HOV Lanes and Low Emission and Energy-Efficient Vehicles

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I-10 West HOV Lane, Houston

INSIDE:

Traffic congestion continues to be a significant issue in metropolitan areas throughout the country. Transportation agencies at the federal, state, metropolitan, and local levels are using a variety of techniques and approaches to improve traffic flow, enhance mobility, and provide travel options.

High-occupancy vehicle (HOV) lanes are one approach in use in some areas to ease traffic congestion. HOV lanes provide travel time savings and improved trip time reliability to encourage travelers to change from driving alone to carpooling, vanpooling, or riding the bus.

HOV lanes improve the people-moving capacity rather than vehicle-moving capacity of congested freeway corridors. HOV lane applications have evolved over the past 35 years. Early projects focused primarily on bus-only facilities. Carpools became the dominate user group on most HOV lanes in the 1970s and 1980s.

The 1990 Clean Air Act Amendments and the Transportation Equity Act for the 21st Century (TEA-21) expanded potential user groups to include specific types of low-emission and energy-efficient vehicles. These efforts focused on providing incentives for the purchase and use of low emission and energy-efficient vehicles.

The Clean Air Act Amendments created the inherently low-emission vehicle (ILEV) program, which focused on non-gasoline powered vehicles. TEA-21 allowed states to authorize ILEV use of HOV lanes without meeting occupancy requirements.

Legislation was approved in at least 10 states — Arizona, California, Colorado, Florida, Georgia, Hawaii, Maryland, Texas, Utah, and Virginia — allowing ILEVs or related non-gasoline powered vehicles to access HOV lanes. Based on the very small number of these vehicles, HOV lane use was virtually non-existent.

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) allows increased flexibility for state departments of transportation and other agencies in maximizing the use of HOV facilities when available capacity exists.

SAFETEA-LU provisions expand the definition of low emission and energy-efficient vehicles to include some types of hybrid vehicles, which operate under a combination of gasoline and electric power. The Environmental Protection Agency (EPA) and the Federal Highway Administration (FHWA) are finalizing guidance on the classification of eligible hybrid vehicles.

SAFETEA-LU requires states to submit a certification to the U.S. Secretary of Transportation that the operating agencies will monitor, evaluate, and report on the use of the lanes by these vehicles, and will limit or discontinue their use if the operation of a facility becomes degraded. SAFETEA-LU defines a degraded condition if vehicles using the facility fail to maintain a minimum average operating speed 90 percent of the time over a consecutive 180-day period during the morning or evening weekday peak-hour periods. The minimum operating speed is defined as 45 mph when the posted speed limit is 50 mph or greater.

This brochure, provided by FHWA, highlights the use of HOV lanes in Arizona, California, New York, and Virginia by low emission and energy-efficient vehicles.

Sources to obtain more information on HOV lanes are highlighted on the last page of the brochure. These sources include the Internet site for the periodic FHWA Program Guidance on HOV Operations. The guidance provides current information on FHWA policies.

Arizona

The Arizona Department of Transportation (ADOT) initiated a pilot program in February 2007, allowing qualifying hybrid vehicles to use HOV lanes in the state without meeting the occupancy requirements.

Currently, HOV lanes are in operation on I-10, SR 202, and I-17 in the Phoenix area. These facilities operate as HOV lanes 24 hours a day, 7 days a week (24/7).

Owners of eligible hybrid vehicles must obtain an alternative fuel license plate with a hybrid decal. Hybrid vehicles that meet Tier II emission levels established under the Clean Air Act Amendments and which achieve not less than a 45 percent fuel increase in combined city-highway fuel economy, based on information provided by the U.S. Department of Energy and EPA, qualify for the hybrid decal. The number of hybrid vehicles allowed to obtain decals is capped at 10,000.

Individuals may obtain an alternative fuel license plate on-line or through the mail. There is an $8.00 initial application fee and $1.50 charge for postage and handling.

Legislation allowing alternative fuel vehicles to use HOV lanes in Arizona was first approved in 1997. The definition of eligible vehicles at that time followed the provisions of TEA-21. Legislation approved in 2001 added hybrids to the types of qualifying vehicles based on approval from the federal government.

ADOT's initial request to FHWA to include hybrid vehicles in the exempt HOV lane user group was not approved since hybrids were not allowed under TEA-21. Based on SAFETEA-LU, FHWA granted conditional approval to ADOT to allow hybrid vehicle use of HOV lanes. The governor authorized the pilot program in January, 2007. ADOT is required to update the hybrid vehicle-eligibility criteria and other program elements to comply with the EPA Final Rule when it is issued.

New York

The Clean Pass program allows eligible hybrid vehicles to use the HOV lanes on the Long Island Expressway (LIE). Clean Pass is part of the governor's Strategic Energy Action Plan. The pilot program started in 2006.

Clean Pass is sponsored through a partnership involving the New York State Department of Transportation (NYSDOT), the New York State Department of Motor Vehicles (DMV), and the State Department of Environmental Conservation (DEC). The Clean Pass program has been granted conditional approval by FHWA, pending the issuance of the EPA Final Rule.

Currently, three hybrid vehicle models are eligible for the program. Owners of eligible vehicles apply to the DMV to register for the program. The DMV issues four stickers to eligible vehicle owners, which must be placed on the front, rear, and each side of the vehicle.

A total of 2,119 Clean Pass stickers were issued by the end of 2006. A total of 1,442 stickers, or 68 percent, were issued to residents on Long Island.

NYSDOT has an ongoing program monitoring use of the LIE. Traffic counts from October, 2006, indicate that hybrid vehicles account for between 15 vehicles to 90 vehicles or 1 percent and 6 percent of the HOV lane volumes during the morning and the afternoon peak hours.

California

Legislation approved in 1999 allowed vehicles meeting California's low-emission vehicle regulations to access HOV lanes in the state without meeting occupancy requirements. Since few vehicles met these requirements, there was no impact on HOV lane use.

Legislation approved in 2004 extended the HOV lane exemption to hybrid vehicles and other vehicles meeting the state's Advanced Technology Partial Zero Emission Vehicles Standard and having a 45 mpg or greater fuel economy highway rating. Implementation of this provision was based on federal action allowing hybrid vehicles.

The legislation directed the California Department of Transportation (Caltrans), the California Department of Motor Vehicles (DMV), the California Air Resources Board, and the California Highway Patrol to develop and implement procedures for identifying exempt vehicles, administering the program, and monitoring use of HOV lanes.

The legislation prohibited the DMV from issuing more than 75,000 clean air vehicle decals to hybrid vehicles and directed Caltrans to examine specific elements when 50,000 decals were issued.

FHWA granted conditional approval for hybrid vehicle use of the HOV lanes based on SAFETEA-LU. Similar to Arizona, vehicle-eligibility criteria must be updated based on the EPA Final Rule.

As required by state legislation, Caltrans conducted an assessment when 50,000 decals had been issued to determine if significant HOV lane breakdown had occurred due to the addition of hybrid vehicles. The factors identified in the legislation to be examined included reduction in the level of service (LOS), sustained stop-and-go conditions, average travel speeds slower than the adjacent general-purpose freeway lanes, and consistent increases in travel times in the HOV lanes.

The analysis focused primarily on the LOS measurement, as it is commonly used to assess freeway performance. A LOS C, which represents the threshold between acceptable operating conditions and breakdown conditions, was used in the determination study. Information on the number of permits issued by counties in the state was also examined.

A total of 25 counties accounted for 98 percent of the 50,679 decals issued by March, 2006. Los Angeles County accounted for 33 percent of the total, followed by Orange County with 10 percent, Santa Clara County with 8 percent, and San Diego and Alameda counties with 7 percent each. HOV lanes are located in all of these counties.

LOS data for a two-week period in April, 2005 was compared with data for the same two-week period in 2006. The assessment concluded that there was no significant HOV lane breakdown directly attributable to hybrid vehicle use of the HOV lanes.

The assessment found that approximately 88 percent to 90 percent of the monitored HOV lanes operated at a LOS C or better during the morning and afternoon peak periods in 2006. Between 10 percent and 12 percent of the HOV lane-miles experienced breakdown conditions in 2006. Approximately 7 percent of the HOV lane-miles experienced breakdown conditions in 2005, prior to allowing hybrid access. While the operation of some 3 percent to 5 percent of the HOV lane-miles degraded from 2005 to 2006, it was not possible to attribute the LOS decline directly to hybrid vehicles. Finally, the assessment indicated that the operating conditions improved in almost as many HOV lane-miles as declined from 2005 and 2006.

In mid-2006, 75,000 decals had been issued, and the DMV stopped issuing stickers. Legislation in 2006 authorized an additional 10,000 decals to be issued, starting January 1, 2007.

The use of HOV lanes by hybrid vehicles is being monitored as part of Caltrans' ongoing data collection program. Traffic counts from 2006 on HOV lanes in Los Angeles and the San Francisco Bay Area indicate that hybrid vehicles account for between 5 percent and 15 percent of total users during the morning peak hour. The highest volumes of 15 percent were recorded on I-405 in Los Angeles. Peak hour hybrid volumes on SR-91, I-10, and I-605 in Los Angeles averaged around 6 percent. Hybrid vehicle volumes on HOV lanes in the Bay Area were lower, representing some 7 percent on I-80 and 5 percent on US 101.

Virginia

Plate Prior to July 1, 2006

Plate After July 1, 2006

Legislation approved in Virginia in 1993 established a clean special fuel license plate for alternative fuel vehicles. State legislation approved in 1994 allowed vehicles with clean special fuel license plates to use the HOV lanes in Virginia without meeting the minimum-occupancy requirements.

Hybrid vehicles, which became available in the state in 2000, were initially determined not to be eligible for the special fuel license plates by the Virginia Department of Motor Vehicles (DMV), in consultation with the Virginia Department of Environmental Quality. After several citizens approached their state legislators about the issue, the decision was reversed. Contrary to federal legislation, hybrids have been able to access HOV lanes in the state since 2000.

As of January, 2006, a total of 11,685 clean special fuel license plates had been issued in the state. In the six years from 1994 through 1999, a total of 78 clean special fuel license plates were issued. In the six years from 2000 to January, 2006, with hybrids qualifying for the HOV exemption, a total of 11,607 clean special fuel license plates were issued.

This increase is directly attributed to hybrid vehicle owners applying for the clean special fuel license plates. Hybrid vehicles account for almost 98 percent of the total.

Between 1994 and January, 2006, 83 percent of the special fuel vehicle plates were issued in counties and cities in northern Virginia, which are served by the I-95, I-395, I-66, and Dulles Toll Road HOV lanes.

The Metropolitan Washington Council of Governments (WASHCOG), in coordination with the Virginia Department of Transportation (VDOT), has an ongoing program for monitoring and reporting on the use of HOV facilities in northern Virginia.

In the fall of 2003, clean special fuel vehicles accounted for between 2 percent and 12 percent of the HOV volumes during the peak periods on the different HOV facilities in northern Virginia.

Counts from October, 2004 indicate that clean special fuel vehicles accounted for between 11 percent and 17 percent of the vehicles in the I-95 HOV lanes during the 6:00 a.m. to 9:00 a.m. peak-period in the northbound direction. These percentages translate into a range of 844 to 1,422 vehicles with clean special fuel license plates using the HOV lanes during the three-hour period and the corresponding total vehicle volumes in the HOV lane ranged from 7,994 to 8,450. In 2005 and 2006, hybrid vehicles accounted for some 24 percent of the peak hour vehicles using the I-95 HOV lane.

The Virginia Enforcement Task Force examined hybrid vehicle use of the HOV lanes and other issues. Reports issued by the Task Force in 2003 and 2005 included recommendations for addressing these concerns.

Legislation approved in 2006 required that a new distinctively different design be used for clean special fuel license plates issued after July 1, 2006. The legislation limits use of the HOV lanes in the I-95/I-395 corridor to vehicles registered with and displaying the clean special fuel license plates issued prior to July 1, 2006. Individuals with clean special fuel license plates registered to vehicles before July 1, 2006, are able to renew or transfer their plates to a newly purchased qualifying vehicle after July 1, 2006 and continue to use the I-95/I-395 HOV lanes.

The legislation increased the fee for the clean special fuel license plates from $10 to $25. For each $25 fee collected after the first 1,000 registrations, $15 will be paid to the State Treasurer and credited to a special non-revenue HOV Enforcement Fund for use by the Virginia State Police for enhanced HOV enforcement.

For More Information

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Interested in more information on HOV lanes and hybrid vehicles? FHWA has numerous publications available on HOV lanes, managed lanes, and different user groups. Many of these reports are available through the FHWA Website and the HOV Pooled-Fund Study (PFS) Website.

FHWA: http://www.fhwa.dot.gov/

HOV PFS: http://hovpfs.ops.fhwa.dot.gov/index.cfm

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