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Authority
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AD HOC CONGESTION, HIGHWAY AND ROADS COMMITTEE
APRIL 11, 2018

SUBJECT: EXPRESSLANES CLEAN AIR VEHICLE POLICY

ACTION: APPROVE RECOMMENDATION

RECOMMENDATION

ADOPT the Clean Air Vehicle toll discount policy.

ISSUE

Current ExpressLanes policy allows designated Clean Air Vehicles (CAVs) with valid DMV decals to access the Metro ExpressLanes for free at all times. However, as CAV penetration rates have risen, the ability to effectively manage ExpressLanes demand and to continue to meet performance targets regarding speed, reliability, and value to ExpressLanes customers has suffered because CAV users are artificially segregated from the population of paying customers and cannot be controlled using price signals.

At the time of the opening of the ExpressLanes, the number of CAV decals issued statewide was 30,000. Since then, that number has increased almost 1000% to 302,453 as of January 1, 2018, with an average annual increase of approximately 54,000 decals per year.

Concurrently, over the past two years, the penetration rate of Clean Air Vehicles in the most congested segment of the ExpressLanes has doubled. Measurements on I-110 North ExpressLanes in the vicinity of Slauson Ave from the first half of 2016 during the weekday AM Peak showed that CAVs constituted 3% of all ExpressLanes traffic. Corresponding measurements from the second half of 2017 revealed that this penetration rate had jumped to 6%.

For insight into the effect of CAVs on the current performance of ExpressLanes, a 6% change in peak period volumes corresponds to a travel time savings of 15 minutes and a speed improvement of 13 mph on I-110 North ExpressLanes. Additional details are shown in Attachment A.

It should be noted that the rise in CAV penetration rates in the ExpressLanes is only one of several variables correlated with the decline in speeds. Other contributing factors may include increases in occupancy switch setting violation rates, overall growth in traffic volumes in the ExpressLanes, and increased occurrence of illegal ExpressLanes ingress and egress to circumvent toll charges.

DISCUSSION

Background

Congestion Pricing is widely recognized as an effective method to practically mitigate congestion in real time. When traffic is uncongested, flow and density increase proportionally, and all vehicles get to travel at full speed. When demand exceeds the maximum capacity of a road, conditions shift from being uncongested to being congested-queues form, delays rise, and speeds drop. Once demand exceeds capacity and traffic shifts from an uncongested state to a congested state, additional flow-related inefficiencies often occur (which often reduce roadway capacity even more, thereby further exacerbating the congestion), and it can take a substantial amount of time for the facility performance to fully recover. This underscores the importance of keeping traffic demand from rising above roadway capacity to ensure travelers can still reach their destinations expeditiously.

An increase in CAVs on the ExpressLanes has been a contributing factor in the growth of ExpressLanes traffic volumes placing additional stress on the ExpressLanes system. CAVs are currently allowed to travel toll-free, effectively removing the price of the trip from their decision-making and reducing the ability to effectively manage ExpressLanes demand. The impacts of this situation are threefold:

- increased congestion severity in the ExpressLanes (i.e., slower speeds)
- longer durations of congestion in the ExpressLanes
- higher toll prices for paying customers of the ExpressLanes

Currently, Metro ExpressLanes allows CAVs with valid DMV decals to access the ExpressLanes for free. Originally, CAVs were required to receive a 100% toll discount in the ExpressLanes, but Metro received an exemption from this requirement for the demonstration phase, during which time CAVs were treated no differently than other ExpressLanes traffic. After that exemption expired, Metro maintained compliance with the law by directing CAVs to declare themselves as HOV 3+ vehicles (regardless of actual occupancy) when using the ExpressLanes, thereby traveling toll free. At the time the exemption expired, the resultant impacts of CAVs on ExpressLanes operations were minimal, as the number of eligible DMV CAV decal holders was substantially lower than present levels.

In 2014, the legislature demonstrated their concurrence with charging a toll to CAVs by including language in AB 1721 (and again when the legislation was renewed in 2017 with AB 544), authorizing High-Occupancy Toll (HOT) lane operators to charge partial tolls to CAVs for more effective traffic demand management. Since then, technological advancements as well as rising CAV volumes and increasing demand for the ExpressLanes have made investment in a system that enables charging CAVs practical and reasonable.

Finally, from an equity perspective, it is justified to charge solo drivers in the ExpressLanes a toll regardless of the type of vehicle they drive. While CAVs mitigate negative air quality impacts, they do nothing to alleviate roadway congestion. The CAV discount policy also ensures that CAVs contribute toward the maintenance and management costs of the roadway-something that CAVs have largely been able to avoid to date, given that these fees are generally collected through gasoline taxes. For example, the average gas tax paid per month is $11.50 for conventional internal combustion engine

vehicles, $6.57 for hybrid CAVs, and $0 for alternative fuel CAVs.

Recommended Solution

To mitigate this issue and improve the performance of the ExpressLanes for all users, staff is recommending that the CAV toll policy be revised to allow for a 15% toll discount for CAVs in place of the current 100% discount policy. This recommendation is based on the following considerations:

- Economic analysis showing that the discount rate should be as low as possible; and,
- Literature review showing that the discount rate should be at least 10% to convey meaningful value.

Supporting Research and Analysis

The above recommendation is based on a detailed investigation into the issue, its potential solutions, and the experiences of other peer agencies across the state and country. Below is a summary of the findings with respect to the handling of CAVs in comparable facilities in California and throughout the US:

- **Provisions in California and Federal law explicitly grant authority to charge CAVs for ExpressLanes use.** At the state level, this provision is found in Section (h) of AB-544, which was signed into law on October 10, 2017. The relevant portion of the law is provided below.

  > *Notwithstanding Section 21655.9, and except as provided in paragraph (2), a vehicle described in subdivision (a) that displays a valid decal, label, or identifier issued pursuant to this section shall be granted a toll-free or reduced-rate passage in high-occupancy toll lanes as described in Section 149.7 of the Streets and Highways Code unless prohibited by federal law.*

  At the federal level, the FAST Act granted public authorities the ability to offer HOV access for clean air vehicles at partially discounted toll rates through 2025. California authorization for CAV access to HOV lanes is scheduled to end at the same time as federal authorization. The following is a more detailed chronology of the California HOT-lane legislation as it applies to CAVs.
  - September 27, 2012: AB-2405 grants CAVs free access to ExpressLanes. (Metro ExpressLanes is granted an exemption to this for its first year of operation)
  - September 28, 2013: SB-286 again grants CAVs free access to ExpressLanes.
  - September 21, 2014: AB-1721 grants CAVs “toll-free or reduced-rate passage” in ExpressLanes.
  - October 10, 2017: AB-544 again grants CAVs “toll-free or reduced-rate passage” in ExpressLanes.
- **A majority of Express Lane facilities across the country are already charging clean air vehicles the same price as solo drivers.** A survey of the 37 Express Lane facilities currently in operation across the country reveals that 68% of them offer no discount for drivers of clean air vehicles. A listing of each facility and CAV discount policy (if any) is provided in Attachment B. Although none of the Express Lane facilities in California are currently offering partial discounts to CAVs, several are currently in the planning stages for such programs.
- **Most FasTrak facilities across the state are already charging clean air vehicles a partial**

or full toll price. A survey of the 18 FasTrak roadway facilities which includes bridges in California reveals that 78% of them have implemented some degree of tolling for CAVs, including 7 facilities that offer a discount of less than 50%, and an additional 5 facilities that offer no discount at all to CAVs. A listing of each facility and CAV discount policy (if any) is provided in Attachment C.

- **Unrestricted (or free) access to HOV and HOT facilities for Clean Air Vehicles is not a widely used strategy in 2018.** 80% of the states in the country are not currently offering HOV -lane access as an incentive for CAV drivers. A commonly cited reason for not offering CAV access to HOV lanes is the negative impact that such access would have on congestion in those lanes.
- **There are up to 17 other incentive programs offered in California to encourage CAV ownership and adoption in addition to the CAV decal program.** These include tax exclusions, exclusive parking access, rebates, utility discounts, registration discounts, and several financial incentive programs.
- **Metro ExpressLanes is currently subsidizing Clean Air Vehicle users $2.2 million annually when considering just the AM Peak alone,** as a result of the existing 100% discount policy. Implementing a 15% discount policy would allow Metro ExpressLanes to recapture approximately $1.9 million (85%) of this subsidy if all Clean Air Vehicles choose to continue using the lanes. If they choose to forgo their trip or utilize other travel means this would result in a reduction of traffic on the ExpressLanes.
- **According to economic theory as applied to a freeway facility, the optimal ExpressLanes discount for CAVs would be 0%.** Therefore, the ideal CAV discount rate for the ExpressLanes should be as low as possible, subject to considerations of customer perceptions and consistency. The more traffic that is allowed an exemption, or the more significant the discount offered, the greater the difficulty in achieving optimum traffic volumes and delivering maximum benefits to society with respect to mobility. This is further substantiated by data on the negative effects of congestion and inadequate demand management shown in Attachment D.
- **According to marketing research, the discount should be no less than 10% to ensure it is perceived by customers as a meaningful discount.** Research has shown that discounts should be at least 10% to successfully influence decision-making behavior and perceptions of 91%-94% of those surveyed (Ingene & Levy, Journal of Marketing, Vol 46).

ALTERNATIVES CONSIDERED

The Board may elect not to modify the current CAV policy. This alternative is not recommended, as it would result in the continued inability to effectively manage a rapidly growing segment of the population of ExpressLanes users through market pricing of increasingly scarce roadway capacity.

NEXT STEPS

Upon Board approval, staff will take the necessary steps to implement the new CAV toll discount policy and notify customers of the change with an outreach strategy and educational campaign. This will include email announcements, web site updates, welcome booklet enhancements, and close coordination with stakeholders. Staff will also provide supportive training to all customer service staff regarding CAV policy, and will update all ExpressLanes policies and procedures to reflect the new

CAV discount. Pending Board approval of this CAV discount policy, implementation is expected to be complete in the second half of 2018.

Furthermore, staff will periodically review the CAV policy to ensure it continues to serve the best interests of the ExpressLanes, and will return to the Board with any further recommendations for enhancements to the policy, as appropriate.

ATTACHMENTS

Attachment A - Impact of 5% Reduction in ExpressLanes Traffic Volume
Attachment B - CAV Treatment on Express Lanes Facilities in the United States
Attachment C - CAV Treatment on FasTrak Roadway Facilities in California
Attachment D - The Importance of Managing Demand

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