

MEMORANDUM

TO: COLORADO TRANSPORTATION INVESTMENT OFFICE BOARD OF DIRECTORS
FROM: NICK FARBER, CTIO DIRECTOR, AND KELLY BROWN, TOLLING OPERATIONS MANAGER
SUBJECT: REQUEST FOR APPROVAL OF PROPOSED FY 2022/2023 ANNUAL TOLL RATE
ADJUSTMENT FOR I-25 NORTH (US 36 TO 120th AVENUE)
DATE: JUNE 15, 2022

Purpose and Requested Action

This memorandum presents a request from the Colorado Transportation Investment Office (CTIO) Staff that the CTIO Board of Directors approve the I-25 North (US 36 to 120th Ave.) (“Segment 2”) 2022-2023 toll rate adjustments for Automatic Vehicle Identification (AVI) and License Plate Toll (LPT) transactions that were presented at the May 2022 Board Meeting. Staff presented the supporting documentation for the proposed 2022-2023 toll rate adjustment to the Board at the May 2022 Board meeting, and it is attached below as Attachment A.

Background

Segment 2 originates from the southern boundary at US 36 and terminates at 120th Avenue. 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.

Recommended New Rates

Staff recommends an adjustment to AVI and LPT toll rates. The recommended increase in toll rates is an average of 9.1 percent for AVI toll rates and LPT toll rates due to a combination of inflation, an increase in equipment maintenance costs, and increasing toll transaction processing costs. The AVI toll rate adjustments range from 10 cents to 30 cents. The LPT toll rate adjustments range from 36 cents to 56 cents (depending on the time of day).

Board Options and Staff Recommendations

1. **Approve** Resolution #392 adopting the proposed FY 2022-2023 AVI and LPT toll rates for I-25 North Segment 2. **Staff recommendation.**
2. Deny the request. Rates on I-25 North Segment 2 would remain unchanged.

Next Steps

If adopted, CTIO staff will implement the approved FY 2022-2023 AVI and LPT toll rates for I-25 North Segment 2, effective 12:00 AM, July 7, 2022.

Attachments

Attachment A: 5/18/2022 Board Memo Seg 2 Toll Rate Adjustment Packet



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ATTACHMENT A

Board Memo Seg 2 Toll Rate Adjustment Packet

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 120th AVENUE)
DATE: MAY 18, 2022

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 120th 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

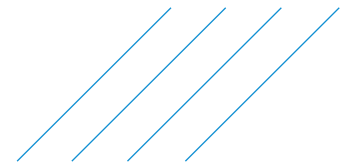
Attachment B: Toll Rate Adjustment Decision Matrix - I-25 North Segment 2



COLORADO
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Investment Office**

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.

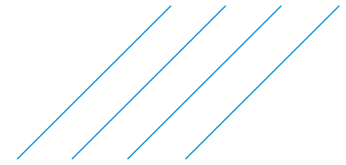
2. Methodology

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.

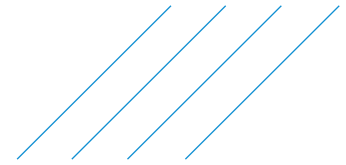
Table 1: Level of Service by Hour

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
Northbound																								
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	-	-	-	-	-	-
Southbound																								
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.

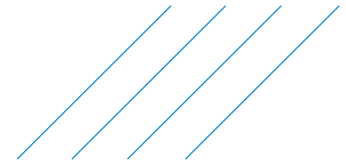


4. Recommendation for New Rates

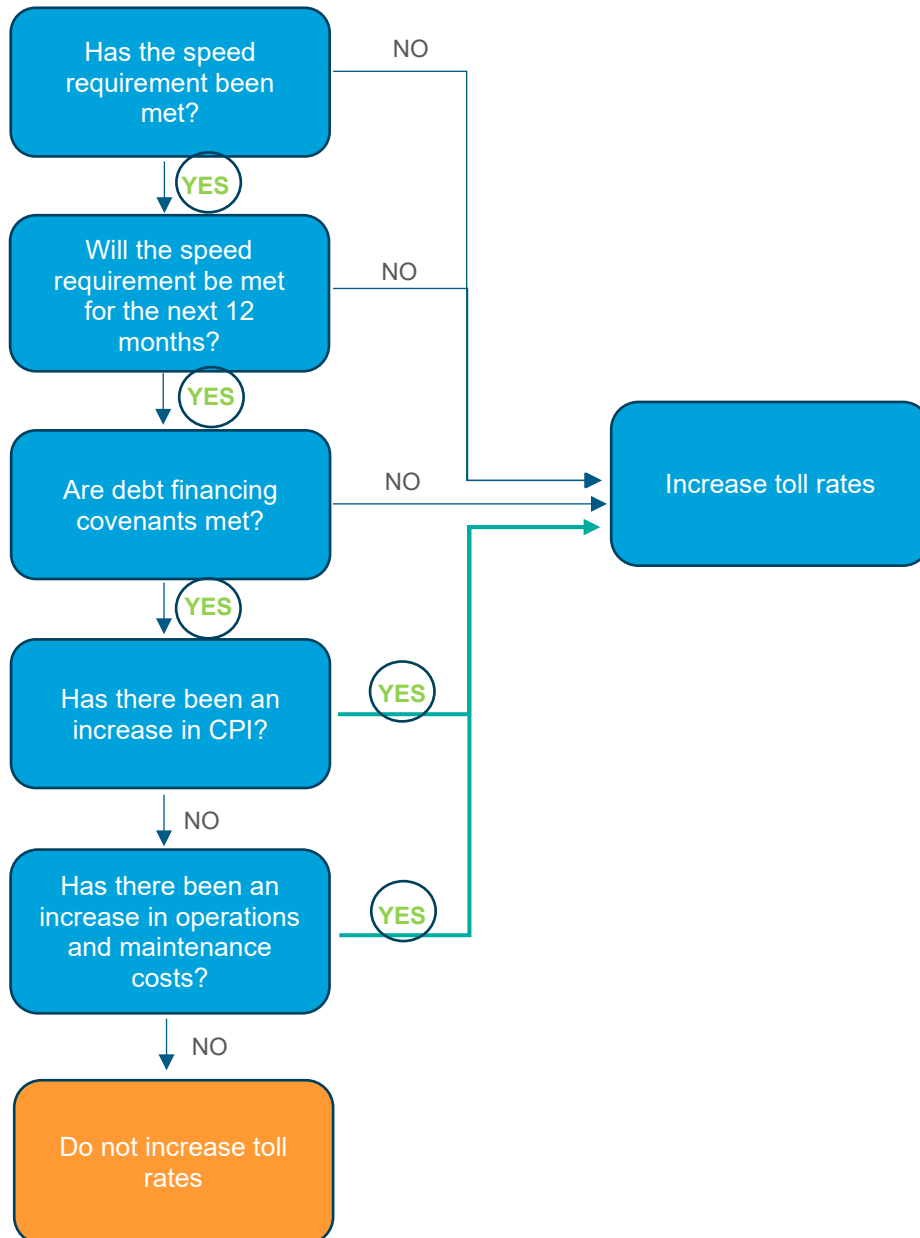
Based on the results noted in the previous section, CTIO recommends revising the AVI and LPT toll rates per the toll schedule shown below in Table 2. There is no change to the multi-axle (4+) surcharge; it remains at \$25.

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
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
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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

MEMORANDUM

TO: COLORADO TRANSPORTATION INVESTMENT OFFICE BOARD OF DIRECTORS
FROM: NICK FARBER, CTIO DIRECTOR, AND KELLY BROWN, TOLLING OPERATIONS MANAGER
SUBJECT: REQUEST FOR APPROVAL OF PROPOSED FY 2022/2023 ANNUAL TOLL RATE
ADJUSTMENT FOR I-25 NORTH (120th AVENUE TO STATE HIGHWAY 7)
DATE: JUNE 15, 2022

Purpose and Requested Action

This memorandum presents a request from the Colorado Transportation Investment Office (CTIO) Staff that the CTIO Board of Directors approve the proposed I-25 North (120th Ave. to State Highway 7 [SH 7]) (“Segment 3”) 2022-2023 toll rate adjustments for Automatic Vehicle Identification (AVI) and License Plate Toll (LPT) transactions that were presented at the May 2022 Board Meeting. Staff presented the supporting documentation for the proposed 2022-2023 toll rate adjustment to the Board at the May 2022 Board meeting, and it is attached below as Attachment A.

Background

Segment 3 originates from the southern boundary at 120th Avenue and terminates at SH 7. This segment of the I-25 Express Lanes opened for tolling in June 2020. The current toll rates were adjusted in 2021 based on a previous analysis of the Segment 3 Express Lanes.

Recommended New Rates

Staff recommends an adjustment to AVI and LPT toll rates. The recommended increase in toll rates is an average of 9.1 percent for AVI toll rates and LPT toll rates due to a combination of inflation, an increase in equipment maintenance costs, and increasing toll transaction processing costs. The AVI toll rate adjustments range from 10 cents to 20 cents. The LPT toll rate adjustments range from 30 cents to 49 cents (depending on the time of day).

Board Options and Staff Recommendations

1. **Approve** Resolution #392 adopting the proposed FY 2022-2023 AVI and LPT toll rates for I-25 North Segment 3. **Staff recommendation.**
2. Deny the request. Rates on I-25 North Segment 3 would remain unchanged.

Next Steps

- If adopted, CTIO staff will implement the approved FY 2022-2023 AVI and LPT toll rates for I-25 North Segment 3, effective 12:00 AM, July 7, 2022.

Attachments

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ATTACHMENT A

Board Memo Seg 3 Toll Rate Adjustment Packet

MEMORANDUM

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FROM: NICK FARBER, CTIO DIRECTOR, AND KELLY BROWN, TOLLING OPERATIONS
MANAGER
SUBJECT: FY 2022/2023 ANNUAL TOLL RATE ADJUSTMENT ANALYSIS FOR I-25
NORTH (120th AVENUE TO STATE HIGHWAY 7 [SH 7])
DATE: MAY 18, 2022

Purpose and Requested Action

This memorandum presents the results of the annual toll rate adjustment analysis for I-25 North (120th Ave. to State Highway 7 [SH 7]) (“Segment 3”) 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 (120th Ave. to State Highway 7 [SH 7]) (“Segment 3”) toll rate adjustment at the June meeting. The updated toll rates would take effect in early July of this year.

Background

Segment 3 originates from the southern boundary at 120th Ave. and terminates at State Highway 7 (SH 7). The current toll rates were adjusted in 2021 based on previous analysis of the Segment 3 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 3 Express Lane to determine adherence to traffic operations requirements and financial covenants. Appendix 1 in Attachment A shows the methodology for determining yearly toll rates 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.

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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 3

Time	Northbound				Southbound			
	AVI	NEW AVI	LPT	NEW LPT	AVI	NEW AVI	LPT	NEW LPT
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6:00 AM-6:45 AM	\$1.15	\$1.25	\$3.39	\$3.70	\$1.15	\$1.25	\$3.39	\$3.69
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7:15 AM-8:15 AM	\$1.15	\$1.25	\$3.39	\$3.70	\$2.40	\$2.60	\$5.35	\$5.83
8:15 AM-8:45 AM	\$1.15	\$1.25	\$3.39	\$3.70	\$2.40	\$2.60	\$5.35	\$5.83
8:45 AM-10:00 AM	\$1.15	\$1.25	\$3.39	\$3.70	\$1.40	\$1.55	\$3.78	\$4.12
10:00 AM-12:00 PM	\$1.15	\$1.25	\$3.39	\$3.70	\$1.15	\$1.25	\$3.39	\$3.69
12:00 PM-3:00 PM	\$1.15	\$1.25	\$3.39	\$3.70	\$1.15	\$1.25	\$3.39	\$3.69
3:00 PM-3:30 PM	\$1.85	\$2.00	\$4.49	\$4.90	\$1.15	\$1.25	\$3.39	\$3.69
3:30 PM-4:30 PM	\$2.40	\$2.60	\$5.35	\$5.84	\$1.15	\$1.25	\$3.39	\$3.69
4:30 PM-6:00 PM	\$2.40	\$2.60	\$5.35	\$5.84	\$1.15	\$1.25	\$3.39	\$3.69
6:00 PM-7:00 PM	\$1.85	\$2.00	\$4.49	\$4.90	\$1.15	\$1.25	\$3.39	\$3.69
7:00 PM-5:00 AM	\$1.15	\$1.25	\$3.39	\$3.70	\$1.15	\$1.25	\$3.39	\$3.69
Weekend	\$1.15	\$1.25	\$3.39	\$3.70	\$1.15	\$1.25	\$3.39	\$3.69

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 3 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 3.

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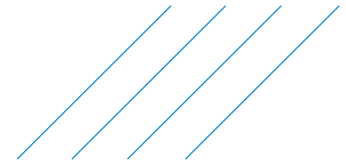
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COLORADO
**Transportation
Investment Office**

ATTACHMENT A

Toll Rate Adjustment Analysis Memorandum - I-25 North Segment 3



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 3) Express Lanes (120 th Avenue to SH 7)	cc:

Subject: Toll Rate Adjustment Analysis- I-25 Segment 3

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 3 Express Lanes (120th Avenue to State Highway 7 [SH 7]).

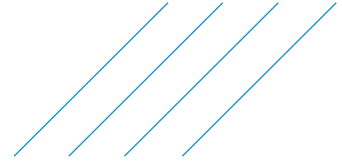
2. Methodology

A flowchart outlining the steps to be followed for 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 3. For the year 2022, a three-step process was undertaken to analyze the need for toll rates increases. The analysis was done using data from June 2021 to December 2022 and 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 – one year on. If there are any hours of the day experiencing LOS C or worse, the current year volumes for those hours are projected a year into the future using growth rates from Colorado Department of Transportation’s (CDOT) Online Transportation System (OTIS). The projected volumes are 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 toll rate increases based on costs.

3. Summary of Findings

3.1. Traffic Management

The percentage of time that the average express lane speed was below 45 mph at different times of the weekdays during the am and pm peak hours of the analysis period. **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 1%). 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 during the analysis period. 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 were performing as intended in providing acceptable LOS. Typically for any hours at LOS C the traffic volumes would project into the future to determine if the LOS criterion (LOS C or better) would be met during the following year. As shown in Table 1, the current LOS is LOS A for the hours analyzed so no projection analysis was performed. 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
Northbound																								
2020-21 LOS	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Southbound																								
2020-21 LOS	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A

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 3 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 revised 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.

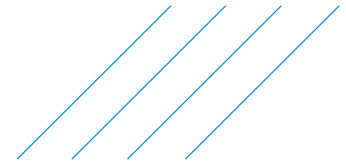
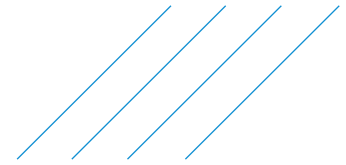
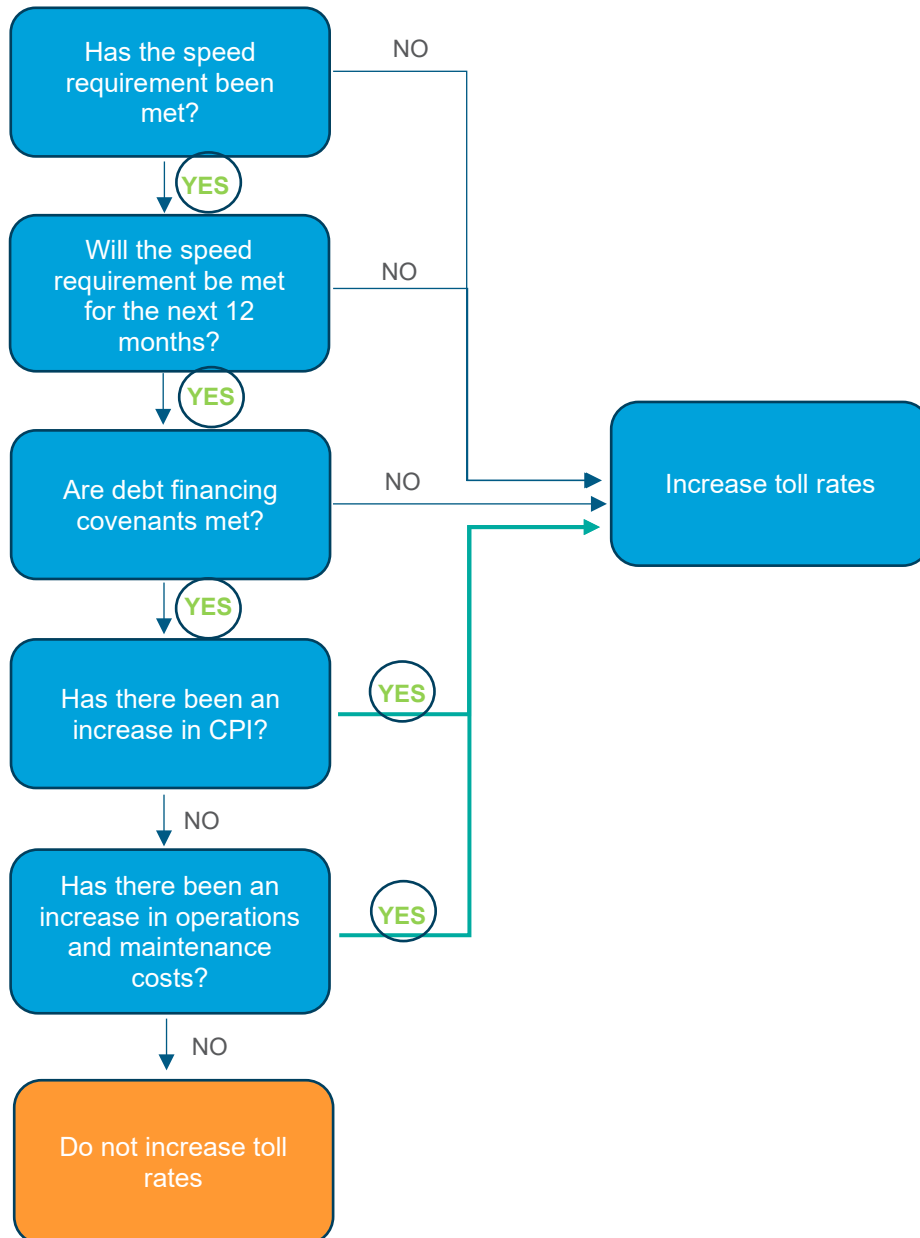


Table 2: Proposed New Toll Rates for I-25 Segment 3

Time	Northbound				Southbound			
	AVI	NEW AVI	LPT	NEW LPT	AVI	NEW AVI	LPT	NEW LPT
5:00 AM-6:00 AM	\$1.15	\$1.25	\$3.39	\$3.70	\$1.15	\$1.25	\$3.39	\$3.69
6:00 AM-6:45 AM	\$1.15	\$1.25	\$3.39	\$3.70	\$1.15	\$1.25	\$3.39	\$3.69
6:45 AM-7:15 AM	\$1.15	\$1.25	\$3.39	\$3.70	\$2.15	\$2.35	\$4.95	\$5.41
7:15 AM-8:15 AM	\$1.15	\$1.25	\$3.39	\$3.70	\$2.40	\$2.60	\$5.35	\$5.83
8:15 AM-8:45 AM	\$1.15	\$1.25	\$3.39	\$3.70	\$2.40	\$2.60	\$5.35	\$5.83
8:45 AM-10:00 AM	\$1.15	\$1.25	\$3.39	\$3.70	\$1.40	\$1.55	\$3.78	\$4.12
10:00 AM-12:00 PM	\$1.15	\$1.25	\$3.39	\$3.70	\$1.15	\$1.25	\$3.39	\$3.69
12:00 PM-3:00 PM	\$1.15	\$1.25	\$3.39	\$3.70	\$1.15	\$1.25	\$3.39	\$3.69
3:00 PM-3:30 PM	\$1.85	\$2.00	\$4.49	\$4.90	\$1.15	\$1.25	\$3.39	\$3.69
3:30 PM-4:30 PM	\$2.40	\$2.60	\$5.35	\$5.84	\$1.15	\$1.25	\$3.39	\$3.69
4:30 PM-6:00 PM	\$2.40	\$2.60	\$5.35	\$5.84	\$1.15	\$1.25	\$3.39	\$3.69
6:00 PM-7:00 PM	\$1.85	\$2.00	\$4.49	\$4.90	\$1.15	\$1.25	\$3.39	\$3.69
7:00 PM-5:00 AM	\$1.15	\$1.25	\$3.39	\$3.70	\$1.15	\$1.25	\$3.39	\$3.69
Weekend	\$1.15	\$1.25	\$3.39	\$3.70	\$1.15	\$1.25	\$3.39	\$3.69



APPENDIX 1: Toll Rate Increase Flowchart





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ATTACHMENT B

Toll Rate Adjustment Decision Matrix - I-25 North Segment 3

I-25 NORTH SEGMENT 3 ANNUAL TOLL RATE ADJUSTMENT DECISION MATRIX FOR FY 2022/2023

Criteria	Analysis	Recommendation
Has the Speed Requirement Been Met for Last 12 Months?	Yes	<input checked="" type="checkbox"/> Toll Rate Increase Not Necessary
	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	<input checked="" type="checkbox"/> Toll Rate Increase Not Necessary
	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	<input checked="" type="checkbox"/> Toll Rate Increase Not Necessary
	No	Toll Rate Increase Advised
Has there Been an increase in CPI?	Yes	<input checked="" type="checkbox"/> Toll Rate Increase Advised
	N/A	Toll Rate Increase Not Necessary
	No	Toll Rate Increase Not Necessary
Has there Been an O & M Increase?	Yes	<input checked="" type="checkbox"/> Toll Rate Increase Advised
	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	<input checked="" type="checkbox"/> Toll Rate Increase Not Necessary
	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

MEMORANDUM

TO: COLORADO TRANSPORTATION INVESTMENT OFFICE BOARD OF DIRECTORS
FROM: NICK FARBER, CTIO DIRECTOR, AND KELLY BROWN, TOLLING OPERATIONS MANAGER
SUBJECT: REQUEST FOR APPROVAL OF PROPOSED FY 2022/2023 ANNUAL TOLL RATE
ADJUSTMENT FOR THE C-470 EXPRESS LANES
DATE: JUNE 15, 2022

Purpose and Requested Action

This memorandum presents a request from the Colorado Transportation Investment Office (CTIO) Staff that the CTIO Board of Directors approve the proposed C-470 2022-2023 toll rate adjustments for Automatic Vehicle Identification (AVI) and License Plate Toll (LPT) transactions that were presented at the May 2022 Board Meeting. Staff presented the supporting documentation for the proposed 2022-2023 toll rate adjustment to the Board at the May 2022 Board meeting, and it is attached below as Attachment A.

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 were set in 2020 based on toll rate sensitivity analyses and were the initial toll rates upon the opening of the toll lanes in August 2020. The original C-470 toll rate schedule was based on the pre-pandemic traffic patterns, and over the last two years, CTIO observed lower traffic volumes when traffic volumes had been predicted to be higher and observed higher traffic volumes when traffic volumes had been predicted to be lower.

Recommended New Rates

Staff recommends an adjustment to AVI and LPT toll rates and an adjustment to the toll schedule. The goal of the proposed toll adjustment is to simplify the toll rate recommendations by maintaining or increasing current peak periods rates with the shoulder period rates being adjusted downward or staying the same. Peak period rates were adjusted based on observed current traffic volumes by period. The westbound AM peak period toll rates and eastbound pre-PM Shoulder period rates were increased, and the PM peak period was expanded to thirty minutes earlier. The AVI toll rate adjustments range from a decrease of one dollar sixty cents to an increase of one dollar fifteen cents, with several of the time-of-day time slots remaining the same with no increase or decrease to the toll rate (depending on the time of day). The LPT toll rate adjustments range from a decrease of two dollars twenty cents to an increase of two dollars fourteen cents (depending on the time of day).

Board Options and Staff Recommendations

1. **Approve** Resolution #392 adopting the proposed FY 2022-2023 AVI and LPT toll rates for C-470.
Staff recommendation.
2. Deny the request. Rates on C-470 would remain unchanged.

Next Steps

- If adopted, CTIO staff will implement the approved FY 2022-2023 AVI and LPT toll rates for C-470 effective 12:00 AM, July 7, 2022.

Attachments

Attachment A: 5/18/2022 Board Memo C-470 Toll Rate Adjustment Packet



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ATTACHMENT A

Board Memo C-470 Toll Rate Adjustment Packet

MEMORANDUM

TO: COLORADO TRANSPORTATION INVESTMENT OFFICE BOARD OF DIRECTORS
FROM: NICK FARBER, CTIO DIRECTOR, AND KELLY BROWN, TOLLING OPERATIONS
MANAGER
SUBJECT: C-470 EXPRESS LANES TOLL RATE ADJUSTMENT
DATE: MAY 18, 2022

Purpose

The purpose of this memorandum is (1) to summarize CTIO staff's planned approach for the time-of-day toll rates for the C-470 Express Lanes and to commence and facilitate a discussion with the Board and the public regarding the establishment of toll rates ranges; and, (2) request Board review of the proposed adjusted toll rates for C-470 Automatic Vehicle Identification via a transponder (AVI) and License Plate Toll via camera (LPT) transactions and provide comments.

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 July 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 were set in 2020 based on toll rate sensitivity analyses and were the initial toll rates upon the opening of the toll lanes in August 2020. The original C-470 toll rate schedule was based on the pre-pandemic traffic patterns, and over the last two years, CTIO observed lower traffic when we initially thought traffic was going to be higher and higher traffic volumes when we thought traffic would be lower.

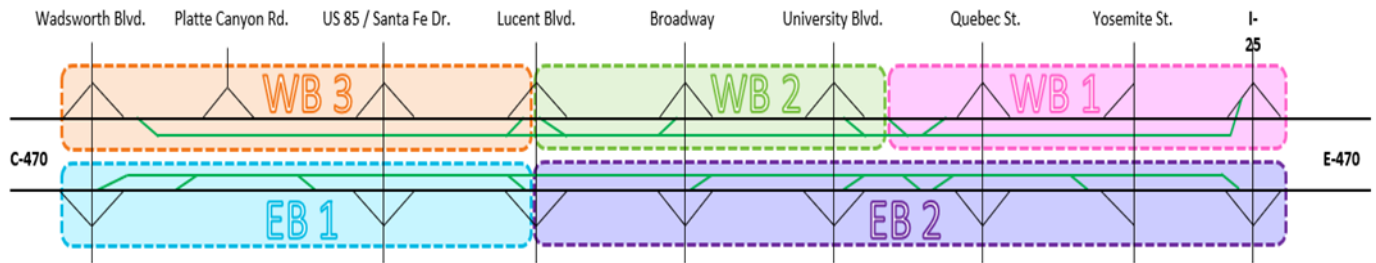
The above analysis shows that the COVID-19 pandemic and construction negatively impacted travel patterns along the C-470 Express Lanes since its opening on August 18, 2020. The goal of the proposed toll adjustment is to simplify the toll rate recommendations by maintaining or increasing current peak periods rates with the shoulder period rates being adjusted downward or staying the same. Peak period rates were adjusted based on observed current traffic volumes by period. The westbound AM peak period toll rates and Eastbound pre-PM Shoulder period rates were increased, and the PM peak period was expanded to thirty minutes earlier. The intent of this recommendation is to generate some additional revenue from the existing users of C-470 through marginal toll rate increases while minimizing excessive diversion away from the express lanes. Additionally, the recommended rates will hedge against the possibility of continued observed traffic volume increases that, if significant enough and sustained for the remaining of 2022, may generate Level of Service D or worse conditions along the C-470 general purpose lanes. Under this condition, the proposed toll rates will position CTIO to better manage, capture, and toll the expected higher traffic demand that is likely to use the express lanes along C-470 as the travel time savings increase. A standard minimum toll rate during off-peak periods is recommended to optimize potential revenue capture based on observed capture rates. It was determined that an optimum minimum toll rate of \$0.75 for AVI customers is sufficient to cover the increased cost of toll collection, operations and maintenance, inflation, and debt coverage.

Recommended New Rates

CTIO staff recommends the proposed new AVI and LPT toll rates for the toll schedule shown below. There is no change to the multi-axle (4+) surcharge; it remains \$25.

Proposed Adjusted AVI and LPT toll rates for the C-470 Express Lanes

Hours	EB Seg 1 Wadsworth to Lucent		EB Seg 2 Lucent to I-25		WB Seg 1 I-25 to University		WB Seg 2 University to Lucent		WB Seg 3 Lucent to Wadsworth	
	ExpressToll	License Plate Toll	ExpressToll	License Plate Toll	ExpressToll	License Plate Toll	ExpressToll	License Plate Toll	ExpressToll	License Plate Toll
	7:00 PM - 5:59 AM	\$ 0.75	\$ 2.20	\$ 0.75	\$ 3.15	\$ 0.75	\$ 2.20	\$ 0.75	\$ 3.15	\$ 0.75
6:00 - 6:59 AM	\$ 0.75	\$ 2.20	\$ 2.25	\$ 5.50	\$ 1.00	\$ 2.55	\$ 1.00	\$ 3.55	\$ 1.00	\$ 2.55
7:00 - 8:59 AM	\$ 1.25	\$ 2.95	\$ 3.60	\$ 7.65	\$ 1.80	\$ 3.85	\$ 1.80	\$ 4.80	\$ 1.80	\$ 3.85
9:00 - 1:59 PM	\$ 0.75	\$ 2.20	\$ 1.80	\$ 4.80	\$ 0.75	\$ 2.20	\$ 0.75	\$ 3.15	\$ 0.75	\$ 2.20
2:00 - 2:59 PM	\$ 0.75	\$ 2.20	\$ 2.35	\$ 5.70	\$ 1.10	\$ 2.75	\$ 1.10	\$ 3.70	\$ 1.10	\$ 2.75
3:00 - 5:59 PM	\$ 1.00	\$ 2.55	\$ 3.30	\$ 7.20	\$ 2.20	\$ 4.45	\$ 2.20	\$ 5.45	\$ 2.20	\$ 4.45
6:00 - 6:59 PM	\$ 1.00	\$ 2.55	\$ 2.85	\$ 6.45	\$ 1.65	\$ 3.60	\$ 1.65	\$ 4.55	\$ 1.65	\$ 3.60
\$25 Surcharge for 4+ Axle Vehicles per Zone All Hours										



Next Steps

- The Board is being asked to review the recommended proposed AVI and LPT toll rates range for the C-470 Express Lanes and provide feedback.
- CTIO staff will integrate any requested changes to the recommended proposed AVI and LPT toll rates for C-470 Express Lanes and will return to the Board in June for the final adoption of AVI and LPT toll rates.
- CTIO staff will begin the Public Outreach process.

Attachments

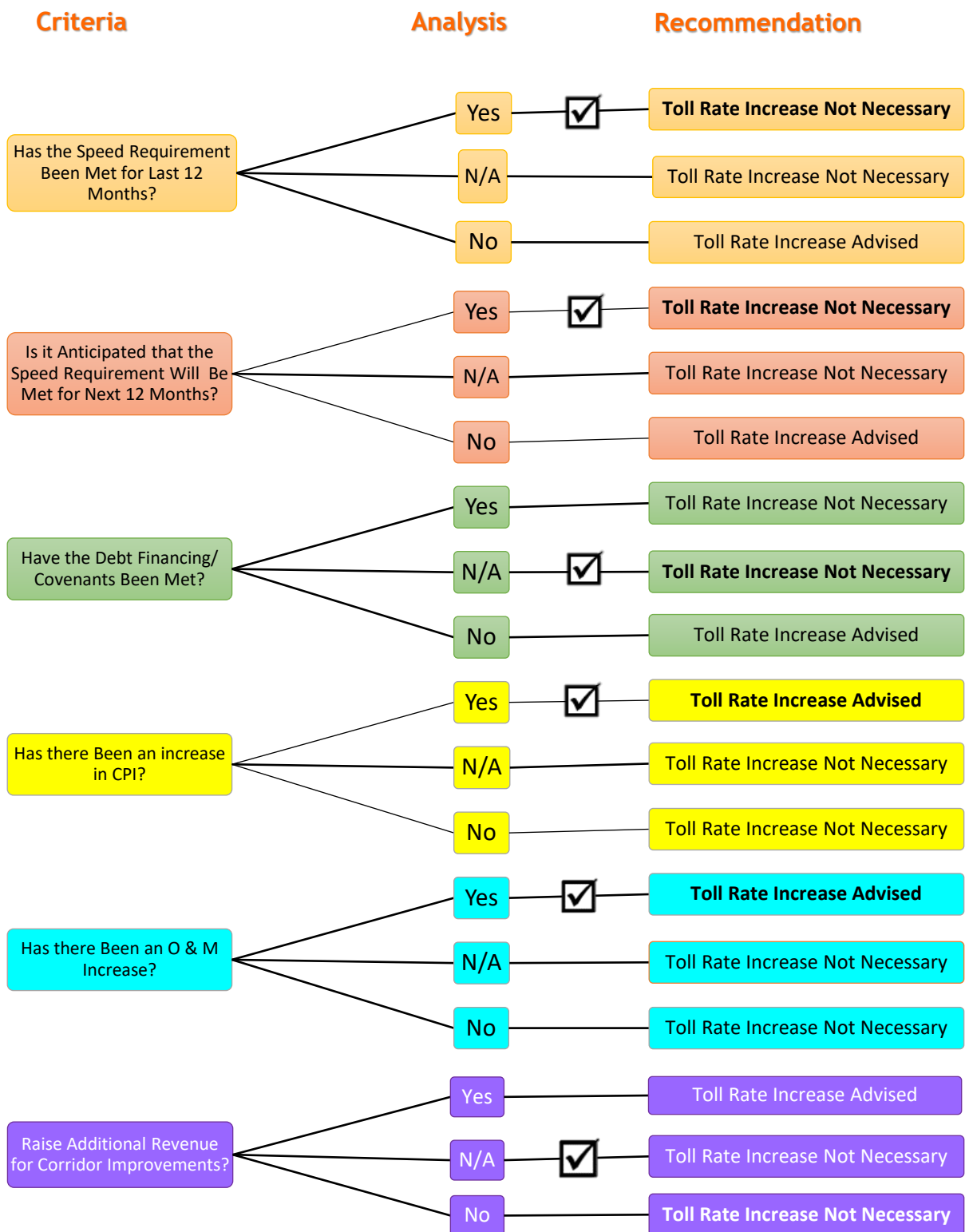
Attachment A: C-470 Toll Rate Adjustment Decision Matrix



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ATTACHMENT A
C-470 Toll Rate Adjustment Decision Matrix

C-470 ANNUAL TOLL RATE ADJUSTMENT DECISION MATRIX FOR FY 2022/2023



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

