

**REPORT OF THE
VIRGINIA DEPARTMENT OF TRANSPORTATION ON THE**

**Feasibility and Safety of Toll-Free
Usage of the Dulles Toll Road
by HOV-3 Vehicles**

**TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA**



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PREFACE

House Bills 1925 and 1928 amend and reenact Section 33.1- 46.2 of the Code of Virginia, relating to high occupancy vehicle lanes. More specifically, the bills permit the toll free use of Dulles Toll Road by vehicles having three or more occupants, and direct the Commonwealth Transportation Board to conduct a study to determine the feasibility and safety of such toll free use and report its findings to the Governor and the 1994 regular session of the General Assembly.

EXECUTIVE SUMMARY

During the 1993 session, the Virginia General Assembly passed House Bills 1925 and 1928 that allowed toll free use of the Dulles Toll Road by vehicles carrying three or more people and directed the Commonwealth Transportation Board to examine the feasibility and safety of such use and report to the Governor and the General Assembly during the 1994 session.

The Dulles Toll Road is currently operating at a level of service (LOS) "D", and is expected to reach LOS "E" in 1994 and LOS "F" by 1996. Average daily volumes are projected to reach 130,000 vehicles per day by the year 2010. These volumes support the need for multi-occupant vehicle incentives. The subject bills propose toll free high occupancy vehicles (HOV) as such an incentive.

While toll free HOV operation under the current toll collection system is feasible and would present no known safety problems, the benefits and incentive for the formation of carpools is questionable. A manned toll booth serving both HOV and LOV (low occupancy vehicle) vehicles would be necessary at each plaza. Since HOVs would still be required to wait in the toll queue they would not benefit from any travel time savings, which is the primary incentive for carpooling in a congested urban area such as Northern Virginia. Verification and auditing of toll free vehicles would be difficult since the attendant would have complete control over whether or not to let a vehicle pass toll free.

Toll free HOV operation alone would have no positive effect on traffic flow in the corridor and would result in a reduction of toll revenues available to be used in the corridor for ongoing expenses and for alternatives analysis, preliminary engineering and design of long term solutions such as the Dulles Toll Road HOV, improved bus

service, commuter rail, commuter parking lots and interchange improvements. The Dulles HOV Special Advisory Committee is examining alternative HOV solutions in the Dulles Corridor and it is recommended that the Committee also examine toll free operations as part of the selected alternative.

INTRODUCTION

By late 1985, barely a year after it opened, the Dulles Toll Road was nearly at capacity and the Virginia Department of Transportation (VDOT) began preparations for widening the roadway to six lanes. Local jurisdictions endorsed the widening and encouraged VDOT to consider designating the median lanes as high occupancy vehicle (HOV). In August 1990, the Commonwealth Transportation Board approved the designation of the median lanes as diamond HOV lanes. Throughout the construction period, there was an extensive marketing campaign to advise motorists that, once complete, the new lanes would operate as HOV-3+ during peak periods in the peak direction. As each section of the widening was completed, beginning in early July of 1992, the Department allowed all traffic to use the newly completed segments and postponed the implementation of the HOV restrictions until the entire project was complete. On September 1, 1992, the HOV restrictions were put into effect and non-HOV traffic, which had previously enjoyed the use of three lanes, was forced into two lanes during the restricted periods. Public outcry was substantial and the non-HOV faction organized and began an extensive -- and successful -- campaign to have the HOV restrictions on the Toll Road lifted. On October 2, 1992, Congress passed an Appropriations Bill that removed the HOV designation on the Toll Road until July, 1993. The restrictions were suspended on October 5, 1992, and in early 1993 the Commonwealth Transportation Board passed a resolution extending the suspension until April 1994 in order to provide an opportunity for the newly formed Dulles HOV Special Advisory Committee to examine the various alternatives as requested by the local jurisdictions.

During the 1993 session, the Virginia General Assembly passed House Bills 1925 and 1928 that directed the Commonwealth Transportation Board to examine the feasibility and safety of allowing toll free use of the Dulles Toll Road for HOV-3+ vehicles and report to the General Assembly on its findings during the 1994 session.

FEASIBILITY

Assuming three conventional lanes in each direction on the Toll Road, the level of service near the main plaza (currently at "D") is expected to reach "F" by 1996. It is projected that traffic on the Dulles Toll Road will reach 130,000 vehicles per day by the year 2010. Assumptions for that projection include the widening of Route 7; HOV and Rail on the Toll Road; construction of the Toll Road Extension; the widening of Route 50; the construction of an HOV lane on I-66 to Gainesville; and an extension of Rail on I-66 to Route 28 at Centerville. Even with these improvements in place, the projected traffic volume supports the need for multi-occupant vehicle incentives.

While toll free HOV operation under the current toll collection system is feasible, the benefits and incentive for the formation of carpools is questionable. At the main toll plaza, one booth could be dedicated for HOV during the desired hours of operation with no adverse effects on conventional traffic. However, at the ramps, dedication of one booth for HOV would place an intolerable burden on conventional traffic. At these plazas, it would be necessary to have a manned booth (or booths) during the hours of HOV operation that would serve both HOV and LOV (low occupancy vehicle) traffic. HOV vehicles would not benefit from any travel time savings since they would still be required to wait in the toll queue, and verification and auditing of toll free vehicles would be difficult since the attendant would have complete control over whether or not to let a vehicle pass toll free. In order to minimize weaving, signing would have to be placed prior to all toll plazas that would direct HOV traffic to a specific lane for toll free passage.

The San Francisco/Oakland Bay Bridge currently utilizes bypass lanes and lane metering to provide toll free operation for HOV-3+ vehicles on the bridge. The operation is enforced by the California Highway Patrol and appears to be successful. There are few violators since the penalty is a moving violation and a fine of over \$200. In conversations with CALTRANS representatives, it was indicated that the elimination

of tolls alone is generally not a sufficient incentive to encourage carpooling -- that it must be done in such a way that the HOVs are afforded a significant travel time savings. This was accomplished on the San Francisco/Oakland Bay Bridge through the provision of toll bypass lanes and the metering system. On that facility, there are 22 approach lanes to the toll plaza. Immediately after exiting the plaza, vehicles are metered into five lanes via a signal bridge that gives preferential treatment to the HOV lanes.

While it may be feasible to construct HOV bypass lanes at all ramp toll plazas on the Dulles Toll Road, such lanes would be extremely difficult to implement on the westbound off ramps due to the short weaving distance available between the toll booths and intersections. The estimated cost to construct bypass lanes at all ramp plazas, if they could be designed to be operationally efficient, would be in the area of \$6 million. The bypass lanes alone, without HOV lanes on the main line, would not provide sufficient travel time savings to serve as an incentive for increased carpooling in the corridor.

It is nearly impossible to estimate the impact of a toll free HOV operation on traffic or revenues since there is currently no way to account for the potential attractiveness of a toll free facility to motorists who would not otherwise use it. For purposes of illustration however, if an average of 500 HOVs passed through the main toll plaza during each hour of the peak periods (6:30 - 9:30 a.m. and 4:30 - 6:30 p.m.) it would result in an annual revenue loss of \$607,500. This assumes that each vehicle would have paid 75 cents in tolls -- 25 cents at a ramp toll booth and 50 cents at the main plaza -- under non-toll free operation. It should be noted that this estimate is conservative since it assumes that the carpools already exist and are not formed from LOVs currently paying tolls. It also does not include revenue losses from those HOV vehicles that would enter and exit the toll road without passing through the main toll plaza.

SAFETY

Provided adequate signing is installed, there are no perceived safety issues that would result from toll free HOV operation if the current ramp configurations were maintained. However, if bypass lanes were to be constructed, some merge-weave problems may result as the higher speed HOV vehicles attempt to merge with the lower speed LOV vehicles exiting the toll booths. This would be especially true on the westbound off ramps. The hostile attitude of many of the non-HOV drivers toward HOVs would further contribute to the merge/weave problems.

CONCLUSIONS

Permitting HOV free access to the Toll Road would not provide sufficient incentive for the formation of a significant number of additional carpools in the Dulles Corridor and would have little, if any, positive effect on traffic flow. The real incentive would be the re-establishment of HOV lanes which would encourage the formation of additional carpools and vanpools in the corridor thus providing a positive impact on traffic flow in the corridor. However, such action would result in a reduction of toll revenues available to be used in the corridor for ongoing expenses such as operations and maintenance, and more importantly, for alternatives analysis, preliminary engineering and design of long term solutions such as main line HOV, commuter rail, commuter parking lots and interchange improvements. The Dulles HOV Special Advisory Committee is examining alternative HOV solutions in the corridor and it is recommended that Committee examine the effect of toll free HOV as part of the selected alternative.

APPENDICES

1993 SESSION

VIRGINIA ACTS OF ASSEMBLY - CHAPTER 5 § 7

An Act to amend and reenact § 33.1-46.2 of the Code of Virginia, relating to high-occupancy vehicle lanes.

[H 1925]

Approved *MAR 25 1993*

Be it enacted by the General Assembly of Virginia:

1. That § 33.1-46.2 of the Code of Virginia is amended and reenacted as follows:

§ 33.1-46.2. Designation of high-occupancy vehicle lanes; use of such lanes; penalties.—A. In order to facilitate the rapid and orderly movement of traffic to and from urban areas during peak traffic periods, the Commonwealth Transportation Board may designate one or more lanes of any highway in the interstate, primary, or secondary highway systems as high-occupancy vehicle lanes, hereinafter referred to in this section as HOV lanes. When lanes have been so designated and have been appropriately marked with such signs or other markers as the Board may prescribe, they shall be reserved during periods designated by the Board for the exclusive use of buses and high-occupancy vehicles. Any local governing body may also designate HOV lanes with respect to highways under its exclusive jurisdiction. HOV lanes shall be reserved for high-occupancy vehicles of a specified number of occupants as determined by the Board or, for those highways under the exclusive control of a local governing body, that local governing body. Notwithstanding the foregoing provisions of this section, no designation of any lane or lanes of any highway as HOV lanes shall apply to the use of any such lanes by emergency vehicles such as fire-fighting vehicles, ambulances, rescue squad vehicles, law-enforcement vehicles, and vehicles of public utility companies when operating in response to an emergency call.

B. In designating any lane or lanes of any highway as HOV lanes the Board, or local governing body as the case may be, shall specify the hour or hours of each day of the week during which the lanes shall be so reserved, and the hour or hours shall be plainly posted at whatever intervals along the lanes the Board or local governing body deems appropriate. Any person driving a motor vehicle in a designated HOV lane in violation of this section shall be guilty of a traffic infraction which shall not be a moving violation and on conviction shall be fined fifty dollars.

C. In the prosecution of an offense, committed in the presence of a law-enforcement officer, of failure to obey a road sign restricting a highway, or portion thereof, to the use of high-occupancy vehicles, proof that the vehicle described in the HOV violation summons was operated in violation of this section, together with proof that the defendant was at the time of such violation the registered owner of the vehicle, shall constitute in evidence a rebuttable presumption that such registered owner of the vehicle was the person who committed the violation. Such presumption shall be rebutted if the registered owner of the vehicle testifies in open court under oath that he was not the operator of the vehicle at the time of the violation. A summons for a violation of this section may be executed in accordance with § 19.2-76.2. Such rebuttable presumption shall not arise when the registered owner of the vehicle is a rental or leasing company.

D. Notwithstanding the provisions of § 19.2-76, whenever a summons for a violation of this section is served in any county, city, or town, it may be executed by mailing by first-class mail a copy thereof to the address of the owner of the vehicle as shown on the records of the Department of Motor Vehicles. If the summoned person fails to appear on the date of return set out in the summons mailed pursuant to this section, the summons shall be executed in the manner set out in § 19.2-76.3.

No proceedings for contempt or arrest of a person summoned by mailing shall be instituted for his failure to appear on the return date of the summons.

E. Notwithstanding the foregoing provisions of this section, no HOV lanes shall be designated within the boundaries of any city having a population of at least 262,000 but no more than 263,000, unless the lanes are part of a functioning and operable system of HOV lanes linking that city with two or more cities contiguous to that city.

F. The prohibition contained in subsection E of this section shall expire and the HOV lanes referred to in subsection E of this section shall be reestablished on January 1, 1990, or when the first usable section of an HOV lane facility is opened on Interstate Route 64, whichever occurs later.

Notwithstanding § 33.1-252, high-occupancy vehicles having three or more occupants (HOV-3) may be permitted to use the Omer L. Hirst - Adalard L. Brault Expressway

(Dulles Toll Road) without paying a toll. The Commonwealth Transportation Board shall conduct a study as to the feasibility and safety of such toll-free use of the Omer L. Hirst - Adelard L. Brault Expressway and report its findings to the Governor and the General Assembly prior to the 1994 Regular Session of the General Assembly.

President of the Senate

Speaker of the House of Delegates

Approved:

Governor

1993 SESSION

VIRGINIA ACTS OF ASSEMBLY - CHAPTER 82

An Act to amend and reenact § 33.1-46.2 of the Code of Virginia, relating to high-occupancy vehicle lanes.

[H 1928

Approved **MAR 8** 1993

Be it enacted by the General Assembly of Virginia:

1. That § 33.1-46.2 of the Code of Virginia is amended and reenacted as follows:

§ 33.1-46.2. Designation of high-occupancy vehicle lanes; use of such lanes; penalties.—A In order to facilitate the rapid and orderly movement of traffic to and from urban areas during peak traffic periods, the Commonwealth Transportation Board may designate one or more lanes of any highway in the interstate, primary, or secondary highway systems as high-occupancy vehicle lanes, hereinafter referred to in this section as HOV lanes. When lanes have been so designated and have been appropriately marked with such signs or other markers as the Board may prescribe, they shall be reserved during periods designated by the Board for the exclusive use of buses and high-occupancy vehicles. Any local governing body may also designate HOV lanes with respect to highways under its exclusive jurisdiction. HOV lanes shall be reserved for high-occupancy vehicles of a specified number of occupants as determined by the Board or, for those highways under the exclusive control of a local governing body, that local governing body. Notwithstanding the foregoing provisions of this section, no designation of any lane or lanes of any highway as HOV lanes shall apply to the use of any such lanes by emergency vehicles such as fire-fighting vehicles, ambulances, rescue squad vehicles, law-enforcement vehicles, and vehicles of public utility companies when operating in response to an emergency call.

B. In designating any lane or lanes of any highway as HOV lanes the Board, or local governing body as the case may be, shall specify the hour or hours of each day of the week during which the lanes shall be so reserved, and the hour or hours shall be plainly posted at whatever intervals along the lanes the Board or local governing body deems appropriate. Any person driving a motor vehicle in a designated HOV lane in violation of this section shall be guilty of a traffic infraction which shall not be a moving violation and on conviction shall be fined fifty dollars.

C. In the prosecution of an offense, committed in the presence of a law-enforcement officer, of failure to obey a road sign restricting a highway, or portion thereof, to the use of high-occupancy vehicles, proof that the vehicle described in the HOV violation summons was operated in violation of this section, together with proof that the defendant was at the time of such violation the registered owner of the vehicle, shall constitute in evidence a rebuttable presumption that such registered owner of the vehicle was the person who committed the violation. Such presumption shall be rebutted if the registered owner of the vehicle testifies in open court under oath that he was not the operator of the vehicle at the time of the violation. A summons for a violation of this section may be executed in accordance with § 19.2-76.2. Such rebuttable presumption shall not arise when the registered owner of the vehicle is a rental or leasing company.

D. Notwithstanding the provisions of § 19.2-76, whenever a summons for a violation of this section is served in any county, city, or town, it may be executed by mailing by first-class mail a copy thereof to the address of the owner of the vehicle as shown on the records of the Department of Motor Vehicles. If the summoned person fails to appear on the date of return set out in the summons mailed pursuant to this section, the summons shall be executed in the manner set out in § 19.2-76.3.

No proceedings for contempt or arrest of a person summoned by mailing shall be instituted for his failure to appear on the return date of the summons.

E. Notwithstanding the foregoing provisions of this section, no HOV lanes shall be designated within the boundaries of any city having a population of at least 262,000 but no more than 263,000, unless the lanes are part of a functioning and operable system of HOV lanes linking that city with two or more cities contiguous to that city.

F. The prohibition contained in subsection E of this section shall expire and the HOV lanes referred to in subsection E of this section shall be reestablished on January 1, 1990, or when the first usable section of an HOV lane facility is opened on Interstate Route 64, whichever occurs later § 33.1-252. high-occupancy vehicles having three or more occupants (HOV-3) may be permitted to use the Omer L. Hirst-Adelard L. Brault Expressway (Dulles Toll Road) without paying a toll. The Commonwealth Transportation Board shall conduct a

study as to the feasibility and safety of such toll-free use of the Omer L. Hirst-Adelard L. Brault Expressway and report its findings to the Governor and the General Assembly prior to the 1994 Regular Session of the General Assembly.

President of the Senate

Speaker of the House of Delegates

Approved:

Governor