

## MEMORANDUM

**TO:** COLORADO TRANSPORTATION INVESTMENT OFFICE BOARD OF DIRECTORS  
**FROM:** NICK FARBER, CTIO DIRECTOR, AND KELLY BROWN, TOLLING OPERATIONS  
MANAGER  
**SUBJECT:** FY 2022/2023 ANNUAL TOLL RATE ADJUSTMENT ANALYSIS FOR I-25  
NORTH (US 36 TO 120<sup>th</sup> AVENUE)  
**DATE:** MAY 18, 2022

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### Purpose and Requested Action

This memorandum presents the results of the annual toll rate adjustment analysis for I-25 North (US 36 to 120th Ave.) (“Segment 2”) 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 I-25 North (US 36 to 120<sup>th</sup> Avenue) toll rate adjustment at the June meeting. The updated toll rates would take effect in early July of this year.

### Background

Segment 2 originates from the southern boundary at US 36 and terminates at 120th Ave. This segment of the I-25 Express Lanes opened for tolling in July 2016. The current toll rates were adjusted in 2021 based on a previous analysis of the Segment 2 Express Lanes. A toll rate adjustment for 2021 was approved by the Board at the April 2021 Board Meeting and went into effect in July 2021. This memorandum evaluates the performance of the I-25 Segment 2 Express Lane to determine adherence to traffic operations requirements and financial covenants. Appendix 1 in Attachment A shows the methodology for determining yearly toll rate adjustments.)

### 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 a period of 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—meeting LOS C or better—would be met in the future for the period June 2022 to December 2022. The express lane traffic volumes were projected for the period June 2022 to December 2022 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 segment of I-25 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.

### Summary of Findings

Based on the above analysis, the current toll rates are managing traffic demand in the express lanes as intended based on the LOS and the average speed requirements. The recommended increase in toll rates is an average of eight (9.1) 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 NEW TOLL RATES FOR I-25 SEGMENT 2**

Time	Northbound				Southbound			
	AVI	NEW AVI	LPT	NEW LPT	AVI	NEW AVI	LPT	NEW LPT
5:00 AM-6:00 AM	\$1.20	\$1.30	\$4.05	\$4.41	\$1.20	\$1.30	\$4.05	\$4.41
6:00 AM-6:45 AM	\$1.20	\$1.30	\$4.05	\$4.41	\$1.20	\$1.30	\$4.05	\$4.41
6.45 AM-7:15 AM	\$1.20	\$1.30	\$4.05	\$4.41	\$1.45	\$1.60	\$4.44	\$4.84
7:15 AM-8:15 AM	\$1.20	\$1.30	\$4.05	\$4.41	\$2.55	\$2.80	\$6.17	\$6.73
8:15 AM-8:45 AM	\$1.20	\$1.30	\$4.05	\$4.41	\$1.70	\$1.85	\$4.83	\$5.27
8:45 AM-10:00 AM	\$1.20	\$1.30	\$4.05	\$4.41	\$1.45	\$1.60	\$4.44	\$4.84
10:00 AM-12:00 PM	\$1.20	\$1.30	\$4.05	\$4.41	\$1.20	\$1.30	\$4.05	\$4.41
12:00 PM-3:00 PM	\$1.20	\$1.30	\$4.05	\$4.41	\$1.20	\$1.30	\$4.05	\$4.41
3:00 PM-3:30 PM	\$1.45	\$1.60	\$4.44	\$4.84	\$1.20	\$1.30	\$4.05	\$4.41
3:30 PM-4:30 PM	\$1.70	\$1.85	\$4.83	\$5.27	\$1.20	\$1.30	\$4.05	\$4.41
4:30 PM-6:00 PM	\$3.35	\$3.65	\$7.42	\$8.10	\$1.20	\$1.30	\$4.05	\$4.41
6:00 PM-8:00 PM	\$1.45	\$1.60	\$4.44	\$4.84	\$1.20	\$1.30	\$4.05	\$4.41
8:00 PM-5:00 AM	\$1.20	\$1.30	\$4.05	\$4.41	\$1.20	\$1.30	\$4.05	\$4.41
Weekend	\$1.45	\$1.60	\$4.44	\$4.84	\$1.45	\$1.60	\$4.44	\$4.84

### Next Steps

- The Board is being asked to review HPTE staff recommendation.
- HPTE staff will integrate any requested changes to the recommended proposed AVI and LPT toll rates for I-25 North Segment 2 and will return to the Board in June for final adoption of FY 2022-2023 AVI and LPT toll rates for I-25 North Segment 2.

### Attachments

Attachment A: Toll Rate Adjustment Analysis Memorandum - I-25 North Segment 2

Attachment B: Toll Rate Adjustment Decision Matrix - I-25 North Segment 2



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**ATTACHMENT A**

**Toll Rate Adjustment Analysis Memorandum - I-25 North Segment 2**



## Memo

To: Kelly Brown, Colorado Transportation Investment Office

From: Rami Harb, Atkins	Email: Rami.Harb@atkinsglobal.com
Date: May 10, 2022	Phone: 720-258-0163
Ref: I-25 North (Segment 2) Express Lanes (US 36 to 120th Avenue)	cc:

Subject: Toll Rate Adjustment Analysis- I-25 North Segment 2

## 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 Interstate 25 (I-25) North Segment 2 Express Lanes (U.S. Highway 36 [US 36] to 120th Avenue). The current toll rates were set in 2021 based on previous analysis of the Segment 2 Express Lanes.

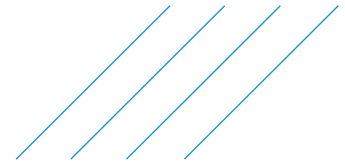
## 2. Methodology

A flowchart outlining the steps to be followed to determining 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 I-25 North Segment 2. For the period June 2021 to December 2022, a three-step process was undertaken to analyze the need for toll rates increases. The analysis was done separately for the northbound and southbound 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 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—meeting LOS C or better—would be met in the future for the period April 2021 to December 2021. The express lane traffic volumes were projected from the period April 2019 to December 2019 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 segment of I-25 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 (less than 2% below 45 mph). Note that speed data is limited to the period from June 2021 to September 2021. From October 2021 to December 2022, traffic volumes were estimated.

Table 1 shows the average LOS for the express lanes at different weekday times between April 2019 and November 2019. The 2019 volumes were used instead of 2021 volumes because of the impact of the COVID-19 travel restrictions on traffic volumes. The LOS in the express lanes, based on average density of vehicles, was at LOS C or better for each hour of the day. Based on the traffic parameters above, the express lanes in 2019 were performing as intended in providing acceptable LOS. For the hours at LOS C, the traffic volumes were projected three years into the future to determine if the LOS criterion (LOS C or better) would be met during the year 2022. As shown in Table 1, the future LOS is LOS C for the hours analyzed. Therefore, the current toll rates are managing traffic demand in the express lanes as intended based on the LOS.

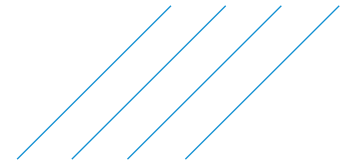
**Table 1: Level of Service by Hour**

Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
<b>Northbound</b>																								
2019 LOS	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	B	C	C	A	A	A	A	A	A
Projected 2022 LOS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	C	C	-	-	-	-	-	-
<b>Southbound</b>																								
2019 LOS	A	A	A	A	A	A	C	C	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Projected 2022 LOS	-	-	-	-	-	-	C	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Based on the traffic operations results above, it was determined that current toll rates fulfil the travel speed and LOS criteria for the I-25 North Segment 2 express lanes.

### 3.2. Inflation and Operations and Maintenance Costs

Inflation was evaluated between 2021 and 2022 using the Denver-Aurora-Lakewood Consumer Price Index (CPI). The inflation adjustment was estimated at 9.1% based on data from the U.S. Bureau of Labor Statistics.

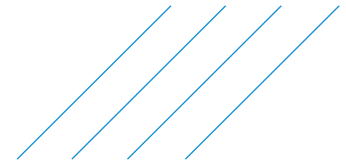


## 4. Recommendation for New Rates

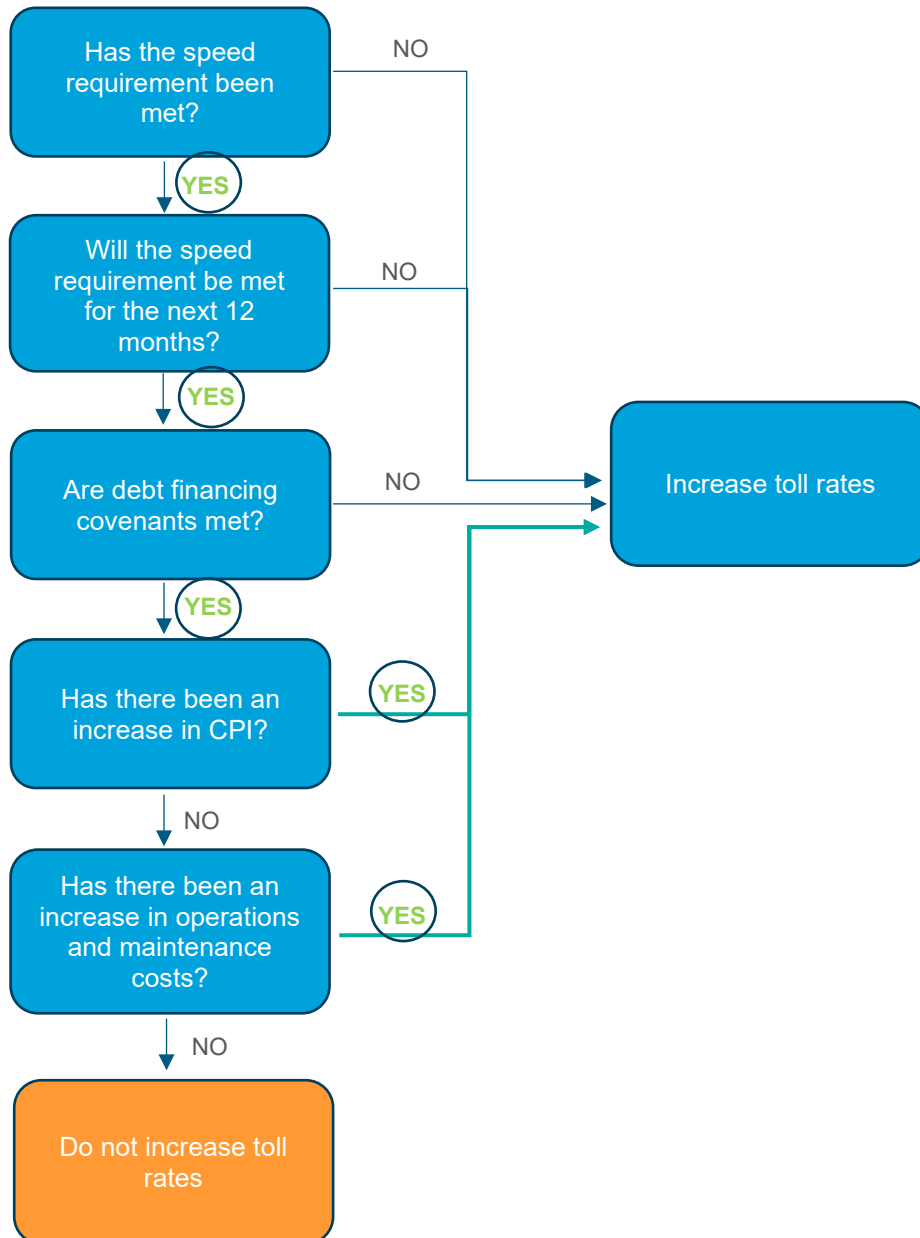
Based on the results noted in the previous section, CTIO recommends revising the AVI and LPT toll rates per the toll schedule shown below in Table 2. There is no change to the multi-axle (4+) surcharge; it remains at \$25.

**Table 2: Proposed New Toll Rates for I-25 North Segment 2**

Time	Northbound				Southbound			
	AVI	NEW AVI	LPT	NEW LPT	AVI	NEW AVI	LPT	NEW LPT
5:00 AM-6:00 AM	\$1.20	\$1.30	\$4.05	\$4.41	\$1.20	\$1.30	\$4.05	\$4.41
6:00 AM-6:45 AM	\$1.20	\$1.30	\$4.05	\$4.41	\$1.20	\$1.30	\$4.05	\$4.41
6:45 AM-7:15 AM	\$1.20	\$1.30	\$4.05	\$4.41	\$1.45	\$1.60	\$4.44	\$4.84
7:15 AM-8:15 AM	\$1.20	\$1.30	\$4.05	\$4.41	\$2.55	\$2.80	\$6.17	\$6.73
8:15 AM-8:45 AM	\$1.20	\$1.30	\$4.05	\$4.41	\$1.70	\$1.85	\$4.83	\$5.27
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10:00 AM-12:00 PM	\$1.20	\$1.30	\$4.05	\$4.41	\$1.20	\$1.30	\$4.05	\$4.41
12:00 PM-3:00 PM	\$1.20	\$1.30	\$4.05	\$4.41	\$1.20	\$1.30	\$4.05	\$4.41
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Weekend	\$1.45	\$1.60	\$4.44	\$4.84	\$1.45	\$1.60	\$4.44	\$4.84



## APPENDIX 1: Toll Rate Increase Flowchart





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**ATTACHMENT B**

**Toll Rate Adjustment Decision Matrix - I-25 North Segment 2**



## I-25 NORTH SEGMENT 2 ANNUAL TOLL RATE ADJUSTMENT DECISION MATRIX FOR FY 2022/2023

Criteria	Analysis	Recommendation
Has the Speed Requirement Been Met for Last 12 Months?	Yes	Toll Rate Increase Not Necessary <input checked="" type="checkbox"/>
	N/A	Toll Rate Increase Not Necessary
	No	Toll Rate Increase Advised
Is it Anticipated that the Speed Requirement Will Be Met for Next 12 Months?	Yes	Toll Rate Increase Not Necessary <input checked="" type="checkbox"/>
	N/A	Toll Rate Increase Not Necessary
	No	Toll Rate Increase Advised
Have the Debt Financing/ Covenants Been Met?	Yes	Toll Rate Increase Not Necessary
	N/A	Toll Rate Increase Not Necessary <input checked="" type="checkbox"/>
	No	Toll Rate Increase Advised
Has there Been an increase in CPI?	Yes	Toll Rate Increase Advised <input checked="" type="checkbox"/>
	N/A	Toll Rate Increase Not Necessary
	No	Toll Rate Increase Not Necessary
Has there Been an O & M Increase?	Yes	Toll Rate Increase Advised <input checked="" type="checkbox"/>
	N/A	Toll Rate Increase Not Necessary
	No	Toll Rate Increase Not Necessary
Raise Additional Revenue for Corridor Improvements?	Yes	Toll Rate Increase Advised
	N/A	Toll Rate Increase Not Necessary <input checked="" type="checkbox"/>
	No	Toll Rate Increase Not Necessary

Based on the answers provided in the above matrix, is the current toll rate sufficient to cover the increased costs for **FY 2022/2023**?

No

Yes

**Staff Recommendation:**  
Toll Rate Increase

**Staff Recommendation:**  
Toll Rate Increase Not Necessary

