

Memorandum

TO: CTIO BOARD OF DIRECTORS
FROM: KELLY BROWN, CHIEF TOLL OPERATIONS OFFICER
SUBJECT: CTIO TOLLING POLICY UPDATES TO INCLUDE DYNAMIC PRICING POLICY AND CRITERION RECOMMENDATIONS
DATE: OCTOBER 18, 2023

Purpose

Present to the CTIO Board of Directors (CTIO Board), for their consideration, the recommended updates to the CTIO Tolling Policy so the policy includes dynamic pricing algorithm criterion. These new policies will guide the Dynamic Pricing Algorithm criterion for each individual Express Lane corridor.

Action

Informational only, the CTIO Board is not being asked to vote on updates to the Tolling Policy to include dynamic pricing at this month's meeting. A redlined version of the Tolling Policy containing the proposed updates to the policy is attached.

Background

In 2019, CTIO conducted a procurement for a Next Generation Lane Toll System (NGLTS). The NGLTS provided CTIO with dynamic pricing functionality. In advance of implementing dynamic pricing on the CTIO Express Lanes network, the CTIO Tolling Policy was adopted by the CTIO Board at the July 17, 2019 board meeting. Staff conducted a workshop at the April 2023 Board Retreat that provided an in-depth overview of how dynamic tolling works and presented initial policy considerations.

Dynamic Pricing Policy Considerations

Where possible, the dynamic pricing criterion are designed to be either a range of acceptable values and/or are a set of guardrails that will give the dynamic pricing algorithm the flexibility to set toll rates that will conform to existing Tolling Policy already approved by the CTIO Board. Specific ranges or criterion for each corridor will be brought to the Board for review and approval prior to implementing dynamic pricing on each Express Lanes corridor. The dynamic pricing criterion will also be analyzed on an annual basis (as is the current process for time of day pricing.)

In the case(s) where one or more of the dynamic pricing algorithm criterion are not functioning as expected, a CTIO Board-approved procedure is included in the policy updates to update the criterion prior to the yearly toll rate adjustment analysis period. This will ensure that Express Lane corridors using dynamic pricing will continue to be met the overall tolling policy objectives and cover its Express Lane obligations.

Next Steps

- The CTIO Board is encouraged to provide feedback on the recommended redline updates to the Tolling Policy.
- Staff will return at the November, 2023 board meeting with a resolution for CTIO Board approval of the updated Tolling Policy.

Attachments

Attachment A: CTIO Tolling Policy (Redlined with proposed policy updates)

Attachment B: CTIO Tolling Policy (Clean with proposed policy updates incorporated)



COLORADO
**Transportation
Investment Office**

ATTACHMENT A

CTIO Tolling Policy (Redlined with proposed policy updates)

Colorado High-Performance Transportation Enterprise Tolling Policy

Formatted: Header distance from edge: 0.4"

1. Purpose

The [Colorado Transportation Investment Office \(CTIO\)](#)¹ ~~High Performance Transportation Enterprise~~ (“~~HPTE~~”) Tolling Policy (“Policy”) is intended to provide a framework for the setting and adjustment of toll rates on ~~HPTE~~CTIO operated corridors. The Policy aims to provide:

- **Statewide Equity:** implementing consistent statewide policies limits controversy and helps the public’s acceptance of toll rates;
- **Communications:** Educating the traveling public on toll policies (HOV rate setting etc.) is a challenging proposition. A consistent policy greatly simplifies that effort; and,
- **Internal Administration:** A consistent tolling policy provides guidance to ~~HPTE~~CTIO staff and simplifies the administration and operation of toll collections.

~~HPTE~~CTIO projects are complex, and each is unique. If it is necessary to deviate from this Policy on future projects, ~~HPTE~~CTIO staff will document the different approach and ~~will~~ seek input and approval from the [Board of Directors \(Board\)](#), and the practice will be incorporated, if necessary, into this Policy.

2. Toll rate setting and adjustment frequency

Background

Studies indicate that the primary reason motorists use Express Lanes is for travel time consistency and reliability. Given the desire for consistency, it is also essential that the motorist is not surprised or confused when receiving the monthly invoice for [the](#) use of the lane. A lack of understanding of the toll rate setting or adjustment policy is one key reason that ~~motorist~~motorists may choose ~~to~~ ~~NOT~~not to use the Express Lane even in circumstances where he or she would otherwise choose to use it.

Policy

Initial toll ~~rates~~rate setting will be initiated by a traffic and revenue study for each corridor. ~~Prior~~ ~~to~~Before project opening, a sensitivity analysis on initial rates will be conducted to finalize toll rates for ~~HPTE~~CTIO Board approval. The pricing objective in the toll rates setting phase is project specific based on financing covenants and traffic operations requirements.

For operational corridors, on a semi-annual basis, ~~HPTE~~CTIO staff will evaluate the performance of each Express Lane to determine adherence to traffic operations requirements and financial covenants. Exhibit A shows the methodology for determining yearly toll ~~rates~~rate adjustments.

3. Transactions Surcharges

Background

The ~~HPTE~~CTIO needs to balance allowing those who do not have an electronic toll pass the capability to use the lane on occasion against the additional costs associated with processing and collecting license plate tolls. Setting a policy on how to calculate such surcharges ensures fairness and a consistent standard across Express Lane corridors. For interoperability agreements, the ~~HPTE~~CTIO needs to consider the cost they impose upon it and seek to recoup it.

Policy

A License Plate Tolling (“LPT”) surcharge ensures that LPT payers bear the full cost of the additional expenses they impose on the system. To that end, ~~a~~an LPT surcharge will be priced based on two objectives: (1) offset the additional back office processing cost and (2) recover revenue lost due to LPT leakage.

For future transaction types, such as Interoperability transactions, ~~HPTE~~CTIO staff will adopt the same methodology where surcharges are set based on recovering additional incurred ~~cost~~costs and

¹ [The High Performance Transportation Enterprise \(HPTE\) is now doing business as the Colorado Transportation Investment Office \(CTIO\). CTIO is how the enterprise refers to itself now and in the future. However, the HPTE name is retained for legislative and legal documents.](#)

Formatted: Tab stops: Not at 3.25"

lost revenue.

4. Express Lanes toll rates setting objectives (revenue versus throughput maximization)

Background

Different corridors can have fundamentally different objectives. A corridor financed with debt that the **HPTECTIO** needs to repay may need to rely upon a revenue maximization tolling policy. A corridor where the **HPTECTIO** only needs to recover operating and maintenance costs provides the **HPTECTIO** the option to focus on throughput if necessary.

Policy

HPTECTIO will set toll rates based on Express Lanes corridor specific objectives. The overarching goal of **HPTECTIO** will be to provide fiscally responsible toll rates that balance needs such as traffic speeds, reliable travel times, debt coverage, operations and maintenance ~~costs~~, and financing future corridor improvements. For Express Lanes operated by a private entity, the toll rates setting methodology will be included in the project agreement.

5. Tolling equity considerations

Background

There are four primary categories of equity concern that most often involve Express Lanes and other priced facilities: (1) Equity; (2) Modal Equity; (3) Geographic Equity; and (4) Revenue Equity. Despite equity considerations that affect Express Lanes, it is important to note that all income groups and roadway users (not just drivers) can benefit from the implementation of pricing. Freeway users, even low- income users, benefit indirectly from additional road capacity because toll paying drivers will not be competing for space on existing general-purpose lanes.

Nevertheless, HPTE is a government-owned business established as a separate division within the CDOT. HPTE is an enterprise for purposes of Section 20 of Article X of the State Constitution (commonly referred to as "TABOR"), and accordingly is not subject to the revenue and spending limitations of TABOR as long as it receives less than ten percent of its total revenues in grants from state and local governments. As an enterprise or a government owned business, HPTE must be cognizant of the revenue it earns, and therefore must collect enough to cover its expenses. Any tolling equity policies implemented will have an effect on the amount of revenue HPTE earns, and will likely have a detrimental effect on projects in operations and for future projects that could have a borrowing component.

Policy

In consideration of Express Lanes objectives in providing safe and reliable trips, **HPTECTIO** will not provide discounts, other than those mandated (e.g. HOV 3+, Hybrid Vehicle Permits with vehicle cap), that can potentially degrade traffic conditions and travel time reliability in Express Lanes. If mandated to provide discounts by an outside agency, **HPTECTIO** will adjust toll rates to help offset the loss in toll revenue.

6. Dynamic pricing algorithm criterion

Background

There are three primary criteria that comprise a dynamic pricing algorithm (1) Cap or No Cap; (2) Rate Change Interval; and (3) Maximum Increment or Decrement. These three dynamic pricing algorithm criterion will function as a framework so that the goals of the **HPTECTIO** Tolling Policy listed in in *Section 4 Express Lanes toll rates setting objectives (revenue versus throughput maximization)* continue to be met.

Policy

CTIO staff will evaluate and implement dynamic pricing for each Express Lane corridor (with Next Generation Lane Toll System equipment) and will set dynamic pricing algorithm criterion that meet CTIO traffic operations requirements and financial covenants.

Dynamic Pricing Algorithm Criterion

1. **Cap.** There shall be a cap to the minimum and maximum toll rate that can be charged.
 - The minimum and maximum toll rate shall be calculated on a per mile basis for each corridor.
 - A minimum toll rate cap shall be set for each individual Express Lanes corridor in order to meet the needs and goals of the Toll Rate Policy.

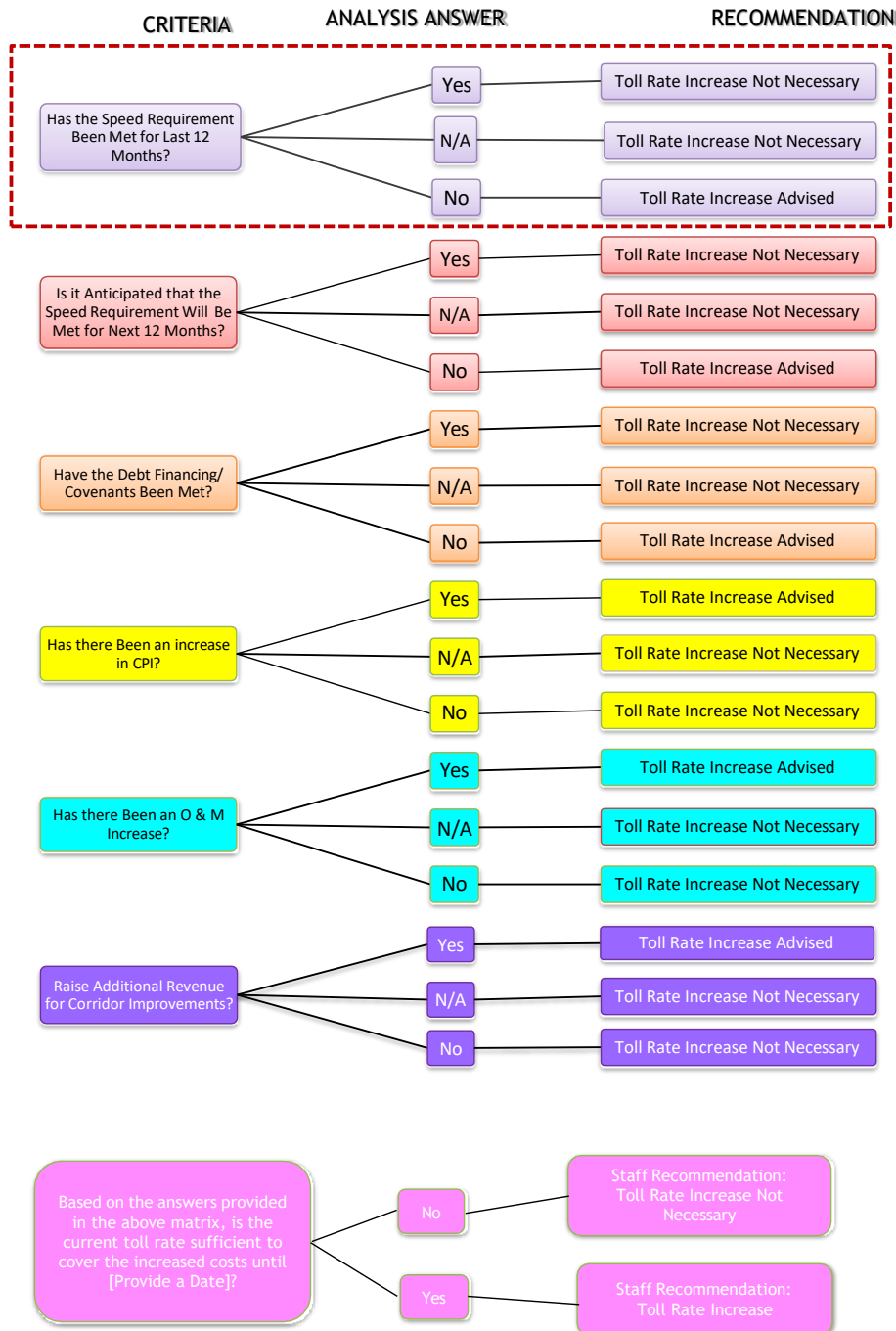
- A maximum toll rate cap shall be set for each individual Express Lanes corridor in order to meet the needs and goals of the Toll Rate Policy.
2. **Rate Change Interval.** The toll rate shall be calculated no less than every five (5) minutes and no more than every fifteen (15) minutes.
 - The Rate Change Interval shall be calculated for each individual Express Lanes corridor in order to meet the needs and goals of the Toll Rate Policy.
 3. **Increment or Decrement Amount.** The amount the toll rate can change at each Rate Change Interval shall be no less than five (5) cents and no more than fifty (50) cents.
 - The Increment or Decrement Amount shall be calculated for each individual Express Lanes corridor in order to meet the needs and goals of the Toll Rate Policy.

The toll rates calculated by the Dynamic Pricing Algorithm shall be monitored and evaluated on an ongoing basis to ensure that toll rates on each individual Express Lanes corridor continue to meet the needs and goals of the Toll Rate Policy. When necessary, adjustments to the dynamic pricing algorithm criterion may be adjusted within the guardrails of this Toll Rate Policy so that the needs and goals of the Toll Rate Policy continue to be met.

As specified in *Section 2 Toll rate setting and adjustment frequency*, the dynamic pricing criterion will be evaluated on a yearly basis. If necessary, to meet the Express Lanes corridor-specific objectives listed in *Section 4 Express Lanes toll rates setting objectives (revenue versus throughput maximization)* CTIO may recommend changes to the dynamic pricing algorithm criterion listed in this section.

If a board-approved dynamic pricing algorithm criterion is not sufficient to meet the needs and goals of the Toll Rate Policy, staff may present the Board with new Dynamic pricing algorithm criterion for their consideration and approval. This reconsideration may take place during the annual toll rate evaluation or whenever analysis by staff reveals that the Express Lane-specific board-approved dynamic pricing algorithm criterion cannot and/or will not meet the needs and goals of the Toll Rate Policy.

CORRIDOR NAME ANNUAL TOLL RATE ADJUSTMENT ANALYSIS FOR FY YYYY/YYYY



Note: For illustrative purposes only. The first criteria must be met for every Express Lanes. The next five criteria vary with specific Express Lanes requirements. Other factors and additional analyses may be required for future Express Lanes. **For Dynamic pricing, toll rates adjustments apply to minimum and maximum toll rates per mile.**



COLORADO
**Transportation
Investment Office**

ATTACHMENT B

CTIO Tolling Policy (Clean with proposed policy updates incorporated)

Colorado High-Performance Transportation Enterprise Tolling Policy

1. Purpose

The Colorado Transportation Investment Office (CTIO)¹ Tolling Policy (“Policy”) is intended to provide a framework for the setting and adjustment of toll rates on CTIO operated corridors. The Policy aims to provide:

- **Statewide Equity:** implementing consistent statewide policies limits controversy and helps the public’s acceptance of toll rates;
- **Communications:** Educating the traveling public on toll policies (HOV rate setting etc.) is a challenging proposition. A consistent policy greatly simplifies that effort; and,
- **Internal Administration:** A consistent tolling policy provides guidance to CTIO staff and simplifies the administration and operation of toll collections.

CTIO projects are complex, and each is unique. If it is necessary to deviate from this Policy on future projects, CTIO staff will document the different approach and seek input and approval from the Board of Directors (Board), and the practice will be incorporated, if necessary, into this Policy.

2. Toll rate setting and adjustment frequency

Background

Studies indicate that the primary reason motorists use Express Lanes is for travel time consistency and reliability. Given the desire for consistency, it is also essential that the motorist is not surprised or confused when receiving the monthly invoice for the use of the lane. A lack of understanding of the toll rate setting or adjustment policy is one key reason that motorists may choose not to use the Express Lane even in circumstances where he or she would otherwise choose to use it.

Policy

Initial toll rate setting will be initiated by a traffic and revenue study for each corridor. Before project opening, a sensitivity analysis on initial rates will be conducted to finalize toll rates for CTIO Board approval. The pricing objective in the toll rates setting phase is project specific based on financing covenants and traffic operations requirements.

For operational corridors, on a semi-annual basis, CTIO staff will evaluate the performance of each Express Lane to determine adherence to traffic operations requirements and financial covenants. Exhibit A shows the methodology for determining yearly toll rate adjustments.

3. Transactions Surcharges

Background

The CTIO needs to balance allowing those who do not have an electronic toll pass the capability to use the lane on occasion against the additional costs associated with processing and collecting license plate tolls. Setting a policy on how to calculate such surcharges ensures fairness and a consistent standard across Express Lane corridors. For interoperability agreements, the CTIO needs to consider the cost they impose upon it and seek to recoup it.

Policy

A License Plate Tolling (“LPT”) surcharge ensures that LPT payers bear the full cost of the additional expenses they impose on the system. To that end, an LPT surcharge will be priced based on two objectives: (1) offset the additional back office processing cost and (2) recover revenue lost due to LPT leakage.

For future transaction types, such as Interoperability transactions, CTIO staff will adopt the same methodology where surcharges are set based on recovering additional incurred costs and lost revenue.

¹ The High Performance Transportation Enterprise (HPTE) is now doing business as the Colorado Transportation Investment Office (CTIO). CTIO is how the enterprise refers to itself now and in the future. However, the HPTE name is retained for legislative and legal documents.

4. Express Lanes toll rates setting objectives (revenue versus throughput maximization)

Background

Different corridors can have fundamentally different objectives. A corridor financed with debt that the CTIO needs to repay may need to rely upon a revenue maximization tolling policy. A corridor where the CTIO only needs to recover operating and maintenance costs provides the CTIO the option to focus on throughput if necessary.

Policy

CTIO will set toll rates based on Express Lanes corridor specific objectives. The overarching goal of CTIO will be to provide fiscally responsible toll rates that balance needs such as traffic speeds, reliable travel times, debt coverage, operations and maintenance costs, and financing future corridor improvements. For Express Lanes operated by a private entity, the toll rates setting methodology will be included in the project agreement.

5. Tolling equity considerations

Background

There are four primary categories of equity concern that most often involve Express Lanes and other priced facilities: (1) Equity; (2) Modal Equity; (3) Geographic Equity; and (4) Revenue Equity. Despite equity considerations that affect Express Lanes, it is important to note that all income groups and roadway users (not just drivers) can benefit from the implementation of pricing. Freeway users, even low-income users, benefit indirectly from additional road capacity because toll paying drivers will not be competing for space on existing general-purpose lanes.

Nevertheless, HPTE is a government-owned business established as a separate division within the CDOT. HPTE is an enterprise for purposes of Section 20 of Article X of the State Constitution (commonly referred to as “TABOR”), and accordingly is not subject to the revenue and spending limitations of TABOR as long as it receives less than ten percent of its total revenues in grants from state and local governments. As an enterprise or a government owned business, HPTE must be cognizant of the revenue it earns, and therefore must collect enough to cover its expenses. Any tolling equity policies implemented will have an effect on the amount of revenue HPTE earns, and will likely have a detrimental effect on projects in operations and for future projects that could have a borrowing component.

Policy

In consideration of Express Lanes objectives in providing safe and reliable trips, CTIO will not provide discounts, other than those mandated (e.g. HOV 3+, Hybrid Vehicle Permits with vehicle cap), that can potentially degrade traffic conditions and travel time reliability in Express Lanes. If mandated to provide discounts by an outside agency, CTIO will adjust toll rates to help offset the loss in toll revenue.

6. Dynamic pricing algorithm criterion

Background

There are three primary criteria that comprise a dynamic pricing algorithm (1) Cap or No Cap; (2) Rate Change Interval; and (3) Maximum Increment or Decrement. These three dynamic pricing algorithm criterion will function as a framework so that the goals of the CTIO Tolling Policy listed in in *Section 4 Express Lanes toll rates setting objectives (revenue versus throughput maximization)* continue to be met.

Policy

CTIO staff will evaluate and implement dynamic pricing for each Express Lane corridor (with Next Generation Lane Toll System equipment) and will set dynamic pricing algorithm criterion that meet CTIO traffic operations requirements and financial covenants.

Dynamic Pricing Algorithm Criterion

- 1. Cap.** There shall be a cap to the minimum and maximum toll rate that can be charged.
 - The minimum and maximum toll rate shall be calculated on a per mile basis for each corridor.
 - A minimum toll rate cap shall be set for each individual Express Lanes corridor in order to meet the needs and goals of the Toll Rate Policy.
 - A maximum toll rate cap shall be set for each individual Express Lanes corridor in

order to meet the needs and goals of the Toll Rate Policy.

2. **Rate Change Interval.** The toll rate shall be calculated no less than every five (5) minutes and no more than every fifteen (15) minutes.
 - The Rate Change Interval shall be calculated for each individual Express Lanes corridor in order to meet the needs and goals of the Toll Rate Policy.
3. **Increment or Decrement Amount.** The amount the toll rate can change at each Rate Change Interval shall be no less than five (5) cents and no more than fifty (50) cents.
 - The Increment or Decrement Amount shall be calculated for each individual Express Lanes corridor in order to meet the needs and goals of the Toll Rate Policy.

The toll rates calculated by the Dynamic Pricing Algorithm shall be monitored and evaluated on an ongoing basis to ensure that toll rates on each individual Express Lanes corridor continue to meet the needs and goals of the Toll Rate Policy. When necessary, adjustments to the dynamic pricing algorithm criterion may be adjusted within the guardrails of this Toll Rate Policy so that the needs and goals of the Toll Rate Policy continue to be met.

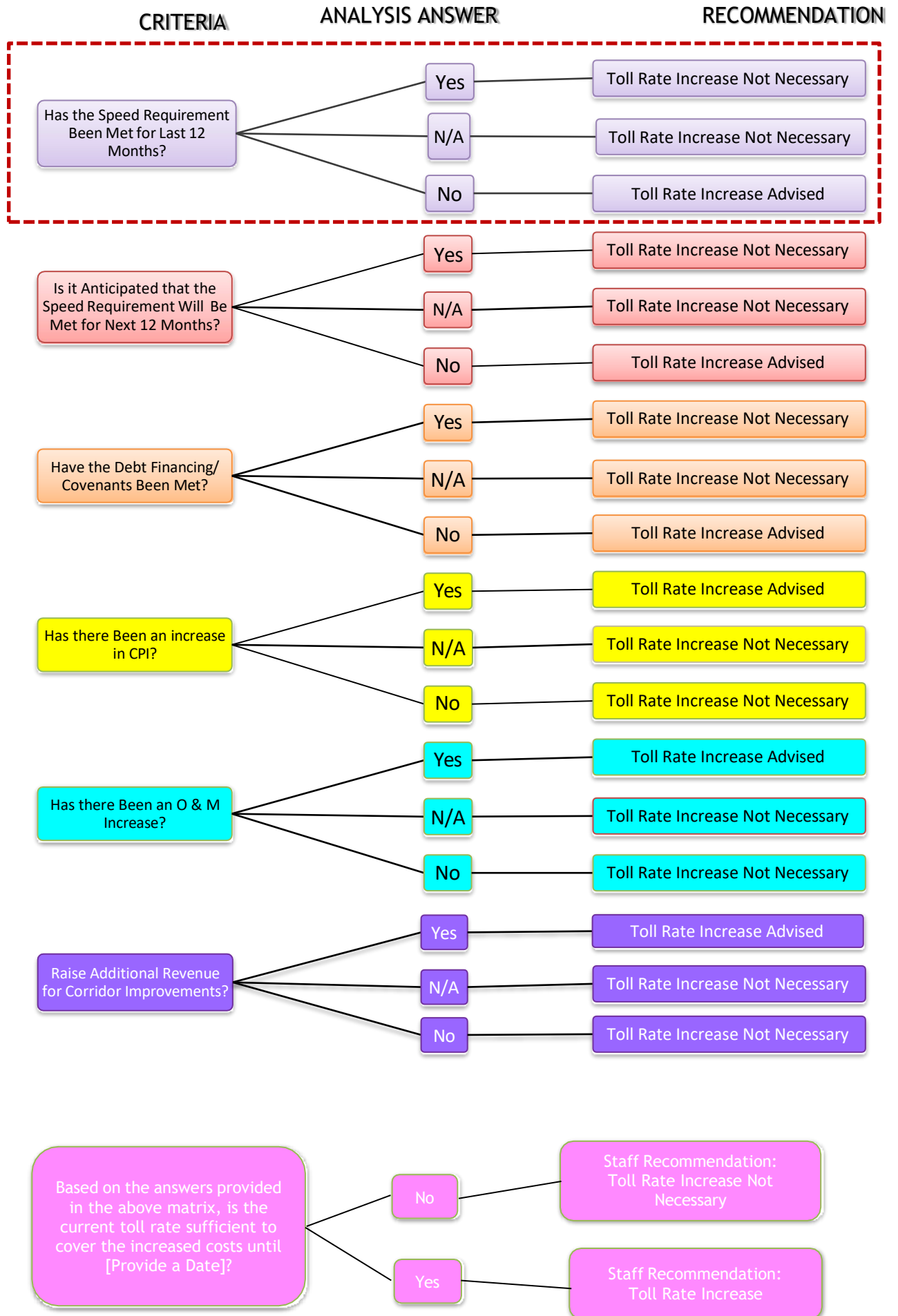
As specified in *Section 2 Toll rate setting and adjustment frequency*, the dynamic pricing criterion will be evaluated on a yearly basis. If necessary, to meet the Express Lanes corridor-specific objectives listed in *Section 4 Express Lanes toll rates setting objectives (revenue versus throughput maximization)* CTIO may recommend changes to the dynamic pricing algorithm criterion listed in this section.

If a board-approved dynamic pricing algorithm criterion is not sufficient to meet the needs and goals of the Toll Rate Policy, staff may present the Board with new Dynamic pricing algorithm criterion for their consideration and approval. This reconsideration may take place during the annual toll rate evaluation or whenever analysis by staff reveals that the Express Lane-specific board-approved dynamic pricing algorithm criterion cannot and/or will not meet the needs and goals of the Toll Rate Policy.

CORRIDOR NAME

ANNUAL TOLL RATE ADJUSTMENT ANALYSIS

FOR FY YYYY/YYYY



Note: For illustrative purposes only. The first criteria must be met for every Express Lanes. The next five criteria vary with specific Express Lanes requirements. Other factors and additional analyses may be required for future Express Lanes. For Dynamic pricing, toll rates adjustments apply to minimum and maximum toll rates per mile.



COLORADO

Transportation
Investment Office

CTIO TOLLING POLICY UPDATES

CTIO Board Meeting

October 18, 2023

What is Dynamic Pricing?

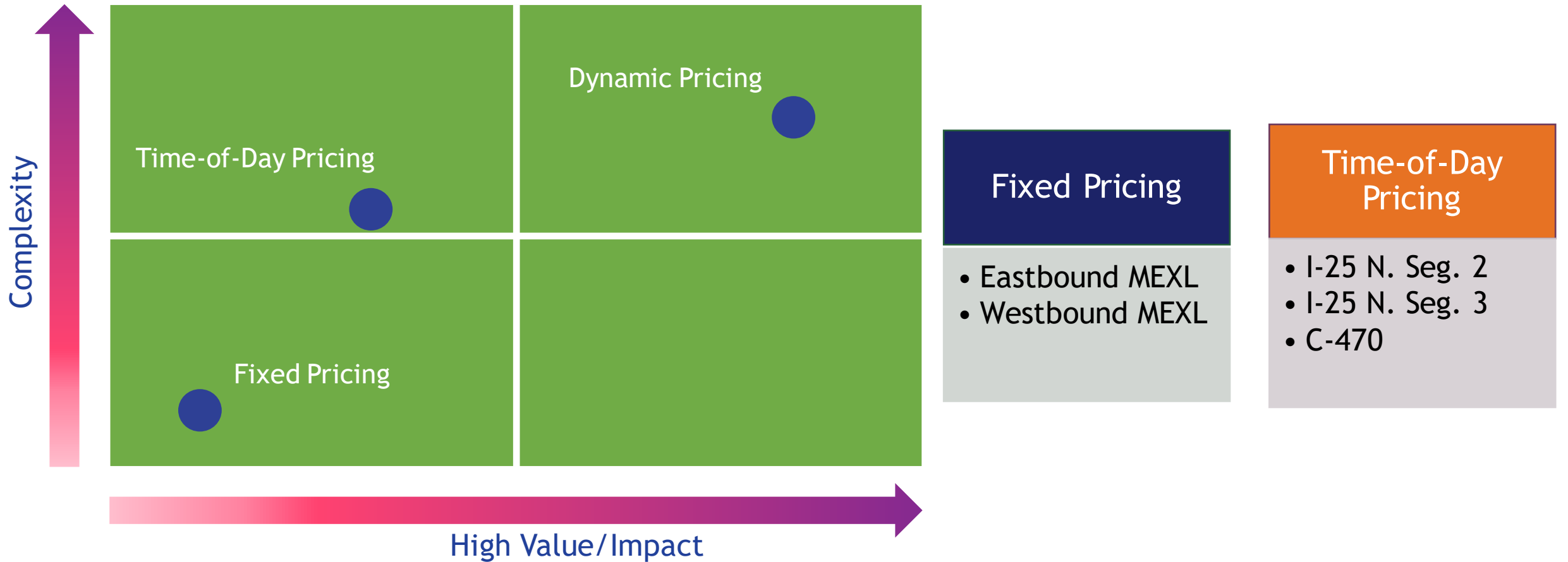
What is Dynamic Pricing?

- Dynamic pricing is a traffic demand management strategy that promotes travel time reliability in Express Lanes.

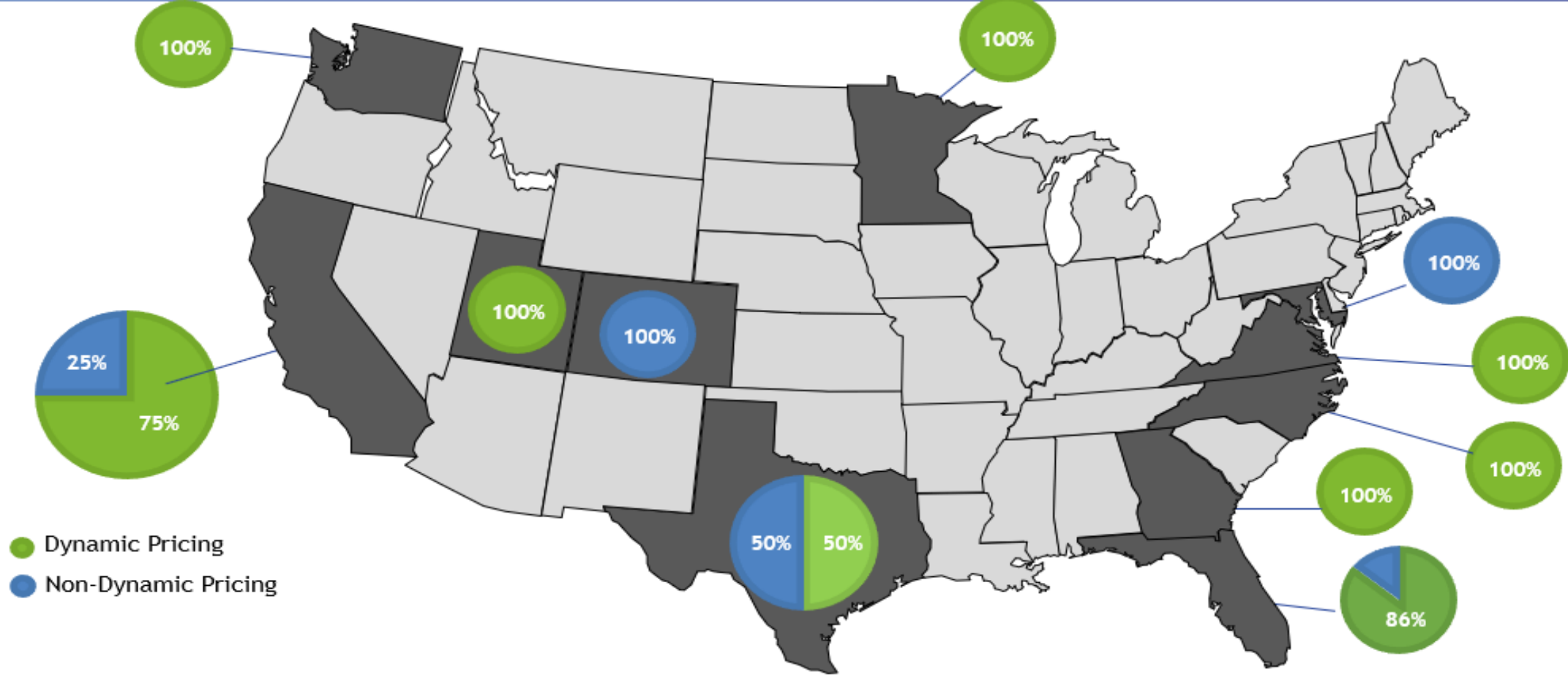
Benefit of Dynamic Pricing Over Time-of-Day Pricing

- Time-of-Day Pricing is based on historical traffic trends; it does not manage traffic demand efficiently during varying conditions.

Pricing Strategies



Pricing Strategy of Existing Express Lanes



Dynamic Pricing Goals

- **Maintain Speeds & Level of Service in Express Lanes**
- **Adhere to CTIO Tolling Policy**
 - **Fiscally responsible toll rates that balance needs such as:**
 - ✓ Traffic speeds
 - ✓ Reliable travel times
 - ✓ Debt coverage
 - ✓ Operations and maintenance costs
 - ✓ Financing future corridor improvements
- **Toll rates based on express lanes corridor-specific objectives**

Dynamic Pricing- Policy Recommendation

- Capped or Un-Capped Rates
- Rate Change interval (Corridor-based)
- Maximum Increment or Decrement (Corridor-based)
- Evaluation and Policy Change Process

Proposed Dynamic Tolling Criteria

Cap

There shall be a cap to the minimum and maximum toll rate that can be charged.

- The minimum and maximum toll rate shall be calculated on a per mile basis for each corridor.
- A minimum and maximum toll rate cap shall be set for each individual Express Lanes corridor in order to meet the needs and goals of the Toll Rate Policy.

Rate Change Interval

The toll rate shall be calculated no less than every five (5) minutes and no more than every fifteen (15) minutes.

- The Rate Change Interval shall be calculated for each individual Express Lanes corridor in order to meet the needs and goals of the Toll Rate Policy.

Increment or Decrement Amount

The toll rate shall be calculated no less than every five (5) minutes and no more than every fifteen (15) minutes.

- The amount the toll rate can change at each Rate Change Interval shall be no less than five (5) cents and no more than fifty (50) cents.
- The Increment or Decrement Amount shall be calculated for each individual Express Lanes corridor in order to meet the needs and goals of the Toll Rate Policy.

Evaluation and Policy Change Process

- The toll rates calculated by the dynamic pricing algorithm shall be monitored and evaluated on an ongoing basis.
- When necessary, adjustments to the dynamic pricing criterion may be adjusted within the guard rails of this Toll Rate Policy.
- Dynamic pricing criterion will be evaluated on a yearly basis. CTIO may recommend changes to the dynamic pricing criterion listed in this section.

Next Steps Timeline

CTIO Board
Reviews
Dynamic Pricing
Policy in
October

CTIO Board
Approves
Dynamic Pricing
Policy in
November

Test and Monitor
Dynamic Pricing
Algorithm in
“Shadow Mode”
• Analyze Data

Public
Information and
Education
Campaign

Implement
Dynamic Pricing
on MEXL in
Winter 2024

Questions/Comments