

Foreword

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In the last 10 years the Transportation Research Board has conducted four conferences on light rail transit (LRT). The first conference, held in Philadelphia in 1975, had as its objective the reintroduction of LRT to a wide spectrum of decision and opinion makers from government, industry, and academia. In 1977 a second LRT conference was held in Boston to address the need for a more detailed focus on planning and technology. These first two conferences were sponsored by the Urban Mass Transportation Administration with assistance from the American Public Transit Association. Attendance at both conferences exceeded expectations, pointing to an even greater interest in light rail transit than had been anticipated by the conference planners. Several years later the need was recognized for a third conference to emphasize topics that had not been adequately developed at the earlier meetings. The result was the 1982 conference, sponsored by the Urban Mass Transportation Administration, on planning, design, and implementation, which took place in San Diego.

Since the 1982 conference on light rail transit, several more LRT projects have been coming on line, especially in the West. Portland's long-considered Burnside Corridor line is well along in construction, and the Sacramento and Santa Clara systems are under way. In San Diego the first "new" light rail line in many years will soon be joined by a short branch intended eventually to reach much farther. Common to all of these projects is the attempt to maximize network length while minimizing cost per mile: all four new West Coast systems use downtown street running for distribution; single-track operation was used for a time in San Diego and will be a feature of two other new systems.

Planning for new rail transit networks in Sunbelt cities is focusing on LRT as a cheaper and faster-to-construct alternative to more expensive, fully grade-separated rapid transit. The use of the term "light rail" appears to make the cost of a project politically more acceptable, although the investment required per mile may be high as is the case with Buffalo's new line, which is perhaps unique in combining a downtown surface center mall with subway in the entire outer portion to allow for existing street width and other conditions. There is great need to keep project costs from becoming as high as those for rapid transit. This goal is sometimes politically painful to achieve as demonstrated in the planning for the Los Angeles-Long Beach line when restoration in economical rights-of-way abandoned not long ago was vigorously opposed by adjacent interests.

Effective use of capital in the design of light

rail rights-of-way, track, stations, signal systems, vehicles, and maintenance facilities is a pressing need; wider understanding of this need is vital if light rail is to be seriously considered as a mass transit mode. The anticipated decreased availability of federal capital funds underscores the need to achieve greater results with state and local tax dollars. The TRB Committee on Light Rail Transit decided that there was need for another LRT conference and that it should be structured around the theme of cost-effectiveness.

Pittsburgh was chosen as the site for the 1985 conference because of several developments in light rail taking place in that city. The second LRT subway constructed in the postwar era was about to open. The main trunk line of the South Hills light rail system is being reconstructed to high standards, employing a mix of private right-of-way, tunnel, and street running; yet for comparison much of the old system built in modest style remains. The newest, sophisticated light rail vehicles and reconstructed PCC cars are being used together in a bilevel operation.

A lasting contribution made by each of the three earlier conferences on light rail transit was publication of the proceedings in Transportation Research Board Special Reports 161, 182, and 195. These reports rank among the most definitive works on the subject of LRT and remain in high demand. It is hoped that the following collection of papers will take its place beside the three earlier works as a permanent reference. Many of the papers published from the 1975, 1977, and 1982 conferences on LRT deal with topics and approaches related to the theme at hand, and the serious inquirer into economical design for light rail is encouraged to refer to those publications for amplification of what is covered here.

This volume contains many papers that were solicited by the TRB Committee on Light Rail Transit to address specific topics from a particular perspective. Other papers were received in response to a general call for papers on the fairly narrow conference theme. The result is a well-structured coverage of the cost-effectiveness aspects of LRT design, including systems, construction, operation, and vehicles.

The papers are arranged in four groups that, in general, correspond to the sessions of the conference. Part 1 includes an overview and discussions of cost-effectiveness issues. Part 2 covers policy and planning considerations. Facility design and rail car technology are combined in Part 3. Part 4 concludes with papers on operations.