

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

**Testimony of
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Mr. Chairman and members of the Committee: My name is Robert Poole. I am the Director of Transportation Studies at the Reason Foundation, a nonprofit research and educational organization based in Los Angeles. We've been researching market-oriented transportation policies for the past 15 years, and several of our policy proposals have been implemented in a number of states.

The focus of my comments today is a potential breakthrough idea for addressing the transportation needs of America's large urban areas. These areas are plagued by traffic congestion. The latest report from the Texas Transportation Institute estimated that the cost of congestion in the largest 75 urban areas is \$68 billion per year in lost time and wasted fuel. That number has grown larger every year for the past two decades. That suggests to me that what we've been doing to address congestion is inadequate.

As a nation, we have been making major investments in two forms of urban transportation: HOV lanes and mass transit. Unfortunately, the 2000 census figures revealed that in most cities, a smaller fraction of people carpooled to work in 2000 than in 1990. Likewise, a smaller fraction used transit to get to work in 2000 than in 1990. And since population has continued to increase, we have even more people trying to use pretty much the same amount of freeway capacity to get to work. No wonder congestion is at record high levels.

I would like to suggest a fresh approach to urban transportation. Let's not abandon HOV lanes, but let's use them in a more productive way. Let's not retreat from mass transit, but let's develop a form that competes better with the automobile. And let's face the fact that we need more urban highway capacity and build more. All three of these changes are part of our new approach called HOT Networks.

The basic idea is as follows. Shift the operating principle of HOV lanes to HOT lanes—that's high-occupancy toll lanes. Convert them to high-speed premium lanes which drivers can use by paying a market price and which truly high-occupant vehicles—buses and vanpools—can use for free. Use the toll revenue stream to support large-scale toll revenue bond issues, to generate the billions of dollars needed to build out the existing HOV facilities into a complete, seamless network spanning most of the metro area's freeway system. Encourage the transit agency to operate large-scale regional express bus service on this seamless, high-speed network.

The HOT Network idea combines two recent innovations: HOT lanes and Bus Rapid Transit (BRT). Currently four HOT lanes are in operation, two in California and two in Texas. Another dozen or so are in the planning stages, including here in Washington for a portion of the Beltway. The basic idea is to sell the unused capacity to paying motorists. They use fully electronic automated toll collection, and the two in California use variable pricing. We now have solid evidence that variable pricing is a powerful tool to match demand with supply on such lanes, to keep them flowing at the speed limit even at the busiest rush hours.

Bus Rapid Transit refers to high-quality express bus service, usually offered on special lanes. In cities like Ottawa, Bogota, and Curitiba (Brazil), large-scale BRT systems provide transit service quality equivalent to far more costly rail transit systems. The Federal Transit Administration has become a big booster of BRT, based in part on studies of very promising busway operations in U.S. cities, including Miami and Pittsburgh. Our HOT Networks concept would provide an uncongested right-of-way for BRT service spanning the entire metro area—without cost to the transit system.

Last year my colleague Ken Orski and I carried out a detailed study of the potential of HOT Networks. We defined such a network as an interconnected set of limited-access lanes on an urban freeway system. Buses and organized vanpools would use these lanes at no charge; all others would pay a variable toll, collected electronically. Such a network would begin by converting the area's existing HOV lanes to HOT lanes. Toll revenue bonds based on the entire network would be used to pay the capital costs of filling in missing links and building costly flyover connectors at freeway interchanges, to make the network truly seamless.

If such networks could be created, they would offer many benefits:

1. "Congestion insurance" for all drivers in the metro area, ensuring that when they really needed to bypass congestion and get somewhere on time, they would have the option to do so—something simply not available today at any price.
2. Much greater productivity than today's underutilized HOV lanes, as measured by people and vehicle throughput per hour, thanks to extensive express bus service as well as paying vehicles.
3. A major new funding source for urban transportation infrastructure, to supplement the declining real value of today's fuel taxes.
4. Greatly simplified enforcement compared with HOV or HOT lanes, since every valid vehicle would be required to have a transponder, and this can be detected electronically. Enforcement would be via video recording of the license plate number, just as on most toll roads today.

The main question we addressed in our study was: How feasible is the idea that HOT Networks could be largely self-supporting from toll revenues? To answer that question, we needed to model hypothetical networks in real urban areas and estimate what it would cost to build them out. And we also needed to get a handle on how much revenue they might generate.

We used TTI data to select eight metro areas with the highest intensity of congestion: Los Angeles, San Francisco, Washington, Seattle, Houston, Dallas, Atlanta, and Miami. In each case, we obtained the long-range transportation plan of the local metropolitan planning organization (MPO) and reviewed their plans for adding HOV facilities over the next 20-25 years. We put these on a map showing already existing HOV lanes and then filled in missing links that were not in the plans, usually for reasons of cost. We also checked for missing flyover connectors—and there were many of those, because they tend to be very costly. We then conferred with federal and state DOT experts, as well as engineering firms, to develop current cost estimates for at-grade lane additions, elevated

lane additions, and flyover ramps. That enabled us to estimate the cost of building out each network. That total was \$43 billion for the eight metro areas.

That was the easy part. More complicated was estimating the revenue that might be generated by people voluntarily paying premium tolls to bypass congestion. Fortunately, we had access to extensive data from the two California HOT lanes that use variable pricing. We also had access to one of the leading traffic and toll revenue forecasting firms, which has done many studies of existing and proposed HOT lanes. We developed a pricing model and applied it to the eight metro areas, taking into account the length of rush hour in each one, the extent of the HOT Network (in lane-miles), and a set of assumptions about the variable pricing structure. Overall, we came up with baseline revenues of \$2.9 billion per year over the eight metro areas.

We then used a simple rule of thumb that says you can probably issue toll revenue bonds in the amount of approximately 10 times that annual revenue stream. Hence, we estimated that \$29 billion in revenue bonds could be issued in support of these HOT Networks. That would fund two-thirds of their capital costs. The rest would come from conventional state and federal highway trust fund monies—the same funds the MPOs would be using anyway as they added more HOV lanes over the next 25 years. Except that building out the system as a HOT Network, with the bonds issued up front, would mean building it out 10 to 15 years sooner than would otherwise be possible. And more of the trust fund monies would be available for other needed transportation projects.

To us, that looks like a truly win-win proposition. It illustrates the power of market pricing to address what has been considered an intractable problem: traffic congestion. Unlike attempts to mandate “congestion pricing” from the top down on all freeway lanes, our approach would be strictly voluntary. The only ones who paid would be those who freely chose to do so, on those days and at those times when it was worth it to them to bypass congestion and get somewhere on time. Yet those paying drivers, in making their individual choices to pay, would be making possible the creation of a vast new infrastructure for high-quality bus rapid transit.

My organization does not lobby, so I am not here to advocate legislation. But I will simply point out that if members of Congress like this idea, only a few simple changes in TEA-21 would make it possible. There would need to be some further easing of the general federal ban on putting tolls on currently free Interstates, for the new and existing lanes in urban areas that become part of a HOT Network. There should be clear federal permission to permit paying vehicles to make use of former HOV lanes that get incorporated into a HOT Network. And local officials should be free to exempt only buses and vanpools from the pricing on the HOT Network.

It would be even more helpful if there were to be a joint FTA/FHWA program to help MPOs and state DOTs that wanted to develop HOT Networks. Investors in large-scale HOT Network bond issues would want assurances that the whole network would actually get built, and that variable pricing would be used, as planned, for a very long time. Mechanisms like a Full Funding Grant Agreement could be helpful in that regard.

To sum up, let me remind you that “road pricing” or “congestion pricing” has been floating around in transportation policy for more than 25 years. It has always had great promise in theory, but has usually foundered on the shoals of political reality. Very few elected officials are willing to impose a charge for using what people have traditionally used without paying. And motorist organizations have an understandable negative reaction to being asked to “pay twice” for existing freeways.

That’s why it’s essential to create true value pricing, in which people pay only if they get something much better in exchange for paying. That’s what HOT Networks offer drivers: \$43 billion worth of new urban transportation infrastructure, giving them congestion insurance across the entire freeway system. And at the same time, those who use transit or who might want to use transit if it were faster and more convenient, will get the benefits of high-speed regional express bus service operating over this entire network. And those responsible for urban transportation gain a major new funding source, at a time when funding constraints threaten to put off many needed projects for a long time.

I believe HOT Networks to be one of those rare opportunities: a truly win-win proposition. Thanks you for the opportunity to explain this concept, and I look forward to any questions you may have.

Note: The complete HOT Networks policy study is available online at the Reason Public Policy Institute web site. The URL is www.rppi.org/ps305.pdf. Robert Poole may be reached by email at bobp@reason.org.