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Commentary:

## HOT Networks: A New Plan for Congestion Relief and Better Transit

By Robert W. Poole, Jr., and C. Kenneth Orski

Today's High-Occupancy Vehicle (HOV) lanes represent a valiant but largely unsuccessful effort to reduce traffic congestion in America's large metropolitan areas. Evidence is growing that, despite billions of dollars worth of capital investment, and many years of rideshare promotion, HOV lanes have not changed Americans' driving habits. Instead of gradually gaining strength, carpooling has been slowly eroding. The fraction of commuters sharing the ride to work declined in the decade of the '90s from a nationwide average of 13 percent in 1990 to 11.4 percent in 2000 according to the 2000 Census. Between 1990 and 2000 in Atlanta, transit's market share of commuting trips dropped from 4.5% to just 3.7%, while car-pooling only increased slightly, from 13.0 to 13.6% – this despite major expenditures on transit and HOV lanes. Although HOV lanes reduce travel time for the remaining small percentage of commuters who are able to carpool, a vast proportion of the traveling public does not benefit from them.

Meanwhile, the traffic congestion which HOV lanes were supposed to alleviate has continued to mount. Congestion in America's largest 75 urban areas cost travelers \$68 billion in lost time and wasted fuel in 2000, an all-time high. In just the eight most congested metropolitan areas (excluding New York), the congestion cost totaled \$30.7 billion—and there is no relief in sight. But America's investment in HOV facilities is too great and their potential too valuable for these facilities to be ignored.

HOV lanes, we believe, could be transformed into a more effective component of the urban transportation system by turning them into premium lanes that would serve as high-speed guideways for express buses, while providing a faster and more reliable travel option to individual motorists traveling in personal automobiles. Buses and vanpools would use the premium lanes free of charge, while other motorists would pay a variable toll. Tolls would be debited electronically from users' smart cards, thus doing away with tollbooths and cash transactions. In effect, our proposal marries two promising transportation innovations receiving growing attention in the transportation community: High Occupancy Toll (HOT) lanes and Bus Rapid Transit (BRT).

HOT lanes are limited-access lanes reserved for buses and other high-occupancy vehicles but open to single occupant vehicles upon payment of a toll. The number of cars using the reserved lanes can be controlled through variable pricing (via electronic toll collection) so as to maintain free-flowing traffic at all times, even during the height of rush hours. California's two HOT lane projects, which have been in operation for several years, have demonstrated convincingly the ability of electronic variable pricing to maintain congestion-free conditions even during peak hours. Moreover, surveys in California have shown widespread public acceptance of the HOT lane concept. People of all income levels use the HOT lanes when saving time is an important consideration. Indeed, utility vans and delivery trucks are a far more common sight on California's HOT lanes than the proverbial Lexus.

Bus Rapid Transit (BRT), also referred to as Flex Trolleys, refers to frequent bus service operating in special lanes. BRT aims to provide performance and service qualities comparable to those of rail transit but at a cost that is considerably lower than that of light rail systems (an average of \$9 million/mile versus \$34.8 million/mile for light rail transit according to U.S. General Accounting Office estimates). Because of its favorable economics, BRT is receiving increased attention from the U.S. Department of Transportation and is picking up support in the transit community. Transit officials realize that the federal New Starts program can only fund a small fraction of the rail candidate projects currently in the pipeline. They see BRT as offering a new generation of less costly transit systems that would extend the benefits of rapid transit to a much larger number of communities.

However, to fully realize the potential of these two innovative concepts, the fragmented and unconnected HOV facilities that already exist in metropolitan areas today must be extended, linked and interconnected so as to create seamless region-wide networks of unobstructed lanes. Only then would transit riders and motorists be able

to take full advantage of the benefits of time savings and increased travel reliability of premium lanes.

In one sense, our proposal calls for a return to an earlier concept, in which special reserved lanes were developed primarily as uncongested guideways for regional express bus service. But instead of offering the significant remaining capacity of these premium lanes to carpool vehicles at no charge, our proposal would open these lanes to all personal vehicles that choose to pay a fee. Charging such vehicles serves two purposes: it generates the funds needed to pay for the network and it manages traffic flow to preserve the time-saving advantages necessary for high-quality express bus service.

We believe there is a way to accomplish this vision without drawing heavily on public sector funds. Experience with California's two HOT lane facilities has shown that motorists are willing to pay tolls to save time even if there is a free highway alternative. These facilities have further demonstrated that tolls paid by motorists can generate a significant annual revenue stream. Our proposal is to use these revenues as the basis for issuing tax-exempt toll revenue bonds to finance the build-out of the HOT Networks.

In a report released this week, we define potential HOT Networks for eight of the most-congested metropolitan areas (Miami, Atlanta, Dallas/Ft. Worth, Houston, Seattle, Washington, D.C., the San Francisco Bay Area, and Los Angeles/Orange County). Using current engineering cost data, we develop the estimated cost of each network. And based on demand data from California's two operational HOT lanes, we estimate the annual premium toll revenue that each would produce, and translate that into hypothetical toll revenue bond issues.

Overall, our estimates show that toll revenue bonds could cover about two thirds of the \$43 billion in construction costs. The balance would come from the federal aid transportation program. To implement this plan we recommend that Congress authorize a multi-year program of HOT Network development to be jointly implemented by the Federal Highway Administration and the Federal Transit Administration. Specifically, the program would aim to encourage states and metropolitan jurisdictions to:

1. Incrementally create networks of premium toll lanes (HOT Networks) by extending, linking, interconnecting and filling in gaps in existing metropolitan HOV systems;
2. Implement Bus Rapid Transit services on the completed parts of the HOT Networks as soon as practicable; and
3. Develop innovative public-private financing arrangements involving tax-exempt toll revenue bonds to help fund a significant portion of the capital cost of these projects.

Funds to support the federal portion of the program would come from special fund allocations drawn from the FHWA's National Highway System or Surface Transportation Program. The FTA's New Starts program would provide funds for bus acquisition and related BRT system components. The proportion of funds to be contributed by each agency would be determined by congressional action in the authorizing legislation.

Our proposed Atlanta HOT Network would cost \$4.9 billion, of which half would be covered by toll revenue bonds. The other half would come from traditional sources of transportation funds, primarily state and federal gas taxes, which would be used in any case to add to the HOV system.

In sum, the HOT Networks concept is an approach by which nearly everyone would win. Transit riders would win because many cities that could not afford to build a large-scale rail system would be able to implement effective region-wide express transit service. Individual motorists would benefit by having the option of faster and more reliable travel on a network of congestion-free lanes when saving time is really of importance to them. Users of regular lanes would gain because regular lanes would become less congested as some motorists switched to the toll lanes. And, importantly, HOT Networks could be built without the need for major new public funds by utilizing the revenue stream from toll charges paid by individual motorists.

The full study is available at <http://www.rppi.org/ps305.pdf>.

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