Our Transportation System is in Crisis - 38

A paper entitled 'Comparison of Bus and Rail Transit Modes for the Dulles Corridor' by William Vincent and Gabriel Roth (well-known retired World Bank Transport Economist and Civil Engineer) was presented at the Annual Meeting of the Transportation Research Board (TRB) in January 2006. The paper compares the costs and effectiveness of alternative transit modes to serve the Dulles Corridor, a 37-km long suburban area in the Washington, DC region of Northern Virginia that includes Dulles International Airport. Virginia plans to construct a heavy rail line in this corridor at a cost of more than US$4 billion dollars. To date, however, there has been little consideration of alternatives that potentially could cost less and perform as well or better. This reminds me of the Trinidad Rapid Rail Project!

In 1997 when the rapid rail project was recommended by the Dulles Corridor Transportation study, the cost estimate was US$1.45 billion, with an expected total of 114,500 daily trips. But, in 1999, a supplement to this study recommended beginning with enhanced express bus services, followed by Bus Rapid Transit (BRT), and ultimately rapid rail. In April 2000 the Draft Environmental Impact Statement done for the Federal Transit Authority (FTA) concluded that the rapid rail project would attract only 86,900 total daily trips and the cost estimate was revised to US$3.246 billion, more than double the earlier figure. The Final Environmental Impact Statement done in 2005 gave a further revised cost estimate of US$4.36 billion to attract only 47,800 daily trips.

The proposed rapid rail alignment is in the median of an existing four-lane highway, and includes stations in the highway median. These stations would be a substantial distance from local activity centres, and this reduces the attractiveness of transit as a travel option, because a transfer is required to get from the station to the activity centre. Moreover, the location in the highway median makes transit-oriented development extremely difficult around the station.

The authors examined two alternatives to rail in the highway median: (1) a dedicated two-lane, two-way busway used to provide BRT service, and (2) a toll-managed two-lane, two-way facility that would be available for buses at no charge and open to other vehicles on a fee-paying basis. Both these alternatives include 4,000 parking spaces in parking garages, which have not been catered for in the rail estimate.

They computed the cost per new transit trip generated to be as follows: rapid rail US$33.91; busway / BRT option US$8.75 – 12.19; Express Toll Lane option US$8.56 – 11.93. In other words, the current rapid rail plan is at least three times more expensive per new transit trip generated than either alternative examined.

Like Parsons Brinckerhoff in my article last week, the authors also showed that there are many advantages of bus transit over rail transit. First, a rubber-tyred system can provide express service on exclusive or bus-priority guideways, as well as full or limited stop services on local streets, thus better matching service delivery with demand. Trains are confined to fixed guideways and must stop along these guideways. In the Dulles Corridor, many passengers will be forced to sit through two dozen or more stops before reaching their final destination, thus unnecessarily increasing travel times.

Second, bus services can be provided on a competitive basis, which exerts downward pressure on costs and encourages services that meet passenger demand. For example, private companies can compete to operate exclusive bus services along a busway, or multiple operators can provide competing services. Rail transit, on the other hand, generally is provided as a government monopoly, reducing pressure to control costs and improve service.

Third, rubber-tyred systems can carry more passengers than the proposed rail plan, and all passengers could have a seat. The Washington DC Metrorail is currently limited to no more than 20,000 or so passengers per hour in the peak direction, and many of these passengers are standing in very crowded conditions. According to the Highway Capacity Manual, the theoretical capacity of a dedicated bus lane exceeds 1,200 buses per hour. Theoretically, if each vehicle accommodates 45 seated passengers, a dedicated lane can accommodate 54,000 passengers seated passengers per hour in the peak direction. The authors gave as an example the Lincoln Tunnel Express Bus Lane, which connects New Jersey with Manhattan, which has been observed to carry 32,600 passengers per lane in the peak hour, nearly four times the capacity forecast for Dulles rapid rail.

The autjhors stated that despite the many advantages of busways and BRT, there is one disadvantage that should be noted: lack of understanding. As in the Dulles Corridor, this lack of understanding leads to an unwillingness to consider BRT as a serious alternative to rail. The reasons for this are many, including perceptions that buses are uncomfortable, prone to getting stuck in traffic, and unable to attract new riders from

their cars. Experience has shown, however, that BRT can take advantage of congestion-free rights-of-way to provide high quality rapid transit services that can attract car owners at a fraction of the cost of rail.

They concluded by suggesting that building rapid rail as planned would be a significant misallocation of resources, as it fails to maximize the number of new transit trips that can be generated, because too much is being spent to attract each new transit rider. It also takes resources away from other potential transit projects that could better serve the region.

The introductory conceptual cost estimate suggested by PB for the 118-km Trinidad Rapid Rail is US$2 billion, and the system has not even been planned yet. When system planning is completed, environmental considerations have been incorporated, lands have been acquired, and costs have been accounted for converting the Priority Bus Route to a Rapid Rail Route with elevated interchanges, will the revised cost estimate be US$10 billion?

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