

Summary Information on Toll/HOV Facilities and Policies
(January 15, 2016)

At its November 6, 2013 meeting, MVIC discussed questions and implications of the Board setting policies regarding the use of tolled managed lanes (e.g., toll express lanes adjacent to free general purpose lanes). Staff conducted initial research regarding example policies, their effect on use and revenues, and the relation to income of users. Draft findings were presented to the MVIC on July 2, 2014.

Staff was asked to address three additional questions:

1. How many people use the current HOV/HOT facility in the Denver area?

Estimated Average Weekday Users - 2015

(DRAFT - January 13, 2016)

Express Lanes	US-36: West of I-25	I-25: South of US-36	Percent of Persons
Toll Paying Vehicles *	15,770	7,390	
<i>Est. Persons (x1.2 per veh.)</i>	<i>18,924</i>	<i>8,868</i>	2.9%
Free HOVs *	4,560	1,900	
<i>Est. Persons (x2.2)</i>	<i>10,032</i>	<i>4,180</i>	1.4%
Non-Rev./Hybrid Vehs.	1,140	400	
<i>Est. Persons (x1.3)</i>	<i>1,482</i>	<i>520</i>	0.2%
Transit Passengers	11,200	12,100	4.0%
Total Persons Express Lanes	41,638	25,668	
General Purp. Lane Vehs.	120,000	220,000	
<i>GP Lane Est. Persons (x1.25)</i>	<i>150,000</i>	<i>275,000</i>	91.5%
Grand Total Persons	191,638	300,668	100.0%
Persons per Express Lane	20,819	Operates limited hours of day	
Persons per GP Lane	25,000		

Sources: *October 2015 Monthly Operations Report (HPTE, Plenary Roads)*

* - Free HOVs likely underestimated due to "learning curve."

of installing new transponder. Some HOVs charged a toll.

Staff compilation from *RTD 2013 Annual Service Report (Boardings)*

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2. What are the benefits of providing HOV facilities? And, what are the impacts of HOV facilities on the Metro Vision goals to reduce SOV share of travel, per capita VMT, and per capita greenhouse gases?

- HOV facilities encourage and provide incentive to SOVs to form and join car/van pools, or ride transit.
- Operational improvements for transit vehicles are often incorporated.
- Car/vanpooling and transit offer a viable mobility option for many people.
- HOV facilities and the associated avoidance of SOV trips will help reduce regional GHG, pollutants, and VMT. The regional scale of reductions will be relatively minor, with greater benefits within a specific corridor.
- Though the impact of individual HOV facilities on total regionwide measures and goals is minor, the collective impact of all VMT reduction strategies is meaningful, to the established goals, and also to expanding personal mobility options. Examples include bicycle, transit, and pedestrian projects, and TDM services of the DRCOG Way to Go program.
- Studies are mixed in their conclusions about the effectiveness of HOV lanes. Some studies conclude “underused” HOV lanes may be more effective in reducing fuel use and pollutants if converted to general purpose lanes, by enabling all traffic collectively, to flow a little smoother during rush hour – as opposed to the managed lane(s) operating at 55 mph+ and the adjacent general purpose lanes operating stop-and-go. Other studies conclude differently – that opening an HOV lane to general purpose vehicles will induce significant additional regional VMT offsetting corridor traffic flow improvements.
- Factors unique to each corridor will affect the results for individual HOV facilities, such as the level of congestion in the corridor, speed difference between HOV and general purpose lanes, length of the facility, ingress/egress points, or adjacent rail transit service.

3. What is the relation of free or toll-paying HOVs to revenues for managed lanes?

- There are many factors and it is impossible to draw a perfect conclusion. However, using the basic assumptions that 1) a certain amount of total revenue must be derived to operate, maintain, and pay for the facility; and 2) the facility has a capacity limit on the number of vehicles that may efficiently use it at peak times, staff offers the following observations:
 - Allowing free use by HOVs, or any type of vehicle, decreases the potential number of toll paying vehicles.
 - If a minimum amount of total revenue is required (e.g., per funding plan), fewer toll-paying vehicles equates to either: higher required tolls for some or all vehicles; or a longer payback period for bonds, etc.
 - There is additional net cost associated with the enforcement of rules regarding free HOVs versus charging a toll for all vehicles.
 - It is an economic balancing act, as is the case with any business or public service.

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- A 2012 study (<http://www.drcog.org/documents/HPTE%20Amendment.pdf>) prepared by Resource Systems Group, Inc. for the change of the US-36/North I-25 Tolled Express Lanes from HOV 2+ free to HOV 3+ free, estimated the following behavioral modifications for 2-person HOVs after the toll is imposed:
 - Most will remain in the managed lanes and pay (split) the toll (~70%)
 - Some will attract a 3rd occupant (e.g. through from Way to Go Program) and travel for free (~6%)
 - Some move to free adjacent “general purpose” lanes or a parallel roadway (~22%)
 - Some will switch to transit (~1%)
 - Some will switch back to SOV (~1% to 2%)

Example HOV policy approaches

If DRCOG wishes to establish specific policies regarding the accommodation of HOVs on public roadway managed/tolled facilities, there are different approaches that could be considered:

- Planning Process: Where to apply policies? Only DRCOG specific actions and responsibilities – 2040 MVRTP, TIP, etc.? Or also, recommendations to CDOT/ HPTE?
- Should blanket policies apply for all future facilities, or case by case (i.e. corridor by corridor)
- Should policies apply to only projects that receive or are considered for DRCOG funding? Or also apply to ANY public tolling/HOV project (CDOT/HPTE).
- Should policies be the basis for Board “support” or “opposition” to projects?