

MEMORANDUM

TO: COLORADO TRANSPORTATION INVESTMENT OFFICE BOARD OF DIRECTORS
FROM: KELLY BROWN, CHIEF TOLL OPERATIONS OFFICER
SUBJECT: C-470 EXPRESS LANES TOLL RATE ADJUSTMENT
DATE: MAY 15, 2024

Purpose

This memorandum presents the results of the annual toll rate adjustment analysis for the C-470 Express Lanes based on the CTIO tolling policy that established a framework for toll rate setting and yearly adjustment.

Action

This memo is informational only. No action is needed. The Board will be asked to approve the C-470 toll rate adjustment at the June meeting. The updated toll rates would take effect in early August of this year.

Background

C-470 is a 12.5-mile facility between I-25 and Wadsworth Boulevard and is the southwest portion of a circumferential expressway around Denver, Colorado. The toll collection system consists of two tolling zones in the eastbound direction and three tolling zones in the westbound direction. The current toll rates and toll schedule were set in 2023 based on a previous analysis of C-470 relative to traffic operations standards and financial obligations. The Board approved a toll rate adjustment for FY 2023/2024 at the June 2023 Board Meeting that went into effect in August 2023.

This memorandum evaluates the performance of the C-470 Express Lane to determine adherence to traffic operations requirements and financial covenants. A flowchart outlining the steps to be followed to determine the need for a toll rate increase is provided as Figure 2 in the technical memo (Attachment A).

Methodology

A comprehensive examination, including analysis of traffic volumes and speed data, was conducted to evaluate the requirement for toll rate adjustments.

Average speeds in the express lanes were examined to determine if the C-470 Express Lanes met the criterion of travel going at least 45 miles per hour (mph) 90 percent of the time for 180 consecutive days. Additionally, a traffic demand management analysis was performed to check whether the Level of Service (LOS) criterion—meeting Level of Service (LOS) C or better—would be met from August 2024 to April 2025. The analysis contained in the Technical Memo (Attachment A) show that the C-470 Express Lanes are presently operating below capacity and are not experiencing any deterioration in LOS and these conditions are forecast to continue for the next 12 months.

Debt financing covenants, Operations and Maintenance (O&M) costs, inflation, and toll transaction processing costs were evaluated to determine whether increases to toll rates were indicated based on these factors.

Summary of Findings

The speed analysis concluded that current toll rates fulfill the travel speed and LOS criteria for the C-470 Express Lanes.

C-470 Express Lanes toll revenues have performed at levels generally equal to the minimum debt financing covenants, including coverage ratios. Moving into 2024, this trend is expected to continue.

As reported by the Bureau of Labor Statistics, the Consumer Price Index (CPI) in the Denver-Aurora-Lakewood, CO area increased by 3.5% year-over-year, as of end of January 2024. This inflation rate was factored into the proposed fiscal year (FY) 2025 toll rate adjustment.

Toll collection costs (O & M) are expected to remain stable or increase slightly during 2024. Additionally, anticipated lifecycle costs to replace toll collection equipment along the corridor will be offset by reductions in toll processing costs per transaction.

Given the findings of this analysis, it is recommended that toll rates be increased by 3.5%, rounded up to the nearest \$0.05, for both Automatic Vehicle Identification (AVI) and License Plate Toll (LPT) rates. This increase in toll rates, which relies on CPI-based inflation, will also assist in addressing debt financing covenants and O&M cost concerns.

Staff Recommendations

Based on the results noted in the previous section, CTIO staff recommends the proposed AVI and LPT toll rates per the toll schedule shown in the tables below. The multi-axle (4+) surcharge remains unchanged at \$25.

Proposed FY 2024/2025 ExpressToll (AVI) Toll Rates for C-470

Hours	EB Seg 1		EB Seg 2		WB Seg 1		WB Seg 2		WB Seg 3	
	Wadsworth to Lucent		Lucent to I-25		I-25 to University		University to Lucent		Lucent to Wadsworth	
	Current Toll Rate	Proposed Toll Rate	Current Toll Rate	Proposed Toll Rate	Current Toll Rate	Proposed Toll Rate	Current Toll Rate	Proposed Toll Rate	Current Toll Rate	Proposed Toll Rate
7:00 PM - 5:59 AM	\$ 0.80	\$ 0.85	\$ 0.80	\$ 0.85	\$ 0.80	\$ 0.85	\$ 0.80	\$ 0.85	\$ 0.80	\$ 0.85
6:00 AM - 6:59 AM	\$ 0.80	\$ 0.85	\$ 2.40	\$ 2.50	\$ 1.10	\$ 1.15	\$ 1.10	\$ 1.15	\$ 1.10	\$ 1.15
7:00 AM - 8:59 AM	\$ 1.30	\$ 1.35	\$ 3.80	\$ 3.95	\$ 1.90	\$ 2.00	\$ 1.90	\$ 2.00	\$ 1.90	\$ 2.00
9:00 AM - 1:59 PM	\$ 0.80	\$ 0.85	\$ 1.90	\$ 2.00	\$ 0.80	\$ 0.85	\$ 0.80	\$ 0.85	\$ 0.80	\$ 0.85
2:00 PM - 2:59 PM	\$ 0.80	\$ 0.85	\$ 2.50	\$ 2.60	\$ 1.20	\$ 1.25	\$ 1.20	\$ 1.25	\$ 1.20	\$ 1.25
3:00 PM - 5:59 PM	\$ 1.10	\$ 1.15	\$ 3.50	\$ 3.65	\$ 2.30	\$ 2.40	\$ 2.30	\$ 2.40	\$ 2.30	\$ 2.40
6:00 PM - 6:59 PM	\$ 1.10	\$ 1.15	\$ 3.00	\$ 3.15	\$ 1.75	\$ 1.85	\$ 1.75	\$ 1.85	\$ 1.75	\$ 1.85
\$25 Surcharge for 4+ Axle Vehicles per Zone All Hours										

Proposed FY 2024/2025 LicensePlateToll (LPT) Toll Rates for C-470

Hours	EB Seg 1		EB Seg 2		WB Seg 1		WB Seg 2		WB Seg 3	
	Wadsworth to Lucent		Lucent to I-25		I-25 to University		University to Lucent		Lucent to Wadsworth	
	Current Toll Rate	Proposed Toll Rate	Current Toll Rate	Proposed Toll Rate	Current Toll Rate	Proposed Toll Rate	Current Toll Rate	Proposed Toll Rate	Current Toll Rate	Proposed Toll Rate
7:00 PM - 5:59 AM	\$ 2.32	\$ 2.45	\$ 3.33	\$ 3.45	\$ 2.32	\$ 2.45	\$ 3.33	\$ 3.45	\$ 2.32	\$ 2.45
6:00 AM - 6:59 AM	\$ 2.32	\$ 2.45	\$ 5.81	\$ 6.05	\$ 2.69	\$ 2.80	\$ 3.75	\$ 3.90	\$ 2.69	\$ 2.80
7:00 AM - 8:59 AM	\$ 3.12	\$ 3.25	\$ 8.08	\$ 8.40	\$ 4.07	\$ 4.25	\$ 5.07	\$ 5.25	\$ 4.07	\$ 4.25
9:00 AM - 1:59 PM	\$ 2.32	\$ 2.45	\$ 5.07	\$ 5.25	\$ 2.32	\$ 2.45	\$ 3.33	\$ 3.45	\$ 2.32	\$ 2.45
2:00 PM - 2:59 PM	\$ 2.32	\$ 2.45	\$ 6.02	\$ 6.25	\$ 2.90	\$ 3.05	\$ 3.91	\$ 4.05	\$ 2.90	\$ 3.05
3:00 PM - 5:59 PM	\$ 2.69	\$ 2.80	\$ 7.60	\$ 7.90	\$ 4.70	\$ 4.90	\$ 5.76	\$ 6.00	\$ 4.70	\$ 4.90
6:00 PM - 6:59 PM	\$ 2.69	\$ 2.80	\$ 6.81	\$ 7.05	\$ 3.80	\$ 3.95	\$ 4.80	\$ 5.00	\$ 3.80	\$ 3.95
\$25 Surcharge for 4+ Axle Vehicles per Zone All Hours										

Next Steps

- The Board is being asked to review CTIO staff recommendations.
- CTIO staff will integrate any requested changes to the recommended proposed AVI and LPT toll rates for C-470 and will return to the Board in June for the final adoption of FY 2024-2025 AVI and LPT toll rates for C-470.

Attachments

Attachment A: CDM Smith Toll Rate Adjustment Analysis Memorandum - C-470

ATTACHMENT A

CDM Smith Toll Rate Adjustment Analysis Memorandum - C-470



To: Ms. Piper Darlington, Director, Colorado Transportation Investment Office

From: David Aron, PTP
Steven Marfitano, PE

Date: April 17, 2024

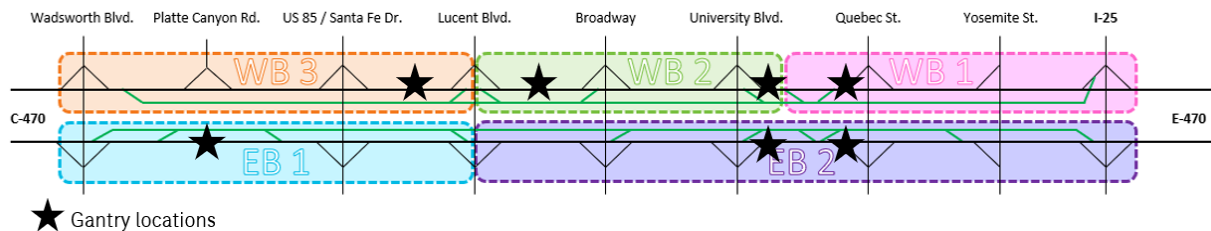
Subject: 2024 C-470 Toll Rate Review Study

This technical memorandum outlines the findings of the yearly analysis conducted to adjust toll rates for the C-470 Express Lanes. The analysis assesses the performance of the C-470 Express Lanes relative to traffic operations standards and financial obligations. Finally, this memorandum outlines the recommended toll rate adjustments for further consideration. These adjustments follow the CTIO tolling policy, which provides a framework for toll rate determination and annual revisions. The last toll rate adjustment took effect on August 1, 2023. It is worth noting that the current toll rate review is for internal planning-level consideration by CTIO to assess the revenue potential of corridor. It is not intended for direct project financing.

C-470 Express Lanes Corridor

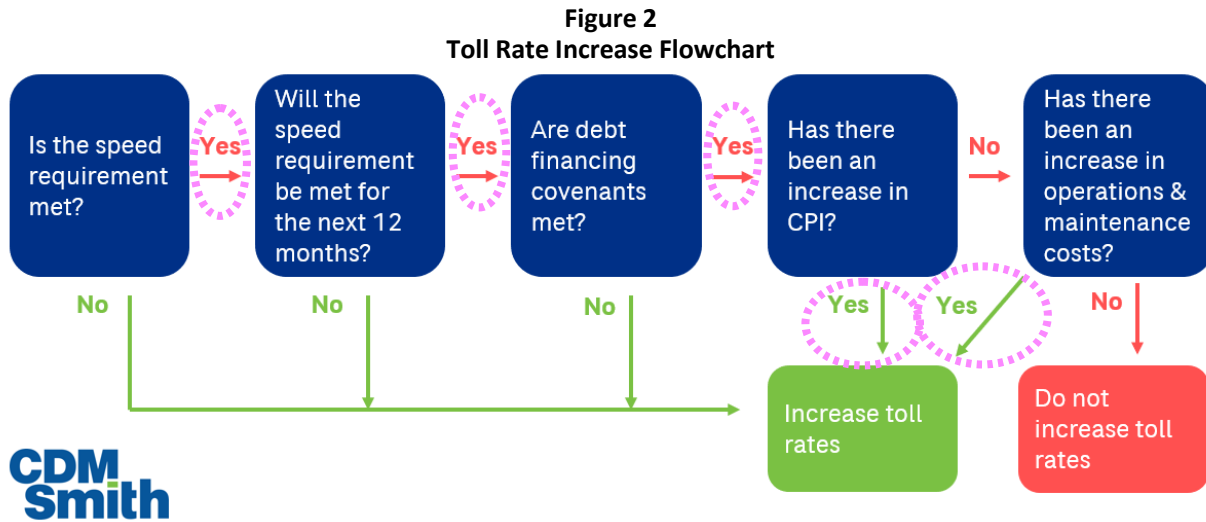
C-470 is a 12.5-mile facility between I-25 and Wadsworth Boulevard and is the southwest portion of a circumferential expressway around Denver, Colorado. The toll collection system consists of two tolling zones in the eastbound direction and three tolling zones in the westbound direction, as shown in **Figure 1**. Tolls are paid using all-electronic toll gantries using ExpressToll transponders or through video imaging and invoicing via LicensePlateToll (LPT). Toll rates are static, set annually, and allow for 4-or-more-axle vehicles to use the facility with a \$25 surcharge per tolling zone. Toll rates are the same for weekdays, weekends, and holidays. Tolls are waived for motorcycles using the lanes and no discounts are offered for high-occupancy vehicles (HOV).

Figure 1
C-470 Express Lane Tolling Zones



Toll Adjustment Process

A comprehensive examination, including analysis of traffic volumes and speed data, was conducted to evaluate the requirement for toll rate adjustments. **Figure 2** is a flowchart delineating the steps to determine if a toll rate increase is necessary.



The initial phase of the assessment verified whether the average speeds within the C-470 Express Lanes consistently upheld a minimum threshold of 45 miles per hour (MPH) for at least 90% of the time during a continuous span of 180 days. Additionally, an evaluation of the corridor's Level of Service (LOS) was conducted to gain perspective on the operations within the express lanes.

Next, the evaluation was extended to cover a 12-month duration to determine whether both the speed mandate of a minimum of 45 MPH and the Level of Service (LOS) benchmark of LOS C or better is expected to be satisfied from July 2024 to June 2025. Forecasts for corridor traffic volumes were extrapolated using a growth rate based on past historic growth trends along the corridor. Express lane traffic volumes were forecast assuming the historic ratio of general-purpose to express lane users. Volume/capacity (V/C) ratios were then calculated to forecast a future express lane LOS.

The assessment culminated in evaluations to assess compliance with debt financing covenants, adjustments for inflation increases, and considerations of operations and maintenance (O&M) expenses. The results of these assessments are discussed in detail in the following sections.

Toll Adjustment Assessment

Speed Requirement

Figure 3 details the results of the V/C analysis for FY 2024, and **Figure 4** shows the results for FY 2025. The analysis utilized planning-level capacities of 1,500 and 1,200 vehicles per hour per lane for the general purpose and express lanes, respectively, representing the limit of free-flow operations at the top end of a theoretical Level of Service C. Any additional volume above these capacities would lead to a deterioration in Express Lane operations below free-flow conditions under Level of Service D or worse. The relatively low V/C ratios in FY 2024, as shown in **Figure 3**, demonstrate that the express lanes are presently operating well below capacity and are not experiencing any deterioration in LOS. The consistently low V/C ratios estimated for FY 2025 indicate that these conditions are forecast to continue for the next 12 months, as shown in **Figure 4**. This evaluation found that current C-470 corridor conditions result in speed and LOS conditions that meet the required criteria. Furthermore, the conditions in the next 12 months will continue to meet the speed and LOS requirements. Therefore, no toll adjustments are recommended based on the speed requirement.

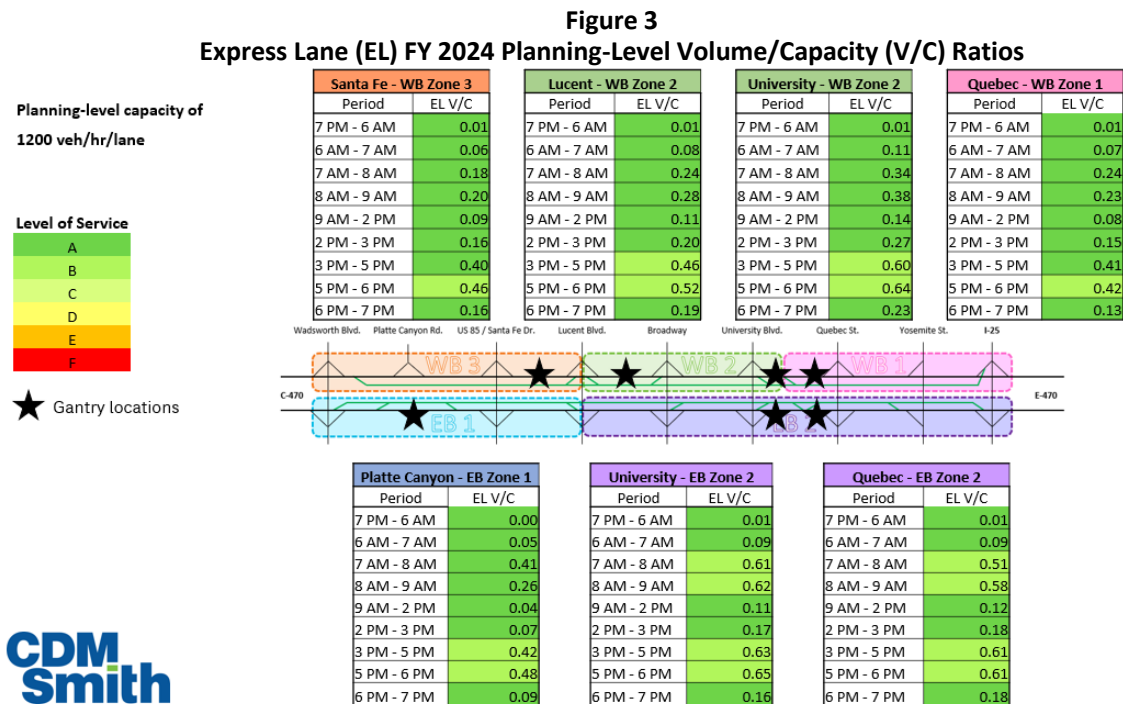
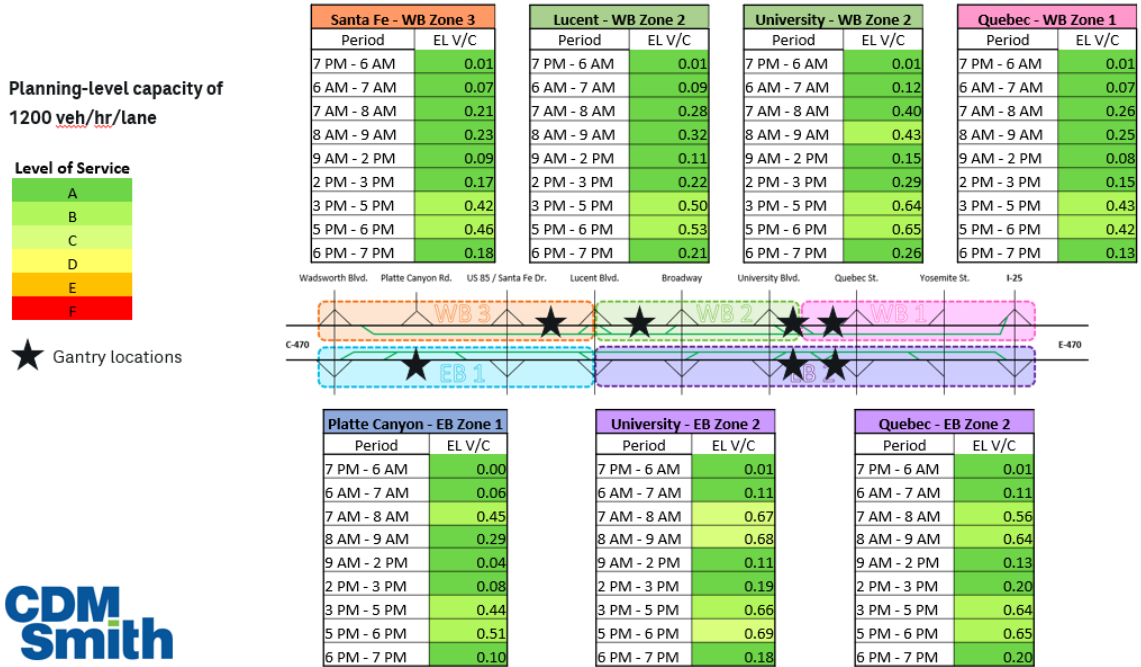


Figure 4
Express Lane (EL) FY 2025 Planning-Level Volume/Capacity (V/C) Ratios



Debt Financing Covenants

Since opening day, C-470 Express Lanes toll revenues have performed lower than originally forecast and have performed at levels generally equal to the minimum debt financing covenants, including coverage ratios. Moving into 2024, this trend is expected to continue. The agency may consider continued toll rate increases to ensure financing covenants are met.

Consumer Price Index (CPI) Increase

As reported by the Bureau of Labor Statistics, the Consumer Price Index (CPI) in the Denver-Aurora-Lakewood, CO area increased by 3.5% year-over-year, as of end of January 2024. This inflation rate was factored into the proposed fiscal year (FY) 2025 toll rate adjustment.

Operations and Maintenance (O&M) Costs

Based on information provided by CTIO Staff, toll collection costs are expected to remain stable or increase slightly during 2024. Additionally, anticipated lifecycle costs to replace toll collection equipment along the corridor will be offset by reductions in toll processing costs per transaction.

Proposed Toll Rates

Given the findings of this analysis, it is recommended that toll rates be increased by 3.5%, rounded up to the nearest \$0.05, for both Automatic Vehicle Identification (AVI) and License Plate Toll (LPT) rates. This increase in toll rates, which relies on CPI-based inflation, will also assist in addressing debt financing covenants and O&M cost concerns.

The current FY 2024 ExpressToll rates are shown alongside the proposed FY 2025 ExpressToll rates in **Table 1**. The current FY 2024 LPT rates are shown alongside the proposed FY 2025 LPT rates in **Table 2**.

Hours	EB Seg 1		EB Seg 2		WB Seg 1		WB Seg 2		WB Seg 3	
	Wadsworth to Lucent		Lucent to I-25		I-25 to University		University to Lucent		Lucent to Wadsworth	
	Current Toll Rate	Proposed Toll Rate	Current Toll Rate	Proposed Toll Rate	Current Toll Rate	Proposed Toll Rate	Current Toll Rate	Proposed Toll Rate	Current Toll Rate	Proposed Toll Rate
7:00 PM - 5:59 AM	\$ 0.80	\$ 0.85	\$ 0.80	\$ 0.85	\$ 0.80	\$ 0.85	\$ 0.80	\$ 0.85	\$ 0.80	\$ 0.85
6:00 AM - 6:59 AM	\$ 0.80	\$ 0.85	\$ 2.40	\$ 2.50	\$ 1.10	\$ 1.15	\$ 1.10	\$ 1.15	\$ 1.10	\$ 1.15
7:00 AM - 8:59 AM	\$ 1.30	\$ 1.35	\$ 3.80	\$ 3.95	\$ 1.90	\$ 2.00	\$ 1.90	\$ 2.00	\$ 1.90	\$ 2.00
9:00 AM - 1:59 PM	\$ 0.80	\$ 0.85	\$ 1.90	\$ 2.00	\$ 0.80	\$ 0.85	\$ 0.80	\$ 0.85	\$ 0.80	\$ 0.85
2:00 PM - 2:59 PM	\$ 0.80	\$ 0.85	\$ 2.50	\$ 2.60	\$ 1.20	\$ 1.25	\$ 1.20	\$ 1.25	\$ 1.20	\$ 1.25
3:00 PM - 5:59 PM	\$ 1.10	\$ 1.15	\$ 3.50	\$ 3.65	\$ 2.30	\$ 2.40	\$ 2.30	\$ 2.40	\$ 2.30	\$ 2.40
6:00 PM - 6:59 PM	\$ 1.10	\$ 1.15	\$ 3.00	\$ 3.15	\$ 1.75	\$ 1.85	\$ 1.75	\$ 1.85	\$ 1.75	\$ 1.85
\$25 Surcharge for 4+ Axle Vehicles per Zone All Hours										

Table 2
Current and Proposed ExpressToll Rates

Hours	EB Seg 1		EB Seg 2		WB Seg 1		WB Seg 2		WB Seg 3	
	Wadsworth to Lucent		Lucent to I 25		I 25 to University		University to Lucent		Lucent to Wadsworth	
	Current Toll Rate	Proposed Toll Rate	Current Toll Rate	Proposed Toll Rate	Current Toll Rate	Proposed Toll Rate	Current Toll Rate	Proposed Toll Rate	Current Toll Rate	Proposed Toll Rate
7:00 PM - 5:59 AM	\$ 2.32	\$ 2.45	\$ 3.33	\$ 3.45	\$ 2.32	\$ 2.45	\$ 3.33	\$ 3.45	\$ 2.32	\$ 2.45
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2:00 PM - 2:59 PM	\$ 2.32	\$ 2.45	\$ 6.02	\$ 6.25	\$ 2.90	\$ 3.05	\$ 3.91	\$ 4.05	\$ 2.90	\$ 3.05
3:00 PM - 5:59 PM	\$ 2.69	\$ 2.80	\$ 7.60	\$ 7.90	\$ 4.70	\$ 4.90	\$ 5.76	\$ 6.00	\$ 4.70	\$ 4.90
6:00 PM - 6:59 PM	\$ 2.69	\$ 2.80	\$ 6.81	\$ 7.05	\$ 3.80	\$ 3.95	\$ 4.80	\$ 5.00	\$ 3.80	\$ 3.95
\$25 Surcharge for 4+ Axle Vehicles per Zone All Hours										

Table 2
Current and Proposed License Plate Toll (LPT) Rates

Disclaimer

Current accepted professional practices and procedures were used in the development of these traffic and revenue estimates. However, as with any forecast of the future, it should be understood that there may be differences between forecasted and actual results caused by events and circumstances beyond the control of the forecasters. In formulating its estimates, CDM Smith has reasonably relied upon the accuracy and completeness of information provided (both written and oral) by the Colorado Transportation Investment Office and other local and state agencies. CDM Smith also has relied upon the reasonable assurances of some independent parties and is not aware of any facts that would make such information misleading.

CDM Smith has made qualitative judgments related to several key variables in the development and analysis of the traffic and revenue estimates that must be considered as a whole; therefore, selecting portions of any individual result without consideration of the intent of the whole may create a misleading or incomplete view of the results and the underlying methodologies used to obtain the results. CDM Smith gives no opinion as to the value or merit to partial information extracted from this report.

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