

Interim Report 7

STAGING AND FINANCIAL PLANS

Prepared for

Metropolitan Dade County Department of Traffic and Transportation
Justice Building
1351 N. W. 12th Street
Miami, Florida 33125

By

Simpson & Curtin
Transportation Engineers
1405 Locust Street
Philadelphia, Pennsylvania 19102

January, 1972

The preparation of this report has been financed in part through a grant from the United States Department of Transportation under the provisions of Section 9 of the Urban Mass Transportation Act of 1964, as amended

The opinions, findings and conclusions expressed in this publication are those of the author and not necessarily those of the Planning Agency or the United States Department of Transportation, Urban Mass Transportation Administration.

FOREWORD

In February of 1969, the Miami Urban Area Transportation Study (MUATS) presented the residents of Dade County with a \$1.5 billion plan to solve the County's transportation problems by 1985. To implement the public transportation facets of that program, the County commissioned this technical analysis (funded by the County and the U. S. Department of Transportation) in order to determine the feasibility of certain elements of the improved public transit plan proposed in the MUATS study.

The technical study is providing the answers necessary to evaluate financially each element of the planned system and implement those sections which provide substantial benefits to the residents and economy of Dade County. To advise local officials and residents of study progress, an interim schedule of reporting has been developed to present results as they become available.

This is the seventh in a series of eight interim reports prepared through the course of the study to stimulate community dialogue as the analysis nears completion. This report analyzes the financial consequences of constructing major transit improvements including routes, stations, equipment and other factors, identifies community benefits, presents and evaluates two programs for construction — Immediate-Action and Deferred-Action — and calculates the return on investment to be realized using the recommended transit improvement procedures.

S U M M A R Y

On May 11, 1971, the Dade County Board of County Commissioners approved in principle a future transit plan for the county. The plan included a comprehensive and coordinated public transit system for the County which consisted of the following major elements:

1. A 44.7-mile high-speed transit system operating on an exclusive guideway with 48 stations serving major traffic generators.
2. Bus routes operating on expressways and arterial streets to serve the areas of the County not directly served by rapid transit.
3. Feeder bus routes to complement other bus routes and rapid transit.
4. Mini-systems at selected rapid transit terminal locations to provide local circulation and link traffic generating areas with rapid transit.

Required public transit improvements for Dade County have been defined in considerable detail in the current technical study. This report pulls together the prior pieces relating to routes, stations, equipment, ridership and other factors to analyze the financial consequences of constructing major transit improvements.

The total transit improvement program will cost approximately \$418,400,000 in 1971 dollars. Fares charged to users of the system can be set at a level which will almost offset operating expenses (by 1985, the operating deficit will reduce to approximately \$700,000 as rapid transit is phased into operation). For purposes of economic analysis, the fares have been set at a level comparable to today's MTA rates. Capital costs will, of course, escalate, as the program must be spread over at least a five-year construction period and, during the life of the program, escalation will cause the 418,400,000 present-day dollars to increase to \$733,550,000.

This program is perhaps the largest single public works undertaking to be considered in Dade County and the obvious question is what will the County get for its investment.

This report identifies substantial community benefits as a result of transit improvement, and an analysis of a typical year's (1985) benefits and costs indicates that, for every dollar invested in the transit improvement program, the County will reap \$3.65 in measurable benefits.

A significant consideration in the decision to go ahead with the program is the fact that the federal government has recognized the need for improved transit services and embarked on a grant program which permits federal funding of up to two-thirds of capital costs. Further, the State of Florida has an established policy of sharing costs at a rate equal to one-half the local share (one-sixth of total cost). This means that Dade County can have a vastly improved public transportation system with an overall benefit-cost ratio of almost four at an expenditure of only one-sixth the total cost.

Plan Implementation

Two programs are considered in this analysis — an Immediate Action Program which calls for rapid transit construction to be started immediately and finished by 1977 and a Deferred Action Program which moves the construction start date back to 1980 with a corresponding construction period. Analysis of the effects of inflation and the build up of public transit use in this time frame indicates that the more economical alternative is to move ahead with immediate development of rapid transit — inflation would double the cost of the program if construction is deferred to 1980–1985. Staging of construction is programmed so that system testing can be accomplished in the vicinity of Interama. From that point, construction will extend down Miami Beach then across the Bay filling out the south, west and north legs of the system including service to the airport. Other elements of the system (vehicles, stations, power subsystem, control subsystem, maintenance and operating facilities and bus acquisition) are likewise staged to match the orderly construction program. Costs are comprehensive in that they consider not only construction of rapid transit structure but replacement and upgrading of bus facilities, park-ride sites and other ancillary facilities.

Financial Analysis

The principal elements in the financial review include

- Annual Operating Cost Estimates
- Capital Costs (both total and annual)
- Operating Revenues, and
- Non-Revenue-Producing Community Benefits

Capital cost elements include those items mentioned in the preceding paragraph. Operating expenses include daily costs of running the system – automatic train operation, station operation, maintenance and yard operation, power costs, bus operating expenses, etc.

Revenue estimates (fares and other sources) have been estimated on the basis of the number of fare schedules flowing from estimates of use of the selected system. The rapid system will be within walking distance of approximately 380,000 residents and 302,000 jobs. In addition, the supporting bus system and circulator routes will increase the “reach” of rapid transit to encompass the entire County. In total, it is estimated that more than 400,000 rides will be completed on the transit system on a typical day in 1985. The combination of operating revenues, operating expenses and local share of capital costs results in the following requirement for an annual cash outlay:

<u>Annual Cash Outlay ¹</u>	
1971	\$ 1,205,000
1972	2,452,000
1973	7,491,000
1974	11,870,000
1975	34,691,000
1976	48,131,000
1977	40,705,000
1978	4,879,000
1979	3,936,000
1980	3,239,000
1981	3,048,000
1982	2,668,000
1983	2,602,000
1984	2,206,000
1985	667,000

There are a number of ways that this annual cash requirement could be met. The simplest way to fund the program would be through a local bond issue. If a single bond issue were sold and the unused proceeds were reinvested, a \$141,430,000 bond would cover the entire program to 1985. The annual cost of principal and interest for such an issue (spread over 20 years at 6½%)

¹ Includes local share of capital cost (1/6 of total) escalated at 10% per year for Immediate-Action Program. Operating deficits are included in total, but are not escalated.

would aggregate \$12,835,620. There are a variety of ways in which this annual sum can be raised. Other communities have used sales taxes, property taxes, utility taxes, etc. Selection of a funding method is a local-state policy decision and should be made after consideration of all the information set forth in this series of reports. However, it should be pointed out that a local sales tax has all the attributes required of a good funding source and, at a one percent rate, would yield sufficient revenue to eliminate the necessity of a major bond issue (financing can be accomplished on a "pay-as-you-go" basis) as well as the need for state aid.

Benefits/Costs

No public transit system pays its way totally out of the fare box. However, there have been a number of areas of benefits identified which offset some of the costs associated with improved public transit. It has been pointed out that the benefit for Dade County has a benefit/cost ratio of 3.65. The groups who will reap these benefits can be thought of in four general areas: 1) the present bus rider; 2) the motorist who switches to transit; 3) the motorist who does not switch to transit; and 4) the community in general. Quantifiable benefits generally include time savings for people who switch to transit, automobile operating cost savings for motorists who switch to transit, reductions in the cost of auto ownership, reduced highway accident costs, reduced parking needs and others. The total measurable benefits for Dade County in 1985 aggregate \$80,552,000 for that year.

The total cost of the program has been similarly enumerated including the alternative costs associated with not carrying out the program at all but developing a bus system for the County. The aggregate of these costs is \$21,953,000 for the same typical year. The comparison of \$81 million in benefits with \$22 million in costs yields an almost four-to-one return on investment. As previously pointed out, this cost includes a considerable sum of money to be shared by the federal and state governments. However, while costs are spread over a number of agencies, the benefits will all accrue to residents of and visitors to metropolitan Dade County.

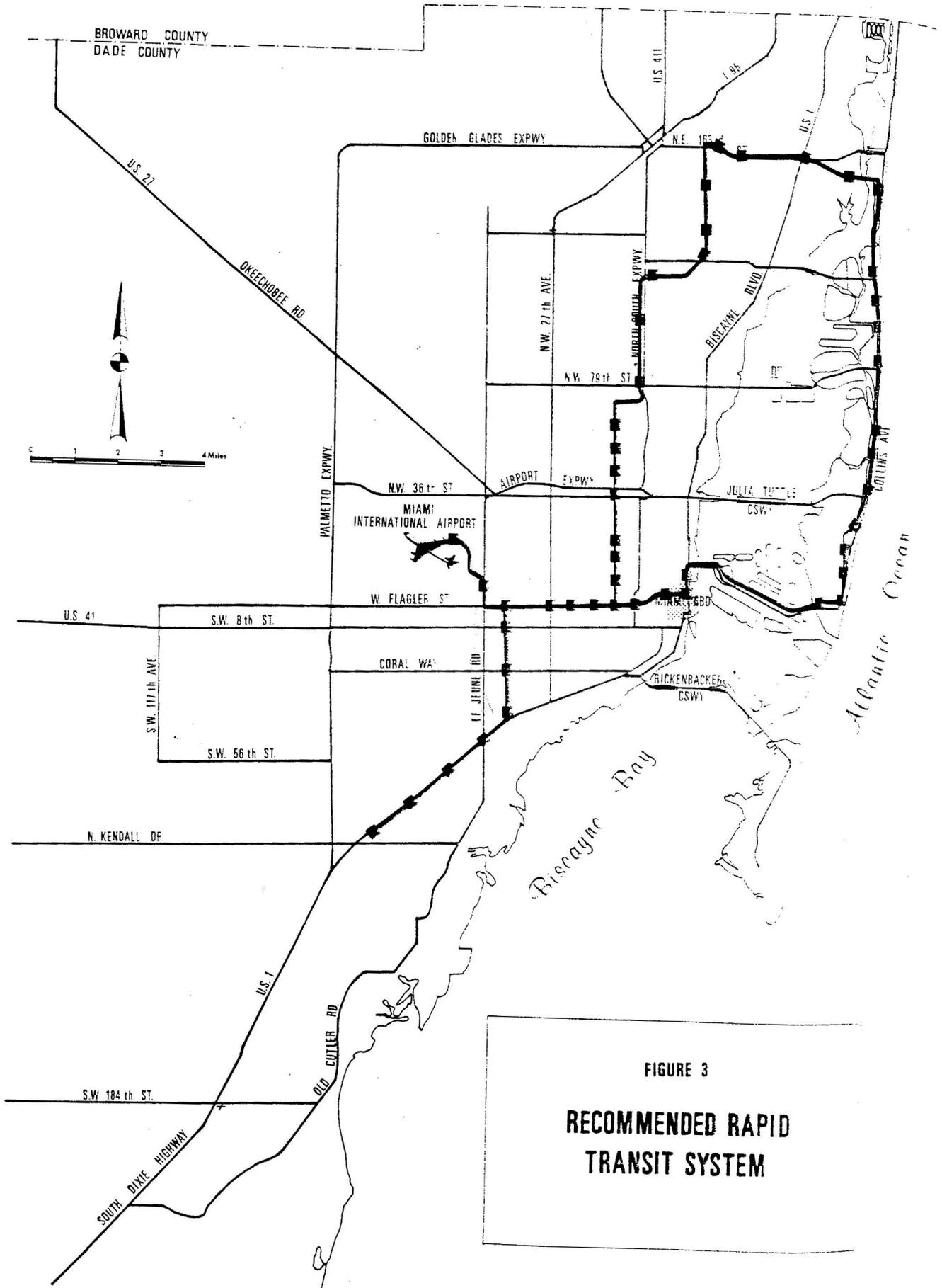


FIGURE 3
RECOMMENDED RAPID
TRANSIT SYSTEM

TABLE XII

CHARACTERISTICS OF 1985 RECOMMENDED TRANSIT SYSTEM

System Length (Miles)	44.7
Number of Stations	48
Average Station Spacing (Miles/Stations)	0.93
Population Served	380,000
Population/Station	7,900
Population/Mile	8,600
Employment Served	302,000
Employment/Station	6,300
Employment/Mile	6,800
Rapid Transit Passengers	212,300
"Bus Only" Passengers	<u>194,300</u>
TOTAL PASSENGERS ^(a)	406,600
Rapid Passengers/Route Miles	4,700
Rapid Passengers/Station	4,400

(a) Does not include air traveler transit trips to Miami International Airport or rapid transit travel from Broward County. An examination of air traveler trip patterns and review of data from other cities would indicate that it is reasonable to assume that at least 5% to 10% of all air travelers and airport visitors would use the rapid transit line in traveling to and from the airport. The ongoing Tri-County study will provide estimates of rapid transit travel from Broward County, but a preliminary projection indicates it could represent as much as 10,000 additional daily riders.