HOV-3+ lane, QuickRide provided a way to utilize the excess capacity during peak periods without degrading the quality of the lanes.

Cape Coral Bridges, Lee County, Florida

In August 1998, Lee County began a value pricing pilot project on the Cape Coral and Midpoint bridges, two of the four bridges that connect Cape Coral and Fort Meyers. This demonstration was intended to be a proactive measure to examine the effects of pricing on existing congestion, as well as to install the technical infrastructure needed for future congestion management projects. Electronic toll collection (ETC) equipment was installed on the bridges, allowing for a variable pricing tolling structure and extensive data collection. By varying the toll structure, the project uses pricing mechanisms to induce patrons who usually travel during peak periods to change their time of travel. The variable toll structure offers a 50 percent discount during the shoulder periods (6:30 to 7:00 a.m., 9:00 to 11:00 a.m., 2:00 to 4:00 p.m., and 6:30 to 7:00 p.m.) just before and after the peak traffic period. Only ETC customers are eligible for variable discounts, and patrons are required to obtain a transponder and an account. Transponders either automatically debit a credit card or draw on prepaid toll accounts as patrons use the facilities.

Port Authority of New York and New Jersey

The Port Authority of New York and New Jersey oversees the maintenance and construction of several bridges and tunnels connecting New Jersey to New York. Bridges and tunnels priced for peak and off-peak periods by type of vehicle are the George Washington Bridge, Lincoln Tunnel, Holland Tunnel, Goethals Bridge, Outerbridge Crossing, and Bayonne Bridge. Commuters who use the EZPass electronic toll collection system are given discounts.

I-394, Minneapolis, Minnesota

In the spring of 2005, the Minnesota Department of Transportation (DOT) is scheduled to implement MnPass, which converts the I-394 HOV lanes into pay-per-use HOT lanes from I-94 to State Highway (SH) 101.

3.3 PUBLIC PRIVATE INITIATIVE

In 1995, the Colorado State Legislature realized that the state would be unable to keep pace with the State's future transportation needs and thus enacted the Public-Private Initiatives (PPI) Program Act. This Act allows private entities to propose alternative means of providing transportation improvements that benefit the state.

Fluor Daniel and HBG Flatiron, Inc. (d.b.a. F&F Infrastructure) submitted an unsolicited proposal to CDOT to develop, finance, design, and construct tolled express lanes along C-470 between I-70 and I-25 on a phased implementation basis. CDOT was then required to conduct an open solicitation for additional competing proposals. Ultimately, the PPI from F&F Infrastructure was chosen, and a pre-development agreement was executed between CDOT and F&F giving them the first right of refusal if the express lane alternative is chosen as the preferred alternative in the EA.