High Occupancy Toll (HOT) and High Occupancy Vehicle (HOV) Facilities
Type: Alternative to the City’s Plan & Supplement to the City's plan

Description:
High Occupancy Vehicle (HOV) facilities provide preferential treatment for buses, vanpools, carpools, and other designated vehicles by providing lanes and roadways reserved for their use. A local example of an HOV facility is the Long Island Expressway (LIE) HOV lane, which is restricted to buses, van pools, taxis, and passenger vehicles carrying two or more occupants during the morning and evening rush hour. The purpose of HOV lanes is to encourage car pooling and bus use and to promote the more efficient use of highway lane capacity. Provided that the HOV lane is less congested, hence bus riders and car poolers benefit from a faster trip.

High Occupancy Toll (HOT) lanes are a variant of HOV lanes. On HOT lanes, vehicles not meeting the prescribed HOV occupancy requirements, such as a minimum of two occupants per passenger vehicle, are allowed to use the lane through the payment of a fee. The fee is paid electronically through systems similar to E-ZPass and can vary based on time of day and the amount of traffic in the HOT lane. The goal of this approach is to allow paying single-occupant drivers to use any excess capacity on an HOV lane. The price is adjusted to maintain uncongested conditions in the lane.

For the purposes of evaluation, this white paper will consider the following scenarios:

- Implementing HOV-2 lanes (i.e. requiring at least two occupants) on the approaches and highways to the major East River and Hudson River crossings leading into Manhattan. For example, the New York State Department of Transportation (NYSDOT) could add HOV lanes to the LIE within Queens. These lanes would be created from existing general purpose lanes.

- The same scenario as above, but with HOT lanes instead of HOV lanes.

Issues for Evaluation:
1) Best Practices
HOV lanes have been widely implemented in the United States since the 1970’s in an effort to better manage highway capacity. If well used, an HOV lane can carry many more passengers than a general purpose lane because the average number of occupants per vehicle in the HOV lane is higher. Locally, HOV lanes are in place on the Long Island, Gowanus, and Staten Island expressways.

There are a more limited number of HOT lane projects in the United States, but the concept has gained traction in recent years through a series of federally funded demonstration projects. Notable projects include HOT lanes on I-15 in San Diego, SR 91 in Orange County, California, I-25 in Denver, and I-394 in Minneapolis. In addition to promoting more efficient use of an HOV lane, HOT lanes generate revenues that can be used to fund transit and other transportation improvements. In almost all cases, HOV and HOT lanes have been built as additions to existing general purpose lanes.
NYSDOT is currently conducting a study of managed use lane application in the New York area that includes assessment of HOV and HOT lanes on key highways. NYSDOT is studying converting existing lanes into managed use facilities as a means of encouraging car pooling and bus use and, potentially, raising revenue. NYSDOT will also look at the possibility of adding managed-use lanes if space is available. The study will identify 12 candidate corridors for HOV or HOT lanes and will be completed in the spring of 2009.

The Port Authority of New York and New Jersey is also conducting a study of an additional managed-use lane on the I-495 approach to the Lincoln Tunnel in New Jersey. I-495 currently has a peak period bus-only lane, called the Express Bus Lane (XBL), which is nearing capacity. The Port Authority is evaluating the potential to convert a general purpose lane into a managed-use lane open to buses, car pools, and, potentially, paying single-occupant vehicles.

2) Reduction of Vehicle-Miles Traveled in business district
Since most HOV and HOT lanes in the United States were implemented as part of highway widening projects, there is no national experience with HOV or HOT lanes reducing vehicle-miles traveled (VMT). HOV and HOT lanes are generally designed to better manage the existing flow of traffic rather than to reduce the number of vehicles using the highway each day. A network of fully-utilized HOV or HOT lanes would not be anticipated to reduce VMT in the Manhattan central business district, unless a significant amount of the capacity of existing traffic lanes on approaches and crossings was reallocated from general-purpose use to buses, ridesharing vehicles, and possibly for priority goods movement.

3) Improvements in local and regional air quality and environment
HOV and HOT lanes may improve speeds and thus reduce idling, with a benefit to local and regional air quality and the environment.

4) Net revenues raised for mass transit
HOV and HOT lanes both involve significant capital costs and enforcement costs. HOV lanes do not generate revenue. HOT lanes do generate revenues which can potentially be used to fund transit improvements. For example, the 7.5-mile I-15 HOT lane in San Diego generates about $1.2 million a year in net revenues, a portion of which is used to fund improved express bus service on the corridor. It would take a number of years to plan, design and construct such a network.

5) Impact on neighborhoods
   a. Traffic congestion outside of the business district
   b. Parking policies

The primary congestion benefit of an HOV or HOT lane network would be on major highways outside of the Manhattan central business district. HOT and HOV lanes are not anticipated divert auto trips away from Manhattan and thus
would not have an impact on neighborhood parking outside the Manhattan central business district.

6) Impact on economic classes
HOV lanes impact all economic classes equally. Any auto commuter who makes arrangements to car pool can use the facility at no cost. HOT lanes have greater equity implications. Research from San Diego and Orange County, California has shown that high-income drivers are more likely to pay to use HOT lanes than moderate and low-income drivers. Hence, those with a greater ability to pay tend to benefit more in terms of travel time savings. However, this impact can be mitigated if the funds generated by the HOT lane go to improvements that disproportionately benefit moderate and low-income commuters, such as additional transit services.

7) Regional equity
HOV and HOT lanes do not create regional equity concerns.

8) Privacy concerns
HOV lanes do not present privacy concerns. HOT lanes use electronic payment systems for the single-occupant vehicles that pay to use the lane. These systems create privacy concerns over the handling of personal information and the ability of the tolling authority to track customer travel. These issues are very similar to those faced by the tolling authorities in New York City that use E-ZPass and can be mitigated through strict protocols regarding the handling and sharing of personal information.

9) Economic impact on jobs, businesses, and the regional economy
As noted earlier, HOV and HOT lanes can reduce highway congestion and improve the efficiency of the regional highway network. These improvements can lead to higher worker productivity and lower business costs. Overall, an HOV or HOT lane network in the New York City region would likely have a positive impact on jobs, businesses, and the regional economy. Such a system would not reduce congestion in the Manhattan Central Business District.

10) Implementability
HOV lanes and HOT lanes have been implemented in many cities across the United States. New York City’s highways present unique challenges as these facilities are physically constrained and travel through heavily developed neighborhoods. Construction projects can further exacerbate existing congestion. These challenges would likely make implementing HOV or HOT lanes on New York City highways more complex and more costly that in other urban areas.

The technology needed to implement HOT lanes is readily available. Strong enforcement is needed for both HOV and HOT lanes in order to prevent evaders from using the lane and diluting its benefits for car pools and/or paying single-occupant vehicles.