MASS TRANSIT DESIGNED BY THE USER

LEW W. PRATSCH

Federal Energy Administration, 1200 Pennsylvania Avenue, N.W.
Washington, D.C.

ABSTRACT

This paper describes the commuter ride sharing concept as it relates to growing commuter acceptance and the energy intensiveness of various modes. The 10 to 40% reduction in automobile vehicle miles of travel achieved by commuter ride sharing programs is attributed to the satisfaction of the commuter's desire for fast, convenient door-to-door service at a reasonable cost. This excellent level of service, similar to the privately driven automobile requires the commuter's direct involvement in the development and coordination of such car, van and bus pool programs. Comparing the energy intensiveness of the various commuter modes, the vanpool is the best, consuming about one-half of the BTU's per passenger mile as other modes. When considering the energy required to reach the rail station or bus fringe parking area, the gap widens. Overall, the commuter ride sharing programs have the potential to save 500,000 barrels of oil per day in the U.S. while virtually eliminating traffic congestion and reducing air pollution.

Introduction

In meeting future urban transportation demands, emphasis must focus on better management and utilization of the existing facilities rather than the need for physical expansion. With the completion of the Interstate Highway System, the nation's basic highway structure will be in place. It is imperative that increased mobility be attained largely through higher vehicle occupancies, as well as other traffic flow advances, so as to reduce energy consumption and air pollution.

During much of the day, the streets and the transit systems are significantly underutilized. Less than 25% of the available or moving seat miles are actually in use. With the automobile representing about 90% of this unused capacity, it is essential that the automobile's productivity be improved. The ultimate passenger moving capacity on a three lane freeway in one direction with cars, vans or buses is approximately 20,000, 45,000 and
150,000 persons per hour, respectively. However, rarely do corridor demands exceed 15,000 persons per hour. A systems approach to utilizing cars, vans, and buses in the diverse markets they are best suited to serve can minimize traffic congestion, air pollution, and energy consumption today, while accommodating significant growth tomorrow.

To achieve better utilization of our highway's passenger moving capacity, alternatives comparable to the individually driven automobile in terms of convenience, cost, and door-to-door travel time must be offered. Amazingly, commuters throughout the nation are developing personalized mass transit around car, van, and bus pools to satisfy their commuting needs and desires. Not so amazingly, this personal touch and involvement vastly improves the level of service available. As a result, voluntary ride sharing programs designed by the user have reduced vehicle miles of travel (VMT) by 10 to 40%. A survey after the oil embargo of 197,000 commuters exposed to comprehensive ride sharing programs in winter 1973–1974 indicated that a lasting 23.5% reduction in VMT was achieved.

Fortunately, the energy intensiveness of user designed mass transit is excellent. While the carpool is acceptable on energy consumption, the vanpool represents the most energy efficient commuter mode, better than rail transit and buses. However, since the vanpool concept is relatively new, many States find that laws regulating common carriers define only cars and buses. Where vans by virtue of their size are classified as buses, many States are either considering or have passed legislation freeing the vanpool from economic regulation and classifying vanpools essentially as carpools.

Market Segments of Commuter Modes

The current use and future potential of various commuter modes differs significantly. In the United States, 83% of commuters' trips are by car. Of these, about 75% of the cars have one occupant, while the remaining 25% average about three persons per car. About 8% of the commuters travel by bus or rail transit and the remainder walk, bicycle or ride motorcycles, etc. The Nation's commuters traveling at least 16 miles one-way generate 53% of the commuter person miles of travel. In urban areas in excess of 1 million in population, this rate is 64%, (Svercl and Asin, 1973).

The carpool market has historically served all trip lengths with a higher participation rate on the longer trips. As a result, the average vehicle occupancy at rush hour is estimated at 1.4 persons per car, while passenger miles per vehicle mile is 1.6. Some employers with comprehensive pooling programs have exceeded an average of two persons per car for all their commuters and over 3.5 persons per car for employees in carpools. Obvious-