



U.S. Department of Transportation
Federal Transit Administration



Metro Orange Line BRT Project Evaluation

Background

Extending the regional rail system to the under-served San Fernando Valley was proposed in California in 1980 as a solution to rapidly increasing travel demand and congestion. However, legislative restrictions on rail funding soon halted the pursuit of either heavy or light rail in the Valley. In response, the Los Angeles County Metropolitan Transportation Authority (Metro) proposed the bus rapid transit (BRT) concept as a solution that would provide a premium, high-capacity rapid transit service in the Valley, at a lower cost than a light rail or subway line. The BRT project would operate along an exclusive busway and was designed to emulate a light rail line in urban design, decreased end-to-end travel time, and the ability to bypass congestion delays. The Metro Board of Directors officially adopted BRT as the Locally Preferred Alternative in 2001. In October 2005, after more than 20 years of planning for rapid transit in the San Fernando Valley, the Metro Orange Line debuted as one of the first full-service BRT lines in the U.S. and the first exclusive busway in Los Angeles.

Objectives

One of the main goals of the Federal Transit Administration's (FTA) BRT Program is to determine the effects of BRT projects through a consistent, carefully structured, and independent evaluation process. In partnership with Metro and FTA, the National Bus Rapid Transit Institute (NBRTI) conducted an evaluation of the Metro Orange Line BRT service. The first task in the evaluation process was to provide a comprehensive overview of the Orange Line, including a historical narrative; a profile of project elements, project costs, technology applications, and issues in planning, design, and implementation; and a "lessons learned" summary. The second task was to evaluate project performance by analyzing data on capacity, travel time, reliability, safety, and security. The performance evaluation also includes analysis of data from NBRTI's on-board survey and an assessment of the project's image and brand identity. The report concludes with the final task, an overall appraisal of the Orange Line's benefits, including assessments of ridership, financial feasibility, transit supportive land development, environmental quality, and overall performance of the Orange Line in meeting project goals.

Findings and Conclusions

Data collected by Metro and NBRTI show that the Orange Line has reduced average end-to-end travel time during peak hours in the corridor by 22 percent. The Orange Line has also resulted in highly reliable service, with virtually no difference between peak and off-peak running times, and an average end-to-end deviation of only 32 seconds from the time allotted by the schedule. With regard to headway adherence, it was found that vehicle bunching during weekday peak periods occurred on about 10 percent of trips, at most, further contributing to the Orange Line's high level of reliability.

In terms of capital expenditure, the Orange Line cost 66 percent less per mile of running way, 71 percent less per annual hour of revenue service, 59 percent less per annual mile of revenue service, and 64 percent less per average weekday boarding than the Metro Gold Line light rail transit (LRT), which was roughly the same length as the Orange Line when the relevant data were collected and, like the Orange Line, connects with the Red Line subway. These findings are especially favorable for the Orange Line, considering that the two modes have very similar ridership. With regard to operating cost efficiency, the Orange Line again compares quite favorably to the Gold Line, costing 58 percent less per annual hour of revenue service, 41 percent less per annual mile of revenue service, 59 percent less per boarding, and 50 percent less per passenger mile.

Since beginning operation in October 2005, the Orange Line's ridership performance has been impressive. By May 2006, the Orange Line had attracted nearly 22,000 average weekday boardings, achieving in just seven months a ridership level not projected to occur until the year 2020. Moreover, survey data suggest that the Orange Line is attracting choice riders and helping to improve overall mobility in the San Fernando Valley.

Benefits

By carefully documenting and analyzing the effects of BRT projects, FTA's BRT project evaluations determine which features are most effective in specific contexts (such as the type of service offered, the level of transit demand, and the size of the region) and thus serve as learning tools for achieving maximum effectiveness of projects throughout the nation. In addition, these evaluations comprise a significant baseline data collection effort, which builds and preserves a more robust dataset on BRT, thereby facilitating more accurate before and after analysis of future BRT projects.

Project Information

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