

MEMORANDUM

TO: COLORADO TRANSPORTATION INVESTMENT OFFICE BOARD OF DIRECTORS
FROM: NICK FARBER, CTIO DIRECTOR, AND KELLY BROWN, CHIEF TOLL OPERATIONS OFFICER
SUBJECT: C-470 EXPRESS LANES TOLL RATE ADJUSTMENT
DATE: MAY 17, 2023

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

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

The C-470 Express Lanes originate from the eastern boundary at the I-25/E-470 junction and terminate at Wadsworth Boulevard. The current toll rates and toll schedule were set in 2022 based on analyses of post-COVID-19 traffic patterns. The Board approved a toll rate adjustment for 2022 at the June 2022 Board Meeting and went into effect in August 2022.

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 in Appendix 1 of Attachment A.

Methodology

A three-fold analysis was undertaken to analyze the need for toll rate increases.

First, average speeds in the express lanes were examined to determine if the express lanes met the criterion of travel going at least 45 miles per hour (mph) 90 percent of the time for 180 consecutive days. In addition, the traffic Level of Service (LOS) for this segment of I-25 was analyzed to assess the performance of the express lanes.

Second, a traffic demand management analysis was performed to check whether the LOS criterion—express lanes meeting LOS C or better—would be met from August 2023 to April 2024. The express lane traffic volumes were projected from August 2023 to April 2024 based on a growth rate of 1.3 percent obtained from the Colorado Department of Transportation (CDOT) Online Transportation Information System (OTIS). These projected volumes were then used to determine the future LOS in the express lanes. The data used for this analysis included:

- Average speed in the general-purpose and express lanes
- Traffic volumes in the general-purpose and express lanes
- Information on events (crashes, lane closures, maintenance, etc.) that occurred along the C-470 as identified in the corridor's Event Audit Report. Minor occurrences of adverse weather or crashes in the general-purpose lanes were taken as part of normal operations and included in the data. However, major events (those lasting more than two hours per the Manual on Uniform Traffic Control Devices [MUTCD, 2009]) whose impact was identified as severe in the corridor's Event Audit Report were excluded from the data.
- Growth rate calculated from CDOT's OTIS traffic volume projections.

Third, the Operations and Maintenance (O&M) cost, inflation, and toll transaction processing cost increases were evaluated to consider increases in toll rates based on costs and inflation.

Summary of Findings

The traffic operations results above determined that current toll rates fulfill the travel speed and LOS criteria for the C-470 Express Lanes. Inflation was evaluated between August 2022 and March 2023 using the latest data available for the Denver-Aurora-Lakewood Consumer Price Index (CPI). The inflation adjustment was estimated at 1.9 percent based on U.S. Bureau of Labor Statistics data. Toll transaction costs increased by 5 percent, and operations and maintenance costs increased by 10 percent in 2023.

The recommended increase in toll rates is an average of 5.6 percent for Automatic Vehicle Identification (AVI) toll rates and License Plate Toll (LPT) toll rates due to a combination of inflation and operations and maintenance costs.

Staff Recommendations

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

Proposed FY 2023/2024 New Toll Rates for EASTBOUND C-470

Time	Eastbound Zone 1				Eastbound Zone 2			
	AVI	NEW AVI	LPT	NEW LPT	AVI	NEW AVI	LPT	NEW LPT
12:00 AM-6:00 AM	\$0.75	\$0.80	\$2.20	\$2.32	\$0.75	\$0.80	\$3.15	\$3.33
6:00 AM-7:00 AM	\$0.75	\$0.80	\$2.20	\$2.32	\$2.25	\$2.40	\$5.50	\$5.81
7:00 AM-9:00 AM	\$1.25	\$1.30	\$2.95	\$3.12	\$3.60	\$3.80	\$7.65	\$8.08
9:00 AM-2:00 PM	\$0.75	\$0.80	\$2.20	\$2.32	\$1.80	\$1.90	\$4.80	\$5.07
2:00 PM-3:00 PM	\$0.75	\$0.80	\$2.20	\$2.32	\$2.35	\$2.50	\$5.70	\$6.02
3:00 PM-6:00 PM	\$1.00	\$1.10	\$2.55	\$2.69	\$3.30	\$3.50	\$7.20	\$7.60
6:00 PM-7:00 PM	\$1.00	\$1.10	\$2.55	\$2.69	\$2.85	\$3.00	\$6.45	\$6.81
7:00 PM-12:00 AM	\$0.75	\$0.80	\$2.20	\$2.32	\$0.75	\$0.80	\$3.15	\$3.33

Proposed FY 2023/2024 New Toll Rates for WESTBOUND C-470

Time	Westbound Zone 1				Westbound Zone 2				Westbound Zone 3			
	AVI	NEW AVI	LPT	NEW LPT	AVI	NEW AVI	LPT	NEW LPT	AVI	NEW AVI	LPT	NEW LPT
12:00 AM-6:00 AM	\$0.75	\$0.80	\$2.20	\$2.32	\$0.75	\$0.80	\$3.15	\$3.33	\$0.75	\$0.80	\$2.20	\$2.32
6:00 AM-7:00 AM	\$1.00	\$1.10	\$2.55	\$2.69	\$1.00	\$1.10	\$3.55	\$3.75	\$1.00	\$1.10	\$2.55	\$2.69
7:00 AM-9:00 AM	\$1.80	\$1.90	\$3.85	\$4.07	\$1.80	\$1.90	\$4.80	\$5.07	\$1.80	\$1.90	\$3.85	\$4.07
9:00 AM-2:00 PM	\$0.75	\$0.80	\$2.20	\$2.32	\$0.75	\$0.80	\$3.15	\$3.33	\$0.75	\$0.80	\$2.20	\$2.32
2:00 PM-3:00 PM	\$1.10	\$1.20	\$2.75	\$2.90	\$1.10	\$1.20	\$3.70	\$3.91	\$1.10	\$1.20	\$2.75	\$2.90
3:00 PM-6:00 PM	\$2.20	\$2.30	\$4.45	\$4.70	\$2.20	\$2.30	\$5.45	\$5.76	\$2.20	\$2.30	\$4.45	\$4.70
6:00 PM-7:00 PM	\$1.65	\$1.75	\$3.60	\$3.80	\$1.65	\$1.75	\$4.55	\$4.80	\$1.65	\$1.75	\$3.60	\$3.80
7:00 PM-12:00 AM	\$0.75	\$0.80	\$2.20	\$2.32	\$0.75	\$0.80	\$3.15	\$3.33	\$0.75	\$0.80	\$2.20	\$2.32

Next Steps

- The Board is being asked to review HPTE staff recommendations.
- HPTE 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 2023-2024 AVI and LPT toll rates for C-470.

Attachments

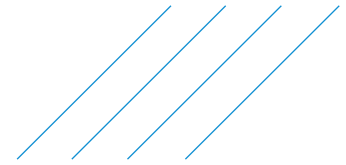
Attachment A: Toll Rate Adjustment Analysis Memorandum - C-470



COLORADO
**Transportation
Investment Office**

ATTACHMENT A

Toll Rate Adjustment Analysis Memorandum - C470



Memo

To: Kelly Brown, Colorado Transportation Investment Office

From: Rami Harb, Atkins	Email: Rami.Harb@atkinsglobal.com
Date: May 9, 2023	Phone: 720-258-0163
Ref: C-470 Express Lanes (I-25/E-470 to Wadsworth Blvd)	cc:

Subject: Toll Rate Adjustment Analysis – C-470 Express Lanes

1. Introduction

Atkins North America, Inc. (Atkins) and the Colorado Transportation Investment Office (CTIO) developed this Toll Rate Adjustment Analysis memorandum to document the methodology used to evaluate the need for toll rate increases on Colorado State Highway 470 (C-470) Express Lanes (I-25/E-470 to Wadsworth Blvd). The current toll rates were set in July 2022.

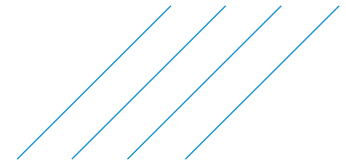
2. Methodology

A flowchart outlining the steps to be followed to determine the need for a toll rate increase is provided in **Appendix 1**. This flowchart was used as guidance to decide if a toll rate increase is required for C-470 Express Lanes. For the period August 2022 to April 2023, a three-step process was undertaken to analyze the need for toll rates increases. The analysis was done separately for each zone in the eastbound and westbound directions.

First, average speeds in the express lanes were examined to determine if the express lanes met the criterion of travel going at least 45 miles per hour (mph) for 90 percent of the time for a period of 180 consecutive days. In addition, the traffic Level of Service (LOS) for each zone was analyzed to assess the performance of the express lanes.

Second, a traffic demand management analysis was performed to check whether the LOS criterion—express lanes meeting LOS C or better—would be met in the future for the period August 2023 to April 2024. The express lane traffic volumes were projected from the period August 2023 to April 2024 based on a growth rate of 1.3 percent obtained from the Colorado Department of Transportation (CDOT) Online Transportation Information System (OTIS). These projected volumes were then used to determine the future LOS in the express lanes. The data used for this analysis included:

- Average speed in the general-purpose and express lanes
- Traffic volumes in the general-purpose and express lanes
- Information on events (crashes, lane closures, maintenance, etc.) that occurred along the C-470 as identified in the corridor’s Event Audit Report. Nominal occurrences of adverse weather or crashes in the general-purpose lanes were taken as part of normal operations and included in the data. However, major events (those lasting more than two hours per the *Manual on Uniform Traffic Control Devices* [MUTCD, 2009]) whose impact was identified as severe in the corridor’s Event Audit Report were excluded from the data.



- Growth rate calculated from CDOT’s OTIS traffic volume projections

Third, the Operations and Maintenance (O&M) cost, inflation, and toll transaction processing cost increases were evaluated to consider increases in toll rates based on costs and inflation.

3. Summary of Findings

3.1. Traffic Management

The express lanes average speeds satisfied the criterion of operating at higher than 45 miles per hour at least 90 percent of the time.

The average LOS for the C-470 express lanes at different weekday times between August 2022 and April 2023 was consistently at LOS C or better. The express lanes, as of April 2023, are performing as intended in providing acceptable LOS. The traffic volumes were projected one year into the future to determine if the LOS criterion (LOS C or better) would be met during the year 2024. Future year projections continue to show LOS C or better for all hours of the day. Therefore, the current toll rates are managing traffic demand in the express lanes as intended based on the LOS.

Based on the traffic operations, it was determined that current toll rates fulfil the travel speed and LOS criteria for the C-470 express lanes.

3.2. Inflation and Operations and Maintenance Costs

Inflation was evaluated between August 2022 and March 2023 using the latest data available for the Denver-Aurora-Lakewood Consumer Price Index (CPI). The inflation adjustment was estimated at 1.9% based on data from the U.S. Bureau of Labor Statistics.

Toll transaction costs increased by 5% and operations and maintenance costs increased by 10% in 2023. Overall, a 5.6% increase in toll rates is recommended based on inflation and increases in operations and maintenance costs.

4. Recommendation for New Rates

Based on the results noted in the previous section, CTIO recommends revising the AVI and LPT toll rates per the toll schedule shown below in Table 1 and Table 2. There is no change to the multi-axle (4+) surcharge; it remains at \$25.

Table 1: Eastbound Proposed New Toll Rates for C-470 Express Lanes

Time	Eastbound Zone 1				Eastbound Zone 2			
	AVI	NEW AVI	LPT	NEW LPT	AVI	NEW AVI	LPT	NEW LPT
12:00 AM-6:00 AM	\$0.75	\$0.80	\$2.20	\$2.32	\$0.75	\$0.80	\$3.15	\$3.33
6:00 AM-7:00 AM	\$0.75	\$0.80	\$2.20	\$2.32	\$2.25	\$2.40	\$5.50	\$5.81
7:00 AM-9:00 AM	\$1.25	\$1.30	\$2.95	\$3.12	\$3.60	\$3.80	\$7.65	\$8.08
9:00 AM-2:00 PM	\$0.75	\$0.80	\$2.20	\$2.32	\$1.80	\$1.90	\$4.80	\$5.07
2:00 PM-3:00 PM	\$0.75	\$0.80	\$2.20	\$2.32	\$2.35	\$2.50	\$5.70	\$6.02
3:00 PM-6:00 PM	\$1.00	\$1.10	\$2.55	\$2.69	\$3.30	\$3.50	\$7.20	\$7.60
6:00 PM-7:00 PM	\$1.00	\$1.10	\$2.55	\$2.69	\$2.85	\$3.00	\$6.45	\$6.81
7:00 PM-12:00 AM	\$0.75	\$0.80	\$2.20	\$2.32	\$0.75	\$0.80	\$3.15	\$3.33

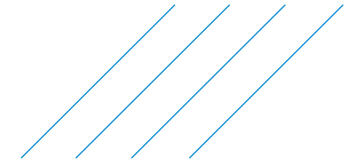
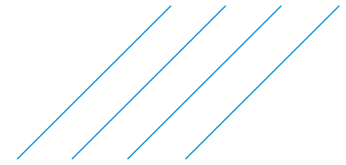


Table 2: Westbound Proposed New Toll Rates for C-470 Express Lanes

Time	Westbound Zone 1				Westbound Zone 2				Westbound Zone 3			
	AVI	NEW AVI	LPT	NEW LPT	AVI	NEW AVI	LPT	NEW LPT	AVI	NEW AVI	LPT	NEW LPT
12:00 AM-6:00 AM	\$0.75	\$0.80	\$2.20	\$2.32	\$0.75	\$0.80	\$3.15	\$3.33	\$0.75	\$0.80	\$2.20	\$2.32
6:00 AM-7:00 AM	\$1.00	\$1.10	\$2.55	\$2.69	\$1.00	\$1.10	\$3.55	\$3.75	\$1.00	\$1.10	\$2.55	\$2.69
7:00 AM-9:00 AM	\$1.80	\$1.90	\$3.85	\$4.07	\$1.80	\$1.90	\$4.80	\$5.07	\$1.80	\$1.90	\$3.85	\$4.07
9:00 AM-2:00 PM	\$0.75	\$0.80	\$2.20	\$2.32	\$0.75	\$0.80	\$3.15	\$3.33	\$0.75	\$0.80	\$2.20	\$2.32
2:00 PM-3:00 PM	\$1.10	\$1.20	\$2.75	\$2.90	\$1.10	\$1.20	\$3.70	\$3.91	\$1.10	\$1.20	\$2.75	\$2.90
3:00 PM-6:00 PM	\$2.20	\$2.30	\$4.45	\$4.70	\$2.20	\$2.30	\$5.45	\$5.76	\$2.20	\$2.30	\$4.45	\$4.70
6:00 PM-7:00 PM	\$1.65	\$1.75	\$3.60	\$3.80	\$1.65	\$1.75	\$4.55	\$4.80	\$1.65	\$1.75	\$3.60	\$3.80
7:00 PM-12:00 AM	\$0.75	\$0.80	\$2.20	\$2.32	\$0.75	\$0.80	\$3.15	\$3.33	\$0.75	\$0.80	\$2.20	\$2.32



APPENDIX 1: Toll Rate Increase Flowchart

