

Public Works Financing

Published monthly since 1988
by William G. Reinhardt, Editor/Publisher
Westfield, NJ

www.PWFinance.net
PWFinance@aol.com

Reprinted from May, 2012

Transportation Policy Review

Managed Arterials: Adapting the Managed Lanes Idea to Urban Roadways

By Robert W. Poole, Jr., Director of Transportation Studies, Reason Foundation

Priced Managed Lanes (otherwise known as express toll lanes) have emerged as one of the principal types of greenfield toll concession projects, exemplified by projects like the Capital Beltway in northern Virginia, the LBJ and North Tarrant Express projects in the Dallas/Fort Worth metroplex, and the I-595 reversible express toll lanes in Fort Lauderdale. Because of their large and growing revenue profile over time, and a strong demand for congestion relief in major urban expressway corridors, we can expect to see more such Managed Lanes projects in the largest dozen or more U.S. metro areas in the coming decade.

But a considerable fraction of traffic and congestion occurs on major arterials in large metro areas. Is there any way the principle of Managed Lanes—offering motorists (and express buses) faster and reliable trips as an alternative to the congested status quo—could be applied to arterials? Some have toyed with the idea of simply replicating the expressway Managed Lane on a major (six or more lanes) arterial. But exclusive lanes on arterials run into two big problems: signalized intersections and left turns. You can hardly offer faster and more reliable arterial travel if those paying for it have to risk being stopped at red lights every half mile or so. And it seems impractical to ban left turns from a long stretch of a major arterial.

Nearly a decade ago a pioneering FHWA Value Pricing grant funded some innovative thinking about this problem, in Lee County, Florida. Civil engineer Chris Swenson came up with the idea of what he called a “tolled queue jump”—an overpass which motorists could choose to use on

payment of a modest (e.g., 25¢ electronic toll), bypassing the signalized intersection (with, in South Florida, a cycle time that can exceed three minutes). Focus groups exposed to the idea suggested that a majority of peak-period commuters would often choose to pay that modest sum to speed past the traffic light.

In 2007-08 Swenson and I teamed up on a Reason Foundation study on how to reduce traffic congestion in Lee County, which was one of America's fastest-growing counties until the real-estate bubble burst. We came up with the idea of outfitting several major arterial corridors with a series of electronically tolled overpasses or underpasses. And last year we teamed up again on a Reason study of the greater Miami urbanized area. For that study (released in March), in addition to proposing over 1,100 lane-miles of expressway Managed Lanes, we proposed four north-south and 10 east-west arterial corridors (totaling 107 route-miles) to be retrofitted with (mostly) underpasses, a total of 79 such grade separations. We dubbed these corridors Managed Arterials, and estimated their construction cost at \$3.8 billion.

Like most states at present, Florida law does not permit charging tolls on "existing" roadway lanes (except when converting poorly performing HOV lanes to tolled Managed Lanes). Our Managed Arterials concept respects this precept by charging only vehicles that choose to use the grade separations (which, of course, would be new capacity). At the signalized intersections, there would still be through lanes, right-turn lanes, left-turn lanes, and permission for U-turns. There would be no restrictions on which lanes vehicles could use in between the grade separations, though we would expect through traffic that planned to use the tolled underpasses to stick with the inner rather than the outer lanes. As for mid-block left turns, many major arterials already use wide medians to restrict or prohibit them, and doing so would ensure better traffic flow on the Managed Arterial, but we recommended that such left-turn access be decided by traffic engineers on a case-by-case basis.

Speaking of traffic flow, since the throughput of an arterial is limited primarily by the signalized intersections rather than by the number of lanes, it turns out that in many cases you would get more bang for the buck by adding tolled grade separations to a congested six-lane arterial than by widening it to eight. Using FDOT throughput tables, Swenson calculated the throughput of a six-lane arterial at 51,800 vehicles per day. If widened to eight lanes, that goes up to 67,000 vpd. But adding grade separations at signalized intersections instead boosts throughput to 87,450 vpd. To be sure, the cost of the grade separations would generally be more than that of lane additions, but the grade separations generate toll revenue, which we estimate would cover two-thirds to three-quarters of the construction cost.

Would Managed Arterials be candidates for procurement as toll concessions? Our estimate (based on data from FHWA and FDOT) is that a single underpass would cost about \$42 million. But a set of 24 of them at one-mile intervals on a 24-mile arterial would total \$1 billion, clearly reaching megaproject magnitude.

And that is the approximate magnitude of what may be approved within the next few years just south of Miami. The Miami-Dade Expressway Authority, in cooperation with Miami-Dade Transit, has under way a detailed project development and environmental study of converting the South

Miami-Dade Busway into a type of Managed Lanes facility. The 20-mile busway parallels congested U.S. 1, built on an abandoned freight rail right of way. But it grossly underperforms as a busway due to dozens of signalized intersections. The idea is to widen the busway to four lanes and add grade separations at many of the intersections, permitting shared use by express buses and paying commuter automobiles. While not precisely a Managed Arterial, its physical configuration would be very similar to one.

Thus far, the reaction of transportation professionals has been very positive. We presented the paper at the 2012 Transportation Research Board Annual Meeting, and it is forthcoming in that organization's Transportation Research Record. We are also presenting it at the 14th International Managed Lanes Conference, this month in Oakland. Thus far, the Miami Busway conversion is the only project of this type moving forward. The toll concession community should keep an eye on that, while looking for similar opportunities in other large congested metro areas.