

HIGHWAY RESEARCH RECORD

Number 475 | Federal, State,
and Local Roles
in Transit Planning

7 reports
prepared for the
52nd Annual Meeting

Subject Areas

11	Transportation Administration
14	Transportation Finance
81	Urban Transportation Administration
84	Urban Transportation Systems

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FOREWORD

The seven reports in this RECORD were prepared for and presented at a conference session during the 52nd Annual Meeting of the Highway Research Board. Staff members of the Technical Studies Division, Office of Program Operations, Urban Mass Transportation Administration, arranged the session program.

The papers outline the efforts at the federal, state, and local levels to foster meaningful transit planning within the transportation planning process. They discuss the roles of states, regional planning agencies, transit operators, and others in long-range regional transportation planning, project planning, and short-range implementation planning. The papers document methods used to improve cooperation and coordination among all levels of government in administering transit planning programs.

Premo presents an overview of the federal interest in transit planning concepts such as the unified work program. The unified operations plan, the coordinated support program, and the single area-wide grant are discussed.

Organizational structures of transit planning agencies must be tailored to the specific needs of the areas they serve. Carroll describes transit planning for the New York metropolitan area where more than 9 million daily transit trips are made. Hall discusses how transit planning and operations can work together in a city with 13,000 transit trips per day.

Watt and Dahms explain the intergovernmental relationship between the transit operator and the regional planning agency in the San Francisco Bay area. They show how the creation of a regional transportation commission with powers to plan and allocate resources for both transit and highway modes can give a metropolitan area a new start.

Kiepper, Bates, Elliott, and Gilcrease present the way Atlanta is going about providing immediate public transportation improvements, while the city designs and constructs an extensive rail and bus rapid transit system. They provide data on effects on ridership of the system-wide fare reduction program.

The last two papers deal with the state's role in transit planning and transit program implementation. Kinstlinger discusses Pennsylvania's involvement in urban and public transportation. He makes suggestions on how federal directives should be altered to help facilitate the planning process. Pyers presents an overview of the comprehensive and diverse public transportation program that has been initiated in Maryland.

EVOLVING FEDERAL ROLE IN TRANSIT PLANNING

Jerome C. Premo, Urban Mass Transportation Administration
Department of Transportation

●THE CONFERENCE SESSION on federal, state, and local roles in transit planning signified a major recognition of the coming of age of public transportation planning in this country. The past 4 years have seen major changes, at all levels of government and among private interests, in perceptions of our metropolitan areas, their development goals and objectives, and the place of transportation in shaping those urban centers.

Coincidentally, it has been in these same 4 years that the federal government has acknowledged its responsibility to metropolitan areas to help in the development and improvement of public transportation systems. In 1969, the Urban Mass Transportation Administration was able to provide less than \$175 million to areas across the nation for transit planning work, capital improvements, and essential research, development, and demonstrations. Now UMTA is in the midst of transit's first billion dollar year, with over \$920 million available in support of transit planning and capital projects and the remainder for an imaginative research, development, and demonstration program.

Clearly, major developments in federal support for public transportation have occurred in the past few years. Now is an opportune time both to reflect on what these changes have been and to consider where and how we proceed from here. Planning, by projecting the future based on past lessons learned, offers us an excellent means of self-analysis.

FEDERAL SUPPORT FOR TRANSIT PLANNING

Federal support for transit planning has increased dramatically in the past few years. Whereas FHWA 1½ percent funds and HUD 701 planning assistance grants provided limited support for transit planning through the late 1960s, substantial federal support for public transportation planning did not materialize until meaningful funding of UMTA's technical study program took place. In fiscal year 1969 technical study funds were limited to \$5 million, with an additional \$2.5 million in local matching funds required. In succeeding years UMTA has provided 9, 15, 25, and now, in fiscal year 1973, \$33.5 million in support of public transportation planning in the nation's metropolitan areas.

Of far greater significance than this increase in planning aid has been the dramatic growth of the capital grant program. In fiscal year 1969, grants of less than \$150 million were made, whereas \$510 million in federal grants were made during the past fiscal year. UMTA's capital grant program for the fiscal year ending June 30, 1973, is in excess of \$860 million.

UMTA CAPITAL GRANT GUIDELINES

With this major program increase have come very reasonable questions about how UMTA allocates capital grants among competing applicants. Following months of extensive evaluation and negotiation with industry and governmental interest groups, UMTA, in July 1972, issued new guidelines for capital grant selection. These guidelines are intended to spell out essentially the criteria by which capital grant requests are evaluated, recognizing differences in size and complexity among urban areas. Three size categories are set forth: under 250,000 population, between 250,000 and 1,000,000, and more than 1,000,000; and guidelines of increasing complexity are spelled out for each group. In areas of under 250,000, public transportation may be the only assurance of some degree of mobility for special groups (nondrivers, the young, the old, the handi-

capped, the poor). The provision of maintenance of service is, therefore, the more relevant objective for small cities. Often if local government support of public transportation is not forthcoming, complete cessation of service occurs with resultant aggravated immobility for captive riders.

In larger urban areas (i.e., those with over 250,000 population and particularly those with a million or more population), public transportation is perceived as a positive force for enhancing the quality of urban life. Transit investments are consciously directed at all three broad problem areas to which the capital grant program objectives relate: mobility for nondrivers, congestion and land use patterns, and environmental conditions. The guidelines should be viewed in the context of UMTA's fundamental interest in strengthening the local planning decision-making process.

UMTA is making a distinct effort to relate comprehensive regional planning, including transit planning, to those capital projects for which assistance is requested. UMTA is vitally concerned that the planning process serve as a means of evaluating alternative development patterns, geared to each urban area's unique goals and objectives, and the transportation-transit systems that can best satisfy those goals. Interest extends beyond a preoccupation with capital improvements to a concern with non-capital-intensive means of improving traffic (and therefore people) movements and associated transportation policy issues such as parking policies.

PERCEPTIONS OF THE PLANNING PROCESS

The capital grant guidelines therefore anticipate major policy and system recommendations, with supporting technical documentation, to emerge from the planning process. But what is the condition of the planning process today?

I do not presume to offer a definitive statement on this critically complex subject, but I can offer some observations that are shared, for the most part I believe, by local decision-makers and operators of public transportation systems.

1. The planning process is not comprehensive. Inadequate, or insensitive, attention is devoted to interrelating comprehensive land use and environmental planning with transportation planning.
2. Transportation planning has been for the most part highway planning. The opportunities that transit can offer in terms of moving people throughout an urban area, which is what I trust we all are seeking, have been inadequately considered. Certainly we must recognize the late arrival of meaningful federal planning and capital assistance here. It is unrealistic to imagine that urban areas, whose only sources of transportation planning aid in the mid-1960s were HPR funds administered by state highway departments and meager 701 aid to embryonic regional planning agencies, will opt for transit-oriented solutions to their transportation problems when little federal aid was available to implement those plans.
3. Elected officials at the metropolitan level have had little influence on transportation plans for their areas.
4. The whole process takes too long, costs too much money, and too often produces plans that cannot be implemented.

The real test of the observations, which unfortunately come across harder than they are really intended to, is whether the planning process is producing cities of vitality and promise and transportation systems that really work. For the most part, I would suggest that transportation systems can, and must, do a better job, especially in responding to the mobility needs of our citizenry who cannot afford cars and all their attendant costs and in shaping comprehensively planned urban development.

Lest I be chastized for these observations, note that the 1971 Pocono Conference, whose subject was Organization for Continuing Urban Transportation Planning, came to many of these same conclusions. Sponsored by the Highway Research Board and the Department of Transportation, the conference examined in considerable detail the transportation planning process. Some of the conference conclusions, summarized with some literary license, were that comprehensive and transportation planning must be better integrated, that most planning agencies lack the teeth to effect consistent plan

implementation, especially in terms of land use controls, and that a strengthening of organizations doing planning is essential.

MILESTONES IN UMTA INVOLVEMENT IN PLANNING

Having offered some perceptions, I would like to offer some background on UMTA's evolving participation in the planning process as a prelude to a definition of our policies in the administration of the technical study program. With the passage of the Urban Mass Transportation Assistance Act of 1970, which authorized \$3.1 billion over a 5-year period for public transportation improvements, we realized that we could no longer proceed with "business as usual." We committed ourselves to an aggressive program of support for transit planning that was integrated with regional comprehensive planning.

Working with FHWA, FAA, and the Office of the Secretary we sought to highlight the key issues, policy and procedural, affecting the planning process. Two results of this coordinated departmental effort were the creation of Intermodal Planning Groups (IPGs) involving UMTA, FHWA, and FAA participation in each standard federal region and the establishment by Secretary Volpe of four departmental goals for better intermodal planning. The two primary goals were

1. Agreement on a single grant recipient agency for DOT planning funds in each metropolitan area, and
2. Development of unified work programs as a basis for departmental funding.

Working with the IPGs around the country, we in UMTA began to meet with state, regional, and local agencies to discuss their planning programs. Just as the IPG effort was really developing, the Pocono Conference took place. Not only did we attend that gathering; we reacted through specific actions to its consensus recommendations to better integrate comprehensive and transportation planning and tie together planning and implementation.

PROGRAM POLICIES

Essentially, we fully supported Secretary Volpe's goals for improved planning by insisting on making technical study grants to a single agency in each metropolitan area, the agency responsible for comprehensive and transportation planning in all possible cases, but only after the agency in cooperation with other participating public groups had prepared a unified work program. The result of this approach has been dramatic, especially in terms of the progress made throughout the country in developing unified work programs. In fact a DOT order formalizing unified work programs as a departmental policy will be issued shortly.

To structure UMTA's technical study program policies in a comprehensive framework, I would like to use the three C's of the transportation planning process as a means and relate how we are trying to use the program to strengthen this process.

Comprehensive—Transit planning cannot be undertaken as a separate activity. It must be fully integrated into a region's comprehensive and transportation planning work program. Thus, we are now funding not only those work activities that are obviously transit-related but also other planning work that is critical to comprehensive planning. We are supporting land use, population, employment, growth policy development, citizen participation, and other planning work essential to transportation decision-making in numerous urban areas.

Continuing—Transit planning is a continuing process. It is our intention to support transit planning (as well as other elements of comprehensive planning and transportation planning) on a continuing basis. The growth of the technical studies program suggests a real federal commitment to the concept of continuing transit planning. But we are trying to avoid the problem of "endless planning" without products. We are insisting on timetables for study completion, and, with the recent addition of UMTA representatives in field offices throughout the country, we shall closely follow work in an effort to ensure timely completion. We are committed to supporting, on a continuing basis, those agencies that produce.

Cooperative—Memoranda of agreement were entered into around the country pursuant to the Federal-Aid Highway Act of 1962, spelling out the cooperative arrangements guiding the transportation planning process. FHWA's certification process has spurred a rethinking of the cooperative arrangements in existence for the planning process; so too has UMTA's technical study program.

In line with the Secretary's planning goals UMTA has endeavored to support a single planning agency in each urban area as recipient of technical study grants. We have utilized the concept of an area-wide grant to the planning agency as a means of securing regional cooperation. By area-wide grant we mean a grant to an agency such as the Tri-State Regional Planning Commission for work spelled out in the region's unified work program. Support is provided not only for the continuing tri-state planning program but also for a whole range of subregional project planning efforts to be carried out by numerous public agencies throughout the region as documented in the region's unified work program.

This approach allows us to make one major grant annually to metropolitan areas, with the prospect of amendments during the year likely. It offers new opportunities for planning and implementing agencies in the metropolitan area to develop relationships. It stimulates the active involvement in the process of not only regional planning agencies but also transit operators, central city planning units, and other subregional public agencies, but in the context of regional needs.

We think that this delivery system challenges intergovernmental relations in a healthy way. The legitimate participants in the process have a responsibility to spell out their respective roles, assuming they are to receive federal support. Therefore, we are urging that traditional memoranda of agreement be carefully evaluated and modifications in policy and technical control of the planning process be carefully considered.

Throughout the country new arrangements are being developed. In Atlanta, for example, the Georgia Department of Transportation, the Metropolitan Atlanta Rapid Transit Authority, and the Atlanta Regional Commission have entered into a new agreement. In Boston, the state, the MBTA, and the Metropolitan Area Planning Council are engaged in detailed negotiations aimed at identifying responsibilities for carrying forward, through plan refinement and implementation, the proposals of the Boston Transportation Planning Review.

In administering its technical study program, UMTA has supported regional planning agencies. We believe that, in doing so, we are fully consistent with evolving federal strategies. Not only is recognition of a single planning agency at the metropolitan level a primary departmental goal (and what better way to implement a goal than through a financial commitment), but also it is called for in a number of major reports, including the following.

1. The 1972 National Transportation Report. Secretary Volpe forwarded this report to Congress with a call for greater flexibility in the use of federal transportation resources by state and local officials. In commenting on the planning process the report notes: "In order for the results of the planning process to have meaning and be implemented, and in order for it to reflect the needs of local governments, these governments need access to funds to finance transportation improvements."

2. The Single Urban Fund Proposal.
3. The Pocono Conference.
4. The Federal-Aid Highway Act of 1972.
5. The revenue sharing.

So this is UMTA's perception of the planning process. We have reacted to the Secretary's goals for better intermodal planning by acting, not just by talking. We are (a) supporting with grant funds a single planning agency at the metropolitan level; (b) encouraging a pass-through concept whereby transit operators, central city planning agencies, and other subregional units can share in the transit planning action; (c) insisting on unified work programs as a basis for grant approvals; and (d) anticipating changes in policy and technical direction of the planning process in response to public transportation opportunities.

AN ADVENTURE IN CREATIVE FEDERALISM: THE TRI-STATE-URBAN MASS TRANSPORTATION ADMINISTRATION STORY

J. Douglas Carroll, Jr., Tri-State Regional Planning Commission

•THE Tri-State Regional Planning Commission is both the comprehensive and the transportation planning agency for the metropolitan region surrounding New York City. It was established by passing the same act in each state legislature. The Commission is the metropolitan clearinghouse responsible for review of federal grant applications for conformance to plans. The region includes nine counties in New Jersey, seven counties plus New York City in New York State, and six planning regions in Connecticut.

Within the tri-state region, there are nearly 20 million residents, or one out of every 11 people in the United States. Within its 9,000 square miles, over 80 percent of the nation's rapid transit trips, nearly 60 percent of the suburban rail commuter trips of the nation, and about 25 percent of the local urban bus trips counted are made. Each day there are more than 9,000,000 trips made via public transportation facilities.

Doing this work are four railroad companies (of which three are bankrupt and one in public ownership), three rapid transit agencies, and more than 300 bus companies, not to mention a few ferries and about 15,000 taxis. There used to be much wider ownership of facilities, but the number of owners has been steadily shrinking through merger and public takeover.

In sum, in the tri-state region, there are many transit problems; there are many agencies with an interest in the provision of public transit; and the problems of planning are complicated and require extensive coordination because there are more than 600 incorporated areas.

Fortunately the three states have worked together since 1961 to establish regional land use and transportation plans, and they are currently straining to put the financing together to build and pay for the planned transit improvements. Present plans call for nearly \$9 billion just to complete the high-priority elements of a region-wide transit system and about \$8 billion more to finish the plan. This kind of money will be difficult to find; so it is important to squeeze the most out of every available dollar.

This was the setting in 1970 when the UMTA technical studies were significantly funded and UMTA tentatively proposed delivering them in each metropolitan area through a single agency, preferably the planning agency.

When this proposal came along, my fellow workers at the Commission reacted strongly to the suggestion. "Great! Let's agree to coordinate all UMTA technical study grants for our region," they said. They argued, "This would help to get a lot of things going that can improve transit service, and besides it will increase Tri-State's prestige to serve as the regional agency to coordinate all technical studies."

These seemed like good arguments at the time. However, it has been a much more difficult and complicated task than it seemed then. We currently have outstanding 32 separate grants for projects. They vary from as little as \$15,000 to as much as \$1,000,000 (Table 1).

The size of the program and the effort devoted to straight administration have been substantial; in fact, our total planning program has been bent toward UMTA work in the last 2 years. There are days when I look back and wonder whether we should not have been more circumspect. This feeling gets particularly heavy when a local mayor, impatient at bureaucratic process, gets on the phone and "hollers me out."

Table 1. Technical studies funded through Tri-State as of January 1973.

Category	No. of Projects	Value (dollars)
Long-range transportation planning	8	5,560,000
Short-range transportation planning	13	2,590,000
Preliminary engineering	5	2,150,000
Special studies	6	1,075,000
Total	32	11,375,000

Note: In addition, 16 more projects have been advanced to UMTA for funding. Their total estimated cost is \$8,600,000.

the question of priority. Requests usually exceeded potentially available funds, so some worthwhile projects had to be set back or rejected. Numerous local arguments on fair shares of available funds had to be weathered, and criteria had to be established to help sort the priorities of the many proposals we had (many of which we had helped to generate).

We also had to consider the obvious difficulty of inserting a planning agency between eligible public agencies and federal grants. How could this "extra player" justify the additional complications? I am sure we have not answered this question to the satisfaction of all local agencies, but we do see certain gains in meeting UMTA grant requirements. We are often better equipped to deal creatively with local problems because of knowledge of the local scene. In some instances, we have been able to revise our contract with UMTA so as to quickly execute a grant for a local government, drawing on already allocated UMTA funds by means of a budget revision.

We are slowly finding procedures that give greater assurance of project success. This includes techniques such as establishment of policy or steering committees that include representatives of the financing and working agencies as well as the planning and implementing agencies. Such participation generally improves the value of the facts and recommendations that are developed.

Another benefit lies in the fact that we have substantial supplies of data: official forecasts and machinery for estimating probable usage. These capabilities ensure that localities do not have to go to a consultant for this information and that a common body of facts is available to all. (An example of this is the special processing of 1970 census data for all parts of our region on journey-to-work records.)

Of course, the greatest value lies in the ability to encourage the use of these funds to actually implement the region's transit plan. Technical studies are evaluated when they are proposed according to the likelihood that they can lead to projects that improve transit service and conform to the region-wide plan and program.

All in all, this program of cooperative effort has been an exciting adventure; certainly it has been both stimulating and instructive. We have had to think and work harder than we had thought at first, and, though there are times when we wish we were not between UMTA and so many local applicants, there are also those cases where problems are solved, the pieces fall into place, and we can draw some satisfaction that things are moving toward a better regional transit system.

I spoke of making us think. For the coming year we have in mind extending the program that UMTA started to include the 23 subregional planning bodies in the region. From a region-wide planning viewpoint, the Commission is concerned with the major regional elements of a transit plan: railroad services, major subway lines, interstate commuter bus services, and special highway services such as exclusive lanes or ramp controls on freeways. These major elements are of concern to state departments of transportation and to major operating agencies such as New York's huge Metropolitan Transportation Authority, which operates the subways and buses of New York City, oversees the old Long Island Rail Road, has just established a new suburban bus operating agency, and owns and operates the Triboro Bridge and Tunnel Authority and several airports, as well as contracting with Penn Central for suburban rail service. Likewise, the Port Authority of New York and New Jersey runs a subway between the two states, oper-

However, as time has gone on, we have adjusted. To an increasing degree, the Commission has been able to undertake part or all of a particular study by providing staff and support to involved local governments. This provision of state assistance has speeded up some work that would otherwise have had to wait for the longer course of consultant selection and contract approval. We hope to do more of this in the future.

One difficulty we faced early was

bus terminal, and has recently announced plans for a \$650 million transit expansion program. It takes major regional planning to fit all of these pieces into a rational plan for ever better transit service.

The authorities and the states that set them up are helping to bring the old numerous services that grew up under private financing into a fully integrated system, but there remains a great deal of important transit planning that has to be done locally. We look forward to a program where UMTA grants can help to support county and city planning efforts so as to ensure that there is local transit planning that conforms to local land use and transit plans.

The idea we are working on now is one in which counties organize the local aspects of transit planning and in which UMTA technical funds available for long-range planning can be passed through to the counties and planning regions to support this important local or subregional effort.

First it should be recognized that land use planning is highly integrated in the tri-state region. Not only are county plans reviewed for certification by HUD, but also we are entering into a process whereby regional land use plans and functional plans such as sewerage, parks, and highways are cross-adopted—i.e., the county or planning region board adopts the Commission's plan, and the Commission also adopts, by resolution, the county plan.

We visualize this working readily in the case of transit planning. The cities and/or counties (or planning regions in Connecticut) would prepare plans for local transit improvements. They would be concerned with local bus services, with services to certain disadvantaged or car-less families. They would locate or improve rail stations or both and plan for the adjacent parking. They would integrate land use and transit plans by planning for transportation centers, fringe parking, and other necessary transit elements. All of these plans would, of course, have to be coordinated with the regional system.

These planning efforts would be coordinated through the device of an annual work program wherein "701" funds and UMTA funds would be committed and where planning targets would be set for the year. Gradually this would extend into monitoring, updating, special studies—all of which would ensure a closer weaving of transit planning to localities and to local land use planning.

Following is a suggested outline of how this might go:

1. Each county prepares a local transit plan;
2. Local transit plan is consistent with county land use plan;
3. Local plan is consistent with regional plan (to be provided by the Commission);
4. Local transit plans should include bus service, stops, shelters, transportation centers (if any), and parking areas at transfer points as well as certain financing and support plans;
5. Service-density standards, data, and special skills will be provided by the Commission or operating agencies with the Commission's assistance;
6. Commission and counties decide on data required for annual monitoring and reporting and cooperate;
7. Special participation by cities of 50,000 or more would be authorized with county planning agency coordination;
8. Two-thirds of annual planning program will come from UMTA coordinated support grant, and one-third will be provided locally in cash or in kind;
9. Standard cooperating agreement will be executed between county and Commission (the Commission would reimburse regularly and, in turn, bill UMTA);
10. County plans could come in for certification by UMTA based on Tri-State Regional Planning Commission submission and comment;
11. Local transit plans and Commission's transit plans can be cross-adopted; and
12. Such plans would be part of the basis for future allocation of technical studies involving short-range planning, preliminary engineering, or special studies.

This kind of arrangement is attractive to us as a means for increasing participation by local officials and also as a means for implementing and coordinating region-wide plans. Realistic plans at the local level coordinated with the regional system will be

essential if transit funds are to deliver the kinds of improved services we all want in the future.

We at the Commission have welcomed the choice of UMTA to coordinate region-wide efforts; we have learned a lot. We believe that proper use of project reviews and forward planning will turn the federal support funds into a smoother program of improvements in the major metropolitan regions of the country.

One other comment may be in order. In our region we had the first three states to establish departments of transportation. They have all changed a great deal from their previous incarnation as highway or public works departments. Each of these states has developed special funding and special organizations to support a transit improvement program. These states, cooperating through the Commission, are in a position to reinvigorate the transit services and to bring truly balanced transportation programs to this metropolis.

TRANSIT PLANNING AND OPERATIONS WORK TOGETHER IN THE PHOENIX URBAN AREA

Edward M. Hall, Community Development and Transportation, Phoenix

●ON MARCH 1, 1971, the Phoenix city council took the necessary bold action to ensure public transportation service without interruption for the citizens of the Phoenix urban area. The stage was set for this action in August 1970 when the Arizona Corporation Commission, which exercised regulatory authority over the Phoenix Transit Corporation, granted permission for this privately owned and operated company to discontinue service on March 1, 1971.

Public bus transit service in Phoenix has followed the national pattern of rising expenses and declining patronage that necessitated service cuts and fare increases.

The City of Phoenix entered into a management contract with the Phoenix Transit Corporation, a subsidiary of American Transit Corporation under which the transit company continues to operate on behalf of Phoenix for a negotiated fee. The American Transit Corporation has performed most cooperatively and effectively under this agreement.

To put Phoenix in perspective, let me summarize some of its predominant characteristics. The Phoenix urban area has a current population of about 1 million people. There are 14 incorporated cities and towns in the Phoenix urban area of some 1,200 square miles. Maricopa County, the SMSA, contains over 9,100 square miles. Phoenix has a population of about 701,000 in about 270 square miles. We have only 1 square mile within the entire city with over 9,000 people. The Phoenix urban area has an average density of about 800 people per square mile and can be characterized as a modern, low-density, dispersed development with a very high quality of open western living. This high quality of living, and a solid economic base, is in fact attracting people in ever-increasing numbers to our Valley of the Sun. Of course, it is this same dispersed life-style that makes providing the level of public transit found in more densely populated cities more challenging for Phoenix.

The Maricopa Association of Governments (MAG) is our council of governments. It is a county-wide organization with 18 cities and towns plus the county government. The Regional Council has elected representatives from the county and each city and town. For transportation matters, the Regional Council is joined by a representative of the Arizona Highway Department. Under the Regional Council is a management committee, which is composed of the county manager and city manager, or clerk, from each incorporated city or town and the director of the state highway department on transportation matters. Several operating committees report to the management committee. Two of these that are important to this discussion are the planning committee and the transportation committee, about which we will have more to say later.

The transit situation can be summed up by saying that there are approximately 13,000 paid fares per day on the system, of which about 4,000 are students. The 13,000 riders represent approximately 0.5 percent of the daily person trips in the valley. We operate 89 buses on some 484 route-miles. The annual revenue passenger count declined from about 9.3 million in 1960 to 4.1 million in 1970. The transit service area encompasses an estimated population of 410,000 people in Phoenix, Scottsdale, and Glendale.

I would say that, as the demise of the privately owned and operated transit system service became clear, many state and local groups and individuals became concerned about transit, and they talked about it. But the Phoenix city council saved transit by its action.

DEVELOPMENT OF A FIVE-YEAR PROGRAM

In fall of 1970 when it was clear that action was needed to preserve the transit service, it was also clear that a short-term public transit improvement program for the Phoenix urban area was needed.

In December 1970, the City of Phoenix, acting as an agent for the Maricopa Association of Governments, obtained a technical studies grant from the Urban Mass Transportation Administration, U.S. Department of Transportation. In January 1971, the City of Phoenix, in behalf of MAG, hired De Leuw, Cather and Associates to make a study of the present transit services and usage patterns, to develop alternate test transit route systems and areas of coverage, and to develop a 5-year capital improvement program. The study was also to investigate alternate means of financing, organization, and ownership of the system. All of this was conducted with dispatch and a report was presented by De Leuw, Cather and Associates on July 12, 1971.

All the cities within the Phoenix urban area and Maricopa County participated in the local share of the cost of the study. Further, there was a transit subcommittee, appointed from the management committee of MAG, that gave broad attention to the study. The City of Phoenix was the contracting agency and worked most closely with the consultant. The consultant also received data and assistance from the Maricopa Association of Governments Transportation Planning Program, at that time called the Valley Area Traffic and Transportation Study (VATTS).

The prompt response of UMTA to the needs of the City of Phoenix and the Phoenix urban area for this study was most helpful and sincerely appreciated throughout the valley. Further, the ability of the consultant to promptly complete the assignment was most helpful. The speed and timeliness of the entire function are a good demonstration of local-federal-consultant cooperative efforts and considerable hard work.

The results of the transit study were given widespread attention in the local media and were presented to a number of civic organizations. Several of the organizations participating in the discussions were

1. Chamber of Commerce;
2. Public school administrators of Maricopa County;
3. Valley Forward Citizens Council;
4. Civic Plaza Business and Professional Association;
5. Arizona AFL-CIO;
6. Leadership and Education for the Advance ment of Phoenix, an antipoverty program;
7. Project for Aging; and
8. Numerous civic clubs and groups.

Further, during the course of the program, two public hearings were held. Needless to say, the recommendations of the study and the entire subject of public transportation received a great deal of interest in the community with opinions ranging over the entire spectrum of totally divergent viewpoints.

ACTION BY CITY COUNCIL

The city council devoted several months to intensive studies and discussions of the level of public transit service to be provided. During these deliberations the level of service and cost to achieve the proper balance were carefully weighed. The council had the benefit of extensive community discussions and recommendations of a number of organizations and individuals. Based on all the available information and thorough deliberations, the city council took the following actions July 1, 1972, to improve public transit.

1. Eliminated the 5-cent transfer fee;
2. Increased the size of the base 35-cent fare zone to eliminate the multiplicity of fare zones, thus reducing the cost of riding for many people;
3. Made a few detailed minor adjustments to existing routes to improve efficiency as previously recommended by staff;

4. Established special fare structures for the very young and those over 65 as follows: (a) retained free ridership for children under 6 years old, (b) new 15-cent fare for children 6 to 11 years old, new 20-cent fare for those over 65, and continued half-fare policy for students, extended to summer recreation activities; and

5. Expanded efforts to merchandise transit: two hostesses hired by the transit company, increased advertising, new schedules published, and information sent to each home with a city water billing mailer.

The estimated cost of those actions in the current fiscal year will be approximately \$185,000, making total public support for transit operations approximately \$383,700 this fiscal year.

The results of the action program are encouraging: Ridership increased about 6 percent in the last 5 months of 1972 as compared to the same period in 1971. This is the first significant upturn in recent history.

In addition, the city submitted an application to the Urban Mass Transportation Administration for a capital grant for 55 new buses to upgrade more than half of our fleet and make other improvements during the next 5 years. I am delighted to be able to report that just this month UMTA approved this capital grant for \$1.9 million with a matching local share of approximately \$960,000.

The above recommendations for transit improvement all follow the master plan laid out by the De Leuw, Cather public transportation study. They are the first phase of our improvement program and are within our fiscal capability.

Further, the city council directed the staff to create a new position of Public Transit Administrator. This was done, and Tom Evans reported for duty on November 1, 1972. The Public Transit Administrator reports to the Deputy City Manager for Community Development and Transportation. The Community Development and Transportation area includes the Planning Department, Building and Housing Safety Department, Airports Department, Traffic Engineering Department, Advance Transportation Planning Team, street programming functions, and public transit. This forms a highly desirable unit for ensuring the total integrated planning of all modes of transportation with all aspects of urban development.

CONTINUING PROGRAM

The Public Transit Administrator, working with the local manager of the American Transit Corporation and city staff, will continue to update and follow through on the implementation of the short-term plan developed by De Leuw, Cather. Further, the city is committed to a program that will constantly monitor and adjust the routes and schedules in order to achieve maximum service with minimum tax dollars. Toward that end, the Public Transit Administrator is developing a program that will analyze route-by-route usage, revenues and costs, schedule adherence and need for improvements, and adjustments or reduction in service. The city has two existing groups that will be most useful in this program: The operations analysis section of the Budget and Research Department is well equipped for the analysis phase, and the special projects section in the city clerk's office is well trained in public contact work.

In short, the City of Phoenix carries the responsibility for overall direction and surveillance and pays all costs of the management contract with American Transit Corporation at this time. This has been a pragmatic approach to continuing public transit service for citizens.

LONG-RANGE PLANNING

I have so far concentrated on the operational aspects and would now like to discuss the long-range planning pertaining to transit. The Maricopa Association of Governments Transportation Planning Program had its beginning in 1965 with the formation of the Valley Area Traffic and Transportation Study. The program is multimodal in concept and intent. All phases of the Transportation Planning Program are based on the land use, population density, social and economic data, and urban form forecast by the urban planners of the valley.

In 1960, the City of Phoenix pioneered with the establishment of an Advance Transportation Planning Team. This team has full-time representatives of the City Planning, City Traffic Engineering, and City Engineer Departments and is augmented as necessary with architects and airport experts. The Public Transit Administrator now brings additional transit input and expertise. This team is intended to provide transportation answers for management and works closely with the MAG Transportation Planning Program.

The City of Phoenix developed the regional transit element for the 1972 National Transportation Study and submitted it to MAG. The team and the Public Transit Administrator have this responsibility for the 1974 study. The data developed for the region by the MAG planning committee are used by this group so that there is total integration of the planning process and data. Thus we utilize the best expertise for each part of the planning process while carefully coordinating for the total valley's need.

Intensified transit planning is being built into the MAG Transportation Planning Work Program. Of course, the City Advance Transportation Planning Team and Public Transit Administrator will contribute significantly to this program. I might add that the MAG Transportation Planning Program pioneered the development of an annual regional capital program several years ago. MAG has now published 5 annual 5-year major street and highway programs. The intent is to incorporate transit into this annual 5-year capital program. The development of this program is keynoted by the fact that each jurisdiction submits its own program, which is related to reasonably anticipated availability of funds. Further, each jurisdiction bases its own annual program on the total regional plan, thus achieving a maximum of coordination within the fundamental concept of the home rule.

I believe it would be of interest to this group to know that the transportation committee, which has representatives of the various jurisdictions, was recently augmented to bring a broader input to this committee.

SUMMARY

The Phoenix city council accepted the responsibility to keep transit service for the valley. The city is providing all public support funds necessary to provide the service at this time. Further, Phoenix is budgeting matching funds for the capital improvements under the capital grant approved by UMTA.

We have a strong planning and transportation capability in Phoenix and are working closely with the long-range planning capability of MAG and the MAG Transportation Planning Program.

MAG is developing a work program to include transit and the study of all realistic, economically feasible transport systems to serve the dispersed urban form as envisioned by our planners. We are planning for a horizon year of about 2.5 million people. This local commitment to a total transportation planning program is being assisted by a technical studies grant by UMTA. The UMTA funds are being combined with HUD, FHWA, and local funds to achieve the desirable total integration of land use, urban form, and transportation planning.

We need to be realistic in the total transportation system planning inasmuch as the basic facilities, streets and freeways, are seriously deficient or nonexistent. For example, we have only 28 miles of freeway open to traffic in the urban area of about a million people. Phoenix has more than 150 miles of critically deficient major streets. Even with growing traffic congestion, people still choose the personalized transport provided by the automobile. Because of the present street deficiencies and lack of an adequate basic freeway system and because of our limited capital resources, we must be very careful that we do not start down the path of a theoretical billion dollar venture without having solid input based on factual experience to test the potential use and economics of such a commitment. Thus, the program of careful surveillance and monitoring is intended to develop an economically viable bus transit service. Concurrently, we will continue to study future transit components and keep abreast of developing technology.

We believe we are organized for results: to serve the public. We have both short- and long-range planning capabilities and short-range improvement programs. The responsibilities are clear-cut and well understood and accepted by the council of governments. Additional levels of transit planning do not appear necessary unless operating and funding responsibility are desired at the state level.

The UMTA study grant provided us with a practical 5-year program, and we have implemented the first-phase improvements. The UMTA capital grant will materially assist in the modernization of our fleet. This assistance has been and will be most helpful to Phoenix and appears to be a very constructive role for the federal government.

Our goal is to plan for and develop a total transportation system that will provide a high level of mobility commensurate with the high-quality western way of life we enjoy in Phoenix.

RELATIONSHIPS BETWEEN THE TRANSIT OPERATOR AND THE REGIONAL PLANNING AGENCY IN A LARGE METROPOLITAN AREA

Paul Watt, Metropolitan Transportation Commission; and
Lawrence D. Dahms, Bay Area Rapid Transit District

•FEDERAL, state, and local roles in transit planning are still evolving and flexible, and the institutional relationships between levels of government and modes of urban transportation are crucially important factors in the success or failure of regional transportation planning and operations. There are new things happening with these relationships in the San Francisco Bay area under the newly created Metropolitan Transportation Commission (MTC) and with the addition of a regional-scale transit agency, BART.

It is impossible to discuss the intergovernmental relationships influencing transit planning, however, without critical and repeated mention of the long-established federal, state, and local relationships that have shaped the highway programs of this country and that have overwhelmingly dominated urban transportation planning and investments in metropolitan regions.

Despite a long history of analytic and institutional efforts and the substantial sums of money spent in the name of urban planning, there exist no workable transportation systems in major metropolitan areas. Plans are held suspect, because of highway biases, by large numbers of citizens, and there are few major transport projects with the necessary combination of assured funding and local political support to resolve the current difficulties of urban areas.

The San Francisco Bay area is perhaps the leading example of an urban region in which planning has failed to achieve local political credibility, has failed to yield workable solutions, and has left a mixed legacy of extensive data and plans that cannot be implemented. The "freeway revolt" is widely credited as having started here, and it continues to have strong impact in delayed or deleted highway and bridge projects. The environmental awareness of the populace has led to innovative institutions and plans for preservation of the San Francisco Bay, the ocean coasts, and other open space resources. Three counties of the area voted some years ago to tax themselves for the support of a major new rail transit system even before federal matching funds were available for such projects. What has happened in the Bay area is happening elsewhere too, resulting in a substantial mismatch between the kinds of transport facilities and services that are locally desired and the kinds that can be delivered by existing federal and state transportation agencies. If this impasse is to be overcome, federal and state relationships with local areas will have to change substantially.

Creation of the MTC as a regional agency with powers to plan and allocate resources for both transit and highway modes represents a new start in the Bay area that may have implications for other metropolitan areas as well.

How are these relationships developing in the Bay area under the legislated powers of the MTC and cooperating agencies? MTC is a special-purpose regional agency, created by the California state legislature to deal with transport matters in the nine Bay area counties. Its enabling legislation dictates that it cooperate for the time being with other regional agencies with related responsibilities for land use planning, air quality, and other specialized matters. Later, it will become absorbed in whatever general-purpose regional agency that might be created to deal with these matters as a whole. It is empowered to plan and set priorities for transport investment, and these

priorities must be adhered to by local and state government. Its planning responsibilities do not stop at the physical planning of transport facilities but go beyond existing practice to recommending legislative changes for the financing and operation of urban transport facilities if such changes are deemed critical to the successful implementation of the MTC's planning efforts. It is not too soon to suspect that they will be.

Many of the major highways of California, both freeways and expressways, have in the past been mandated by state and federal system plans, much as is the practice in other states. Among the innovative powers of MTC is the responsibility to plan for such highways according to regional priorities, unless there is an "overriding state interest" in a particular facility. Because most of the travel on such urban highways is regional, or even local, it is an important power to be returned to a regional jurisdiction. As such, it challenges the existing federal, state, and local relationships for highway planning, priority setting, and financing. These powers have not yet been tested in practice, but the success of this challenge may be the most crucial factor bearing on MTC's effectiveness and the ability of other urban regions to escape the present highway construction impasse. The response of the state legislature to recommendations included in the MTC plan will determine whether MTC will receive enough additional powers and flexibility to become effective.

As far as transit systems are concerned, there too the MTC interrupts established federal, state, and local planning and funding patterns by providing a new level of decision-making between local transit operating agencies and their formerly direct dealings with Washington. But interposing such a regional level of planning and priority setting for transit has advantages as well as disadvantages for the operators themselves. Because there has not been, in California at least, a state role in urban transit that encourages local operating agencies to come together in patterns that make regional sense, each operator has gone it alone within his own, relatively local jurisdiction. But, as new money has become available within recent years, at both the state and federal levels, for transit investment, and with highway solutions breaking down in urban regions, the opportunities for and responsibilities of transit operations are rapidly extending beyond the jurisdictions of local operators. A regional agency with the powers and resources to do system-level transit planning, to influence the integration of operations, and even to set priorities between competing financial claims on state and federal resources has thus become a much needed partner of transit operating agencies in ensuring their collective success in providing regional transit.

In each instance then, with highways and transit, MTC has newly intervened in established federal, state, and local patterns of responsibility to sort out system-level planning priorities and to make resource allocation decisions for each mode within the urban region. If it can go on, with the further cooperation of state and federal governments, to make flexible allocative decisions among highways and transit and to obtain adequate financial resources, MTC will have the ability, theoretically at least, to plan and implement transport facilities responsive to the political desires of its metropolitan region.

Among the unique contributors to MTC's deliberations thus far in seeking to bring about acceptable transportation improvements in the Bay area has been a strong transit planning advocacy. Both the well-established operating transit agencies in San Francisco and the East Bay with their high performance and patronage records and the planning of the promising regional newcomer, BART, have contributed to the region's expectations for what should be possible in terms of good transit service. Their willingness to financially support and plan with the MTC has been invaluable so far.

Traditionally transit operating agencies have not undertaken broadly defined transit-transportation planning efforts, but this is changing, and BART's unique legislative and then electoral mandate in the Bay area to plan for a new regional rail transit system has contributed to a wider awareness. Among the functions that BART was originally intended to serve are both an attraction of commuters away from the private automobile, particularly for access to downtown San Francisco and Oakland, and an influence on the future distribution of economic activity and, hence, land use in the region. Both of these objectives place transit planning in a much broader context than that of the efficient mobility of passengers. The cross relationships between rail system design

and urban location patterns and the relative attractiveness of transit versus highway modes for regional commuter traffic led BART to a variety of regional planning concerns from its earliest days.

Without transit advocacy, such as BART and other systems now developing in the Bay area, decision-makers are not likely to fully recognize transit needs. Already countering such transit interests is the long-established federal-state highway cartel whose acknowledged political powers have led to a preponderance of highway-oriented transport bureaucracies, plans, facilities, and funds. The funding patterns established by these interests for the provision of highway systems have long convinced decision-makers that urban highways are the financially easiest course to follow in programming new regional transport facilities. Even in the Bay area, past transport planning without the influence of such transit advocacy produced a highway plan.

Even now, political realities being what they are, MTC could not be expected to develop a multimodal transport plan without transit advocacy. MTC needs BART and other transit operating agencies to help develop support for the transit elements of its plan. A transit constituency needs to be formed and, indeed, is forming.

Of the several strong and capable transit operating agencies in the Bay area, BART's role is predominately regional. AC Transit, SF Muni, Golden Gate Transportation District, and even the commuter functions of the Southern Pacific Railroad either have a local transport function or serve as a single, specialized commuter system. Not only does BART begin to tie much of the region together with its own service, but it provides an interrelationship among the various local systems so that they can provide comprehensive regional mobility via transit. BART has the potential to extend the backbone of regional-scale transit through much more of the region and to provide the linkages to new local systems that may be created.

BART provides the scale of service that goes beyond local mobility to the region-shaping potentials of transit, therefore being one of several crucial planning determinants of the land use, economic, and environmental characteristics of the future Bay area. This is a heavy planning responsibility if taken seriously and not ignored as subordinate to exclusive mobility concerns but not so crucial to the bulk of local transit operators.

BART's success as a regional system (or integral part of one) depends greatly on the abilities of other local systems to serve feeder and distributor roles to extend the coverage of the system beyond pedestrian or automobile access to its stations. Therefore BART's success, and regional transit's success, depends on the collective success of all transit in the region.

To summarize, while BART is not, and probably should not be, dominant in deliberations of transit system operators (most trips, after all, are still relatively short), it is the operating agency with the greatest need to plan for coordinated operations, construction of future extensions, and regional environmental impacts.

What planning role does BART see for itself, if MTC does become strong and successful? BART will continue project planning in support of MTC's systems planning and in concert with land use and environmental constraints. In the absence of an effective multimodal planning agency at the regional level in the past, it has had to take on systems planning responsibilities as a single function district.

There must be a trade-off, however, if BART is to relinquish systems planning responsibilities; for, until highway agencies are considered as much operating agencies as city builders, until transport resources can truly be allocated among modes, and until the environmental and energy limits of major urban areas are taken quite seriously, the metropolitan transportation planner will serve as a channel between federal and state government and the transit operator for funds already legislated exclusively for transit and as a mediator between competing transit operators desirous of obtaining a larger share of the same funds. In coming years this is not really where the most important decisions will be made. Existing roles must be considered transitional until more meaningful ones emerge from further legislative and popular action.

What are the needed changes? Arbitrary restraints must be taken off transportation finance. The management of highway facilities must be brought back to the region.

With these changes, transit and highway agencies at the local level will take on

parallel characteristics that will allow them to function together as a combined system to be planned and operated for the most effective overall system.

What does this mean? The concept of constructing and maintaining highways but leaving operations open to the free play of individual operators of single vehicles simply does not work anymore in large urban areas, at least not in the congested morning and evening commuting hours. The source of answers to a growing range of urban transport problems seems to be highway agencies both capable and responsible for the disciplined operation of their facilities. Inasmuch as, beyond a certain point, traffic regulation with single-passenger vehicles can do no more, this begins to give multiperson vehicles priorities on these street and highway facilities—not under the exclusive jurisdiction of a transit operator competing with automobiles, but rather under the joint jurisdiction of a traffic movement agency. If this agency is locally and regionally responsive, it can begin to make optimum use of existing facilities and make wise decisions on resource allocation for new facilities and on regulation of existing facilities. This starts to make highway agencies (a) locally responsive, (b) transit oriented, (c) operators as well as builders, and (d) in fact similar in function to the BART rail system. New highway construction retains its characteristic of influencing urban form comparable to BART fixed-rail systems; and the freeway has to be operated in coordination with other services just as BART has to be operated in coordination with other services.

But the present federal, state, and local institutional relationships stand in the way of this concept. They have placed the financing, planning, construction, and maintenance of highways beyond the effective reach of local and regional government, even though the social, environmental, and mobility impacts are largely at the regional or local level. Although the newer pattern of federal support for transit finance is tied more closely to regional or local desires, the institutional mismatch between highway and transit delivery systems at the urban regional level will continue to cause difficulty until state responsibility in the highway field is returned to local and regional government. That would be more in parallel with the evolving transit support framework.

The region-forming aspects of highways at the freeway and expressway scales need to be recognized as an important planning aspect of regional growth and development. To have most of these highway facilities mandated legislatively as parts of state and federal systems of transport connectors takes away much of the power of regions to determine their own future.

Thus, BART is willing to recognize the prime responsibility of MTC to conduct system-level planning, presuming MTC will be able to demonstrate its abilities and powers to do such planning and make it stick—not just for transit but for highways as well.

Such changes can occur. MTC, together with regional land use and environmental protection agencies, should gradually emerge as the system-level planning agency for a truly multimodal regional transport system, leaving highway and transit agencies to do project planning, construction, and operation of facilities within the overall systems plan.

But MTC will fail in its charge without fundamental changes in existing financing and institutional arrangements. These changes must come at the federal and state levels. Let's hope that this discussion has demonstrated the case for these state and federal actions. The San Francisco Bay area is prepared to uphold its part of the responsibility.

IMPACT OF IMMEDIATE-ACTION TRANSIT IMPROVEMENTS

Alan F. Kiepper, John W. Bates, H. King Elliott, and E. E. Gilcrease, Jr.,
Metropolitan Atlanta Rapid Transit Authority

•VOTERS of Fulton and DeKalb Counties, Georgia, which include the City of Atlanta, approved the proposal of the Metropolitan Atlanta Rapid Transit Authority (MARTA) to implement a two-part public transportation improvement program. The regional plan is described as the Long-Range Transit Program, of which the Short-Range Transit Improvement Program is a part.

The major part of the long-range program, major in expense and effort, is the construction of a \$1.32 billion rapid transit system consisting of 64 miles of trunk lines—50 rail and 14 busway—and more than 1,500 miles of surface bus routes. However, although smaller in cost and in spite of difficulty of implementation and duration, the second part of the MARTA program is actually first in sequence of implementation.

MARTA's \$45 million Short-Range Transit Improvement Program was designed to provide for Atlanta's immediate public transportation needs, needs that could be met, at least in major part, by improvements to the existing public transportation system. By taking immediate action to improve the existing system, MARTA is able to meet some of the people's transportation needs now, rather than making them wait 7 to 10 years to realize some benefit from tax payments that go to provide the new system.

The immediate-action transit improvements implemented to date have had significant impacts. Before we discuss these impacts it is proper to describe the entire short-range program, which has the following seven parts:

1. Purchase the privately owned Atlanta Transit System, Inc.;
2. Lower fares to 15 cents with free transfers, hold the 15-cent level for 7 years, and then increase the fare by 5 cents per year to 30 cents the tenth year (after 10 years, the fare will be set to equal one-half of operating costs);
3. Increase the operating fleet by purchasing 490 new, air-conditioned 47-passenger buses, 125 of which will replace old vehicles in the original fleet;
4. Expand services by establishing new crosstown and radial routes, improving frequencies and service periods on existing routes, establishing special neighborhood-oriented service in transit-dependent neighborhoods, and providing express park-and-ride service from suburban locations;
5. Provide radio communication equipment for all operating and service vehicles;
6. Provide passenger shelters at high-volume transit stops; and
7. Improve informational customer services.

The entire program is funded by a combination of two-thirds federal and one-third local funds, the local funds being provided by a 1 percent sales tax in Fulton and DeKalb Counties. However, all operating costs incurred by the transit improvements would be financed entirely by local funds.

These are the major elements of the MARTA immediate-action program. There are a number of other improvements, minor in the context of the public aspects of the program, including two new bus maintenance facilities.

Transportation has always been a significant factor in the Atlanta region. In fact, Atlanta was created by the intersection of three railroad lines at a point that was, in 1837, totally undeveloped. Public transportation in Atlanta is more than 100 years old, and it is significant that the action by the voters of Fulton and DeKalb Counties to fund and approve the MARTA program occurred on the 100th anniversary of the first transit line established in Atlanta in November 1871. Public transportation in Atlanta was originally a private operation, beginning with two of Atlanta's leading citizens who orga-

nized the Atlanta Street Railway Company and established a line 2 miles long that ran from downtown, past the home of the president of the company, to the home of the other founder. Other transit lines were established by competing companies. In 1889, the first electric streetcar line in Atlanta was established to provide service from Five Points, the center of town, to Atlanta's first subdivision, Inman Park. The streetcar line developer built a new street in which a streetcar line could be constructed.

The several private street railway companies merged in 1902 to become the Georgia Railway and Electric Company. This company became the Georgia Power Company, which, in 1948, sold its transportation activities to create the Atlanta Transit System, Inc. It was this company that MARTA purchased on February 17, 1972, to become, for the first time in MARTA's 6-year history, an operating agency.

MARTA began operations as an authority on January 3, 1966, but its roots go back to statements and studies of the area planning commission as early as 1952. It was at that time that the Metropolitan Planning Commission noted the importance of mass transit to the area. This recognition progressed in various stages through the years, and in 1954 the first statement of the need for a rapid transit system was documented. This was followed by a series of studies of expressways, commuter patterns, and the further need for transit, which led in 1961 to a detailed plan for a mass transit system. A more detailed plan was produced in 1962 under the auspices of a Transit Study Commission. A series of legislative acts in the Georgia General Assembly culminated in a constitutional amendment allowing creation of a transit agency in the Atlanta area in 1964. The legislative act creating MARTA was passed in 1965 and was followed by a series of referenda on participation by eligible counties and the City of Atlanta. The counties of Fulton, DeKalb, Clayton, and Gwinnett and the City of Atlanta approved participation.

MARTA began operations in 1966. The Board of Directors of 10 Atlanta area business people, none of whom may hold public office, began to assemble a staff and employed a consultant. Further reevaluations of the transit plan were made in 1967 with a detailed report published in November 1967, which led to a funding referendum in November 1968. This referendum was unsuccessful. A major reason for its failure was reliance on property tax for the local source of funds for construction; a second reason for its failure was lack of assurance of federal funding assistance. MARTA was instructed by local officials to restudy the plan and to derive a new program for reconsideration.

Another plan, in 1971, used a different source of revenue, the sales tax. By this time, the Urban Mass Transportation Act of 1970 had been funded, making \$3.1 billion immediately available under contract authority and a total of \$10 billion available over 12 years. This encouraged Atlanta citizens to commit their funds with some assurance of matching federal funds.

The referendum was successful by a narrow vote, but many people who voted against the issue stated they did not vote against rapid transit itself but against additional taxes.

With the passage of the referendum and the assured finances of the total program, MARTA was able to move immediately to enact its Short-Range Transit Improvement Program and to begin implementation of its long-range program. Just prior to the referendum, Secretary of Transportation John A. Volpe announced approval of a \$30 million capital grant to implement the short-range program. Sales tax provided the \$15 million matching funds. MARTA quickly moved to implement the various elements of the program and began negotiations immediately with the owners of the Atlanta Transit System, Inc. On February 17, 1972, MARTA purchased the Atlanta Transit System and began its operations, and on March 1, 1972, the fare was reduced from 40 to 15 cents.

As stated, the major difference between the successful Atlanta proposal in 1971 and the earlier defeat in Atlanta, and defeats elsewhere, was in the method of financing. Other proposals were tied to some combination of property taxes and fare-box revenues for construction and operation. The financial plan approved for Atlanta is tied to neither property taxes nor fare structure. The Atlanta plan is based on receipts from a local option 1 percent sales and use tax and a low fare policy subsidized by sales tax revenues. Another unique financial feature of the approved program is its short term. Forecasts of transit patronage and sales tax revenues suggest that the entire cost of construction

can be retired in 14 or 15 years. This compares to a term of 30 to 40 years usual for a project of this size.

The sales tax-low fare financial plan for Atlanta was developed by assuming that urban transportation is, in economic terms, a mixed-benefit public good. This assumption is based on the characteristics of an urban transportation system. Private benefits accrue to the user of the system through the achievement of mobility resulting in monetary income through work trips and other benefits such as shopping, medical, and educational trips. Whereas the degree of usage of a given system can be determined with reasonable reliability and user charges are in most cases based on that usage, the usage itself is in response to the supply, and determination of how much transit service people really want and are willing to pay for is a problem. Public benefits also accrue to the community as a whole through the very existence of a viable transportation facility; the relationship between transportation and economic development is well documented.

Of specific concern in the Atlanta financial plan is the equity aspect of the proposal. The sales tax is generally accepted to be a regressive tax; that is, the proportion of income paid out in taxes decreases with larger incomes. However, as will be shown, the financial program for MARTA overcomes these regressive aspects.

When the financial plan for the successful MARTA program was developed, property taxes were excluded from consideration as a source of revenue. The cost of the public transportation system for the four-county system was estimated to be \$1.42 billion. At the indicated level of federal participation of 67 percent, the local share would be \$473 million. Several revenue sources were considered. Analysis of these sources (sales tax, payroll tax, admission and amusement tax, hotel and motel tax, income tax, automobile license fees, gasoline tax, and cigarette tax) showed estimated revenues as given in Table 1. Only three sources—sales, payroll, and income taxes—indicated potential revenues of sufficient magnitude to accomplish the project.

In the early stages of development of the financial plan, it was assumed that public funds would be used to pay the capital cost and that user charges, or fares, would pay for operation of the system when constructed. This approach would appear to meet the standards of equity for two of the three possible sources of capital funds. With fare incomes meeting operating costs, the system users would pay in proportion to their benefit (use). An income or payroll tax would be equitable if it were a flat rate and would be a preferred inequity if it were a surcharge on a graduated state or federal tax base. However, sales tax is considered to be regressive and, therefore, as a source of capital funds would be undesirably inequitable.

Further, political consideration resulted in removal of the payroll tax as an alternative fund source. It was judged that the constitutional framework and political atmosphere were such that a tax such as this could not be levied. Financial plan development stood at an impasse with each of the two remaining fund sources having proponents and opponents. It was not until a new factor was introduced that the impasse was resolved. Financial discussions, as stated previously, treated capital and operating costs as separate and distinct categories. Without recourse to the economic considerations as such, financial planners had considered the provisions of the physical system itself as a public good, such as city streets, fire and police protection, and similar services. The provision of the operating system was considered only in terms of pure benefit financing with the user paying all operating costs. Sam Massell, mayor of Atlanta, introduced the mixed-benefit concept indirectly by suggesting the sales tax for both capital and operating funds with the alleged regressiveness of the sales tax counteracted by free or low fare. Consideration of this concept led to a proposal of a sales tax of 0.75 percent and a 15-cent fare.

The proposal was introduced to the 1971 session of the Georgia General Assembly. Following much discussion in legislative chambers, public forums, and news media, a sales tax proposal for transit financing passed both houses of the General Assembly and became a part of the MARTA enabling legislation. The proposal was amended to provide for a 1 percent tax instead of 0.75 percent but for a 10-year period only, after which the rate would be reduced to 0.5 percent. Also, after that period, application of tax revenues to operating expenses is limited to 50 percent. The additional $\frac{1}{4}$ per-

cent is in lieu of any further cash contributions by the state as authorized under a state constitutional amendment approved by voters in 1966, which permits the state to participate financially in rapid transit up to 10 percent of the total cost.

Table 2 gives estimates of transportation cost burdens for work trips for various tax and fare combinations. These include a 1 percent sales tax, the previous 45-cent transit fare including transfer cost, the 15-cent fare, the sum of the 15-cent fare and sales tax, use of the automobile, income tax, and other combinations. As shown in Figure 1, the automobile is the most regressive in terms of transportation cost. The least regressive is a 2 percent income tax with a 15-cent fare. However, this is very close to the 1 percent sales tax and the 15-cent fare adopted. (The 2 percent income tax was not considered as a source of revenue.) These figures relate to the total cost of transportation to and from work. In short, the sales tax and low-fare method of financing public transportation can be judged as an equitable financing method when overall public transportation service, as well as direct cost, is considered.

On a strict analysis of the sales tax, the financing method is regressive and creates an undesirable equity, but when the low fare is considered with the sales tax, in terms of transportation cost, the regressiveness, and therefore the inequity, is significantly reduced if not cancelled entirely. Economic benefits accruing to the region as a whole from implementation of the public transportation system also are significant. Even if it is urged that such economic benefits accrue primarily to high-income groups, the system provides special compensatory opportunities to low-income groups through special route services. It may therefore be concluded that, on strictly construed economic theory, the MARTA financing plan does not provide equity; however, the plan does approach equity more nearly than a continuation of previous procedures. From a subjective viewpoint that considers opportunities created and nonquantifiable and social effects, the adopted financial plan and transportation system are satisfactory from an equity standpoint.

The practical test of the MARTA program has been seen in the response of the citizens to the first steps of implementation. At the time of MARTA acquisition, the Atlanta Transit System was operating a fleet of 504 buses over 80 routes that made up 1,088 route-miles. Service amounted to approximately 19 million vehicle-miles, and 57.5 million passengers were being carried annually, including 13 million transfer passengers. Average weekday revenue passengers amounted to 150,000, excluding transfers, with two-thirds of these carried during the peak hours. Saturday and Sunday ridership amounted to approximately 43 percent and 15 percent of weekday ridership respectively.

The population of the Atlanta Standard Metropolitan Statistical Area at the time of acquisition was approximately 1,450,000 persons of whom 780,000 lived in the area served by the transit system.

The reduced fare was placed in effect on March 1, 1972. At that time, the basic cash fare was reduced from 40 cents, or 3 tokens for \$1.00, to 15 cents. All zone charges were eliminated, as was the 5-cent transfer charge. Fares in Clayton County, which did not approve the referendum, remained at their previous level, as did special service fares such as those for the Falcon Flyer, the Stadium Shuttle, and Six Flags services. School fares remained at 10 cents. At that time, those paying special fares amounted to 17 percent of the total MARTA ridership, leaving 83 percent of MARTA's passengers who were actually affected by the fare reduction.

During the first 3 months following the initiation of the reduced fare, weekly statistics were compiled from system-wide revenue records to quantify ridership increases. These increases and system-wide ridership for all revenue passengers ranged from 11 to 22 percent per week. It is important to note that these represent the increase in actual passengers at the reduced fare over the number of passengers who were anticipated under the previous fare structure, from estimates prepared by the Atlanta Transit System prior to its acquisition by MARTA. Comparable increases for passengers who actually experienced reduced fares range from 16 to 27 percent, averaging 23 percent over the 13-week period. Transfers also increased significantly because of the elimination of the transfer charge. These statistics have also been maintained on a monthly basis, and compilation is continuing. Monthly ridership statistics for the first

Table 1. Potential tax revenue estimates (in thousands of dollars) for 1970.

County	Sales at 0.5 Percent ^a	Payroll at 0.5 Percent ^b	Admissions and Amusements, 2 Percent Increase	Hotel and Motel, 2 Percent Increase	Income			Auto-mobiles at \$5	Gasoline at 1 cent/gal	Cigarettes at 2 cents/pack
					Personal at 1 Percent	Corporate at 1 Percent	Total			
Dekalb	4,467	3,397	140	60	6,292	750	7,042	1,115	1,776	972
Fulton	15,467	15,214	1,100	1,300	11,143	3,550	14,693	1,415	3,270	1,526
Clayton	783	679	26	20	1,238	117	1,355	250	402	208
Gwinnett	617	296	14	10	769	83	852	185	355	164
Total	21,334	19,577	1,280	1,390	19,442	4,500	23,942	2,965	5,803	2,870

^aOf the sales tax for Dekalb and Fulton Counties, Atlanta accounts for \$13,700.

^bOf the payroll tax for Dekalb and Fulton Counties, Atlanta accounts for \$13,815.

Table 2. Estimates of transportation cost burden.

Cost	Gross Annual Income			
	2,000	4,000	7,500	15,000
1 percent sales tax ^a	25.00	39.00	63.00	90.00
Percentage of gross income	1.24	0.98	0.84	0.60
45-cent fare ^b	225.00	225.00	225.00	225.00
Percentage of gross income	11.25	5.63	3.00	1.50
15-cent fare ^c	75.00	75.00	75.00	75.00
Sum of 15-cent fare and 1 percent sales tax	100.00	114.00	138.00	165.00
Percentage of gross income	5.00	2.85	1.84	1.10
Cost of automobile ^d	444.00	444.00	444.00	444.00
Percentage of gross income	22.00	11.10	5.92	2.96
1 percent local income tax ^e	0	0	25.50	98.00
Sum of 1 percent income tax and 45-cent fare	225.00	225.00	250.50	323.00
Percentage of gross income	11.25	5.63	3.34	2.15
2 percent local income tax ^f	0	0	51.00	196.00
Sum of 2 percent income tax and 15-cent fare	75.00	75.00	126.00	271.00
Percentage of gross income	3.75	1.88	1.68	1.80

^aGalambos (4, p. 11).

^b45 cents each way x 5 days per week x 50 weeks per year = \$0.90 x 5 x 50 = \$225.

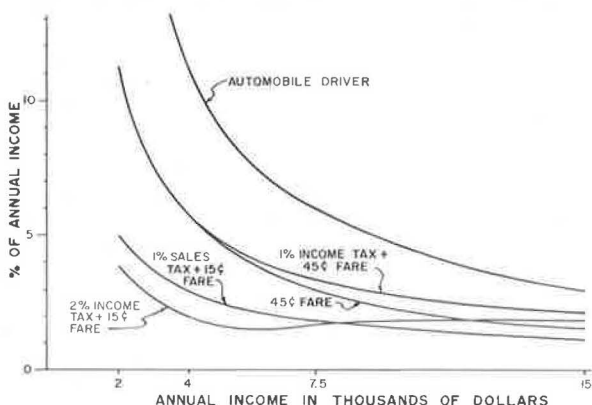
^c15 cents each way x 5 days per week x 50 weeks per year = \$0.30 x 5 x 50 = \$75.

^d8 cents per mile x 11 miles per day x 5 days per week x 50 weeks per year.

^eGalambos (4, p. 9).

^fRevenue from 1 percent income tax times two.

Figure 1. Costs of work trips for automobile and transit users as a percentage of annual income.



8 months after the fare was reduced are given in Table 3 and in Figure 2.

Table 3 shows a fairly steady and gradual increase in ridership through the summer of 1972. In the fall of 1972, however, these increases rose considerably, mostly because of the implementation of service improvements.

Table 4 gives the improvements in service that have been inaugurated by MARTA since its acquisition of the system. To date, eight types of improvements have been made, resulting in 22,026,000 additional annual vehicle-miles of service and 35 additional vehicles scheduled. To date, 129 such improvements have been made.

Examination of ridership by time period during the first 3 months of reduced fares shows an increase of approximately 12¹/₂ percent in the rush hours and as much as 30 percent during the midday period. On Saturday, preliminary figures indicate an increase of 29 percent, whereas Sunday ridership is up an average of 37 percent. It should be emphasized that these figures are preliminary. Also it should be noted that the weekday time period figures are taken from a selected sample of maximum load point ridership checks, whereas the Saturday and Sunday figures are based on revenues collected. Bus operators have indicated that there has been a significant increase in the number of short trips. These may or may not have been picked up at the maximum load points; therefore, these figures could, in fact, be low.

Critical overloading occurred on many routes immediately after the fare reduction. For example, on one of the normally heavy routes, during the first week under reduced fare, seven consecutive vehicles during one morning peak period were observed carrying in excess of 90 passengers. These overloads became critical so rapidly that MARTA acquired 55 used buses from other systems. These vehicles were reconditioned and put into service in the period between April and October of 1972.

As a result of the overloads, comments on short trips, and general observations and requests for information concerning ridership patterns and rider characteristics, a fare reduction study designed to provide answers to these questions was formulated.

From information available from normal operating sources, MARTA was aware of the increases in ridership. However, from these sources, it is not possible to develop qualitative conclusions about changes in ridership patterns and changes in the transit market. For example, the data available could not show how much of the increase in ridership was due to the decrease in fares, to improvements in service, to new transit riders, and to increased ridership by previous transit riders who, because of the low fare, now have increased mobility. The distribution of trips by trip purpose is also not obtainable from these data.

It was felt that there existed an imperative need to determine the answers to these questions for MARTA's own internal use in its continuing planning and program development, as well as to provide information to other transit agencies on MARTA's experience. With the cooperation of the Urban Mass Transportation Administration and in conjunction with the Atlanta Regional Transportation Planning Program (a joint effort of MARTA, the Georgia Department of Transportation, and the Atlanta Regional Commission), MARTA has undertaken a comprehensive study of the effect of the fare reduction and service improvements on transit ridership patterns. This study consists of two basic phases.

One is an on-board survey of transit riders to determine actual ridership patterns. This is a small-sample personal interview survey with detailed questionnaires requesting in-depth information about the transit rider, as opposed to the more traditional hand out-mail back survey in which only limited information is obtained. The Georgia Department of Transportation at this same time was conducting an in-home survey as a part of the continuing transportation planning program. An additional series of questions was included in that survey to provide information about attitudes toward transit and transit usage by nontransit users. The on-board survey was conducted in November 1972. The in-home survey was conducted from October through December 1972. The tabulation and analysis of the data derived from these surveys are now being processed.

The research study has five specific objectives:

1. To separate and quantify the response of riders to the reduction in fare and improvements made to transit services,

Table 3. Record of transit ridership for March through October of 1972.

Month	Total Passengers		Group Affected	
	Number	Increase (percent)	Number	Increase (percent)
March	5,656,100	13.3	3,586,200	19.9
April	5,278,700	19.2	3,456,500	23.0
May	5,812,100	15.5	3,689,500	22.0
June	5,176,600	21.9	3,648,000	22.4
July	5,033,800	23.0	3,625,100	29.2
August	5,464,300	24.6	3,935,200	29.6
September	5,653,800	20.7	3,592,300	29.4
October	5,986,600	25.2	3,731,600	33.4

Figure 2. Trend in monthly passengers and transfers.

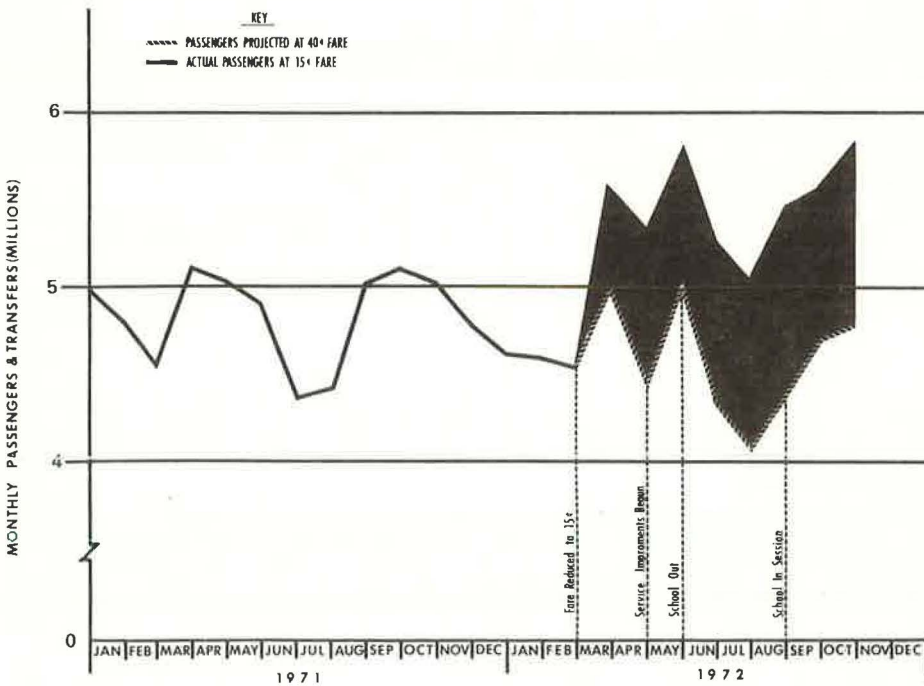


Table 4. Transit service improvements for April through October of 1972.

Date	Improved Headways and Expanded Service Periods	New Lines and Services	Extensions	Line Revisions	Total Improvements	Additional Vehicles Required	Annual Vehicle-Miles*
4-10	16	-	-	-	16	15	274,000
5-01	10	2	3	2	17	6	294,400
6-03	16	1	4	5	26	-	1,091,800
7-24	2	-	-	-	2	-	18,700
8-26	14	2	4	3	23	7	712,400
10-02	4	-	-	1	5	6	115,500
10-14	19	-	-	1	20	1	410,900

*The Atlanta Transit System operated 19,108,000 annual vehicle-miles of service before MARTA acquired the system.

2. To obtain descriptive data about transit ridership under the new public operation,
3. To determine the attitudes and perceptions of nontransit users to determine their reasons for nonuse,
4. To establish the relative merit as expressed by both users and nonusers of types of service improvements for MARTA use in deriving implementation schedules, and
5. To provide new data on cost and service elasticity for input to the behavior models on modal choice to be used in the continuing transportation planning program.

The results of the research study are scheduled for release in late spring of 1973.

In conclusion, the immediate-action transit improvements made in the Atlanta region have had a significant impact on the region and specifically on the public transportation system. MARTA was able to effect transit improvements because it presented to the citizens of the region a well-planned transit program, consisting of both short- and long-range components. MARTA was able to establish a funding source that is equitable in application. The 1 percent sales tax now producing about \$4 million a month for MARTA is a dedicated revenue source; the sales tax collections must be and can only be used for public transportation purposes. With this commitment of revenue, MARTA is able to make definitive plans to carry out the program. It must be assumed that the corresponding federal funds are also committed to the same degree and that, with the local and federal partnership, the Atlanta region will continue to make transit improvements not only to carry out the committed short- and long-range programs but also over an even longer period of time to provide continuing favorable impact on the region.

Every proposal for improved public transit in recent years has been received by critics with the statement that people are wedded to automobiles and that they will never leave them for public transportation. Atlanta has proved these critics to be wrong. The transit system in Atlanta is carrying nearly 1 million more people each month than would have ridden without the MARTA immediate-action program. MARTA contended before the 1971 referendum that people would switch to public transportation if it was convenient, economical, safe, and fast. The impact in Atlanta has shown that this is true, and, when the new system begins its first operations in 1977, the impact of the longer range improvements on the region and on transit ridership will be even more significant.

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THE STATE'S ROLE IN THE TRANSIT ASPECTS OF LONG-RANGE TRANSPORTATION PLANNING

Jack Kinstlinger, Pennsylvania Department of Transportation

●PENNSYLVANIA'S involvement in urban and public transportation is designed to further the commonwealth's basic transportation goals as defined by the 1972 National Transportation Needs Study. These are

1. Development of regional and statewide transportation systems that are compatible with the land development trends and that help to shape desirable development patterns;
2. Provision of transportation systems that will meet the anticipated needs for the movement of people and goods and for the storage of vehicles;
3. Development of transportation facilities that will support and enhance the regional and state economy;
4. Development of a unified system of transportation facilities, which includes various classes of roadway and bus, rail, and air facilities subject to limitations relating to the amount and form of urban growth, available technology, and economic feasibility;
5. Reduction of conflicts between transportation improvements and established community development patterns, important community facilities, and environmental standards; and
6. Provision of transportation facilities that will increase the mobility of non-car users (e.g., the poor, the disabled, the old, the young).

In the furtherance of the goals as regards public urban transportation, Pennsylvania state government actively accepts the following responsibilities: (a) controls, through a Public Utilities Commission, public transportation by regulating rates and carrier entry into and exit from the business of providing transportation services and specifying the areas served and routes used; (b) creates by state law, or enables the creation by local government of, multijurisdictional and regional transit operating authorities and planning commissions with powers to adopt multimodal transportation plans and programs; and (c) provides through a state department of transportation technical and financial assistance to local operating authorities and planning commissions. In the current fiscal year, \$60 million is being granted to local transit operating agencies for capital improvements and operating subsidies and more than \$1½ million to local planning agencies for transportation planning purposes.

The state department of transportation itself maintains an administrative and planning staff to ensure that adequate, safe, economical, and equitable public transportation is available to the public and that state funds are being wisely and properly spent to support this objective. This responsibility is being discharged by (a) monitoring public transportation services in light of minimum operating standards and guidelines that are being promulgated by the department, (b) reviewing grant applications to ensure that they are consistent with environmental and social objectives of the communities and the state with the ongoing multimodal transportation planning process, and (c) promoting a sound multimodal planning process, coordinated with comprehensive planning, in all metropolitan areas and in the state as a whole that identifies transportation needs, programs and priorities, that maintains data projections and current proposals, and that is used for purposes of guiding the formulation of capital programs, budgets, and investment decisions generally.

There are two principal ingredients for successful long-range transportation planning at the metropolitan level: Plans must encompass the entire metropolitan area, regardless of political boundaries, within which transportation facilities serving com-

muters will be required over the next 20 years or so; and the planning must consider the needs for major transportation corridors and terminals, chiefly expressways and fixed rail lines, as well as social, economic, environmental, and land use elements and their interrelationships.

We obtain these ingredients by conducting long-range transit planning on a multi-modal basis in conjunction with comprehensive planning either by regional planning commissions with appropriate authorization and capabilities or by joint agency staff efforts under the guidance of ad hoc multijurisdictional committees operating under legal agreement.

In our smaller urbanized areas, all except for the Philadelphia and Pittsburgh regions, short-range transit studies as described in UMTA's External Operating Manual (1) have been completed, are under way, or are planned. These studies are appropriate in those areas where public transportation is primarily by bus and are intended to identify bus routes and schedules, equipment, maintenance, funding, and organizational requirements over the next 5 to 10 years to meet existing and near-term demand. The studies are performed under the technical and policy guidance of the urban area transportation study committees that were initially established in Pennsylvania to conduct area-wide highway studies under the 3C planning process. The committees are comprised of elected officials of the center city and suburban counties and representatives of state and federal government and of transit and aviation operating agencies. The contracting agency with UMTA is either the city, county, or PennDOT, depending on mutually agreed on arrangements.

In some of these medium and small urban areas where there appears to be a need for capital-intensive improvements to assist public transportation such as for fringe parking lots, fixed rail lines, or express or exclusive bus lanes, we plan to conduct long-range transit studies to match our long-range highway studies, and we will re-evaluate land use projections to reflect the more intensive use of public transportation that the studies may show to be feasible.

With the emerging requirement to prepare unified work programs for the smaller as well as the major metropolitan areas, we believe that PennDOT, working under the technical and policy direction of urban transportation study committees, should be the lead agency in the preparation of the work program and the single recipient agency for multimodal transportation planning funds. Such an arrangement would ensure the adequate representation of elected officials of both the center city and the outlying counties, an arrangement that is unique to the transportation study committees, would provide economy of scale by allowing a centralized and well-trained transportation planning staff in Harrisburg to serve a number of smaller urban areas that lack similarly trained staff locally, and would maximize coordination among the transportation modes. We look forward to local concurrence to such an arrangement.

The situation is somewhat different in our two larger metropolitan areas, Philadelphia and Pittsburgh. Both of these have, pursuant to state legislation, regional planning commissions with responsibilities for both comprehensive and multimodal transportation planning. In Philadelphia, the Delaware Valley Regional Planning Commission encompasses the nine-county, bi-state area of Philadelphia. Regional plans on land use, open space, water, sewer, highways, and transit were adopted in 1969 by a commission composed of local elected officials and representatives of state transportation and planning agencies and appropriate federal officials. Similar representation exists for the Southwest Pennsylvania Regional Planning Commission encompassing the six counties of metropolitan Pittsburgh. A multimodal transportation plan was adopted for Allegheny County in the 1960s, and a similar plan for the six-county region was scheduled for adoption in late 1973. The secretary of PennDOT or the planning deputy is a voting member of both of these commissions.

Long-range transportation planning studies as described in UMTA's External Operating Manual (1) are the responsibility of these planning commissions, and they have been designated the lead agencies in the preparation of unified work programs. PennDOT, using in part its highway planning and research funds as well as its general funds, furnishes all of the money to the regional planning commissions for long-range highway planning and provides 90 percent of the funds to match UMTA grants for public trans-

portation systems planning. All of PennDOT's funds are made available through contract arrangements with the planning commissions that define carefully the detailed work program to be followed. These contracts are monitored by PennDOT staff to ensure that the planning process is soundly conceived; the environmental and social impacts as well as the need of minority and other disadvantaged are considered in plan evaluation; the planning process is participatory and has involved citizen groups, individuals, local elected officials, and operating agencies; and plans reflect regionally prospective federal, state, and local fiscal resources and the ability of the operating agencies to design, build, and operate the public transportation systems and services. Additionally, the transportation plans, and the basic land use and demographic projections underlying these plans, must reflect state policy with regard to population settlement, environmental protection, and the equitable distribution of investments throughout the commonwealth.

In the deliberations of metropolitan agencies, the state sees its role as an arbiter and a balance wheel between local representation. Because implementation of the plan depends essentially on local initiative and local funds, the state takes care not to dominate the planning process. However, it has become apparent that regional planning commissions or councils of government are not effective in protecting the best interest of the region without a strong state role and participation. Traditionally, a consortium of local governments will avoid making hard and uncomfortable decisions that may tread on the toes of one or more local governments, regardless of how the decision may benefit the region as a whole, without the strong centrifugal force of the state. Any good political scientist knows that groupings of government at any level will not work together effectively without the bonding influence of the next higher level of government. This is certainly true in metropolitan government. In many ways, this is perhaps the major role of the state in metropolitan decision-making.

In Pennsylvania, results of the long-range transportation planning studies are taken seriously as guiding investment decisions. The Pennsylvania Transportation Commission, which is responsible for formulating a 6-year capital program for public transportation, has adopted a policy that establishes the plans and priorities resulting from the long-range transportation planning process as one of the bases for adding to, deleting from, or modifying its capital program. In addition, PennDOT when exercising its proper function as state clearinghouse for transportation matters under the project notification and review system of OMB Circular A-95 will approve federal capital grant applications for public transportation only upon evidence of consistency and compatibility with the long-range plan and priorities. These plans and priorities are further used by PennDOT in preparing its annual public transportation capital budget for General Assembly approval.

PennDOT, in its Environmental Action Plan being prepared pursuant to the 1970 Federal-Aid Highway Act, will be reshaping its metropolitan systems planning for both public transportation and highways. First, more emphasis will be given to subarea or corridor studies in which highway, mass transit, and associated land use plans will be studied over a 10- to 15-year time frame in much greater detail than has been possible under the area-wide long-range planning process. These studies will consider in detail environmental and social impacts and in some instances may involve multiagency staffs and extend through the route location phase, but always on a comprehensive basis. The main thrust of the long-range area-wide planning process will be to weave results of individual subarea studies into a coherent whole that is consistent with area-wide growth and development policies and objectives. Second, we will have prepared, as part of the area-wide long-range transportation planning process, an environmental overview statement that will identify environmentally sensitive areas in the region, land use projections, major physical features, existing and predicted intensities of pollution, and existing and proposed transportation networks and implementation staging. Essentially the overview statement will be used to evaluate environmental impacts of transportation on an area-wide basis and establish a framework within which environmental impact statements for individual projects will be prepared and reviewed. Finally, area-wide transit and highway plans will be subject to project notification and review that currently apply only to project planning and will be subject to annual public hearings prior to

annual recertification that planning requirements for the region have been met.

In closing, I will list a few recommendations to the federal government that I believe will facilitate the urban mass transit program as well as the transportation planning process.

1. Support legislation that will require the preparation of state and regional land use and population settlement plans and policies together with implementing programs. Lack of effective regional or state influence on many private or local development decisions is seriously eroding the effectiveness of the planning process and ability of transportation systems to operate optimally.

2. Apply the concept of metropolitan unified work programs and single recipient agencies to encompass all regional and comprehensive planning programs by the various federal cabinet agencies to achieve an integrated and comprehensive planning program at the regional level.

3. Standardize planning criteria, planning area boundaries, certification procedures, and contractual arrangements among DOT modal administrations and between all federal planning programs.

4. The Urban Mass Transportation Administration should recognize state departments of transportation as agencies qualified to receive UMTA planning funds and as a single recipient agency where appropriate. Funding should be available on a continuing basis for state staff salaries to permit continuing planning activities including surveillance, reappraisal, and refinement of transit planning techniques and procedures.

5. The Urban Mass Transportation Administration should formulate and make public a systematic means of allocating urban mass transit funds among the states and localities to allow the states and local agencies to make future plans based on reliable estimates of future financial resources. States should become partners with federal and local agencies in the determination of mass transit needs, priorities, and projects meriting early funding approval.

6. Provide substantially increased levels of federal capital grants for urban mass transportation through a special trust fund, contract authority, or other arrangement that ensures continuity of funding and reliable predictions of future allocations. The bankrupt Highway Trust Fund does not contain the resources required to meet all immediate transit needs.

7. Provide federal funds for meeting transit agency operating losses. This need must be met if transit services are to continue and be improved. State and local governments cannot continue much longer to meet this demand alone. Problems of fund accountability and equitable allocation have apparently perplexed federal officials and precluded federal support of a transit subsidy program. These problems can be overcome by allocating federal transit subsidy funds to the governors on the basis of need and passenger-miles served and by allowing the states to assume responsibility for allocating the funds among operating agencies and monitoring their proper use.

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THE STATE'S ROLE IN TRANSIT IMPLEMENTATION

Clyde E. Pyers, Maryland Department of Transportation

•IT HAS BECOME increasingly clear in the last decade that local governments need to assume greater responsibilities in, but do not have the resources to implement, ambitious transit programs. The initial response to this insufficiency was a federal grant-in-aid program supporting the local government's transit activities. This program, while successful, has suffered from some shortcomings, two of which are germane to this paper.

First, the local governments are typically able to produce the one-third local share only for the planning of their proposed systems. In many cases, they are unable to provide the more substantial one-third share of capital cost. This has led to a great deal of planning and relatively little implementation.

Second, the direct transfer of funds from the federal level to the local government tends to short-circuit the state government's involvement in, and contribution to, transit programs. Thus, it is typical for the highway element of urban transportation to be the responsibility of the state and the transit element the responsibility of the local government. Obviously, this organizational framework does not lend itself to a balanced intermodal approach to urban transportation problems.

In many states, the response to this organizational dichotomy has been the creation of a multimodal state department of transportation. In Maryland, we like to think that we have created a model form of this type of department. As evidence, let me describe the powers, duties, funding sources, and organization of the Maryland Department of Transportation.

HISTORY OF MARYLAND DOT

The Maryland DOT was created by an act of the Maryland General Assembly in 1970. We officially opened our doors on July 1, 1971. The act combined five major existing agencies (the State Roads Commission, the Metropolitan Transit Authority, the Department of Motor Vehicles, the Maryland Port Authority, and the State Aviation Commission) into one unified department with an Office of the Secretary as headquarters. The Secretary of Transportation has final responsibility for all the activities of these administrations, including personnel administration and the power to shift functions.

The act also provided for an ample headquarters' staff in the Office of the Secretary so that the Secretary could develop programs and independently evaluate projects without relying solely on the modal administrations.

Most significantly, the act stipulated that all of the revenues of the above-mentioned administrations, including gasoline taxes, wharfage fees, vehicle registration fees, bus fares, and landing fees, be placed in a single Transportation Trust Fund. Expenditures are made from this fund in accordance with the transportation needs of the state as determined by the Department's programs rather than in accordance with their modal source.

Supporting the concept of the trust fund and providing us with much greater leverage in initiating major projects are the Secretary's bonding authority. The Secretary has the personal authority to obligate bonds up to a limit of just under a billion dollars, \$950 million to be exact. Such bonds are retired by income from the trust fund. To this time, we have obligated only about \$350 million, which was largely incurred prior to the creation of the Department. In addition, we have a Transportation Authority that can issue bonds to be retired by the revenue from toll facilities, such as the new Chesapeake Bay Bridge and the Baltimore Harbor Tunnel.

During the first year of operation, the Department prepared and the legislature passed the 1972 Consolidated Transportation Program. This involved identification of two series of transportation programs and increased our funding sources to accomplish these critical programs.

The Consolidated Transportation Program developed proposed an accelerated highway construction program, support for new rail transit systems in Baltimore and Washington, bus transit systems in the state's smaller urban areas, and port and airport improvement programs in return for an increase in the gasoline tax from 7 cents to 9 cents and an increase in the Department's bonding authority from \$450 million to \$950 million. The General Assembly approved this program in 1972.

As a part of the 1970 act creating the DOT, the Baltimore Metropolitan Transit Authority was brought within the Department as a full-line administration that has equal status with the highway administration. This reorganization thereby placed the full faith and credit of the State of Maryland behind the guarantee of public transportation throughout Maryland urban areas and, incidentally, made us the only state in the Union, to the best of my knowledge, that owns and operates a major urban area transit system.

In recognition of our multimodal powers and responsibilities, and perhaps more importantly because of the unusual cooperative relationship that we have been able to establish among the Department, the Baltimore Regional Planning Council, and the local agencies in the region, the U.S. Department of Transportation has designated our Department as the single grant recipient of transportation planning funds for the Baltimore metropolitan area. I might also note that in the Washington region, where the Metropolitan Washington Council of Governments is the grant recipient, the results of a similar cooperative process are much the same.

PROGRAMS UNDER WAY

As a result of all these activities, the Department now has under way a statewide transit development program. I would like to describe some of the particulars of this program so that you can understand the depth of the Department's commitment in this area.

Baltimore

In the Baltimore metropolitan area, the Department directly operates the dominant bus system. Within the next few months, we hope to become the sole supplier of urban bus service in the region. We now operate over 800 buses and carry in excess of 100,000,000 revenue passengers per year. The success of the Baltimore operations has depended on substantial federal assistance. UMTA has been a full partner with us in accomplishing the quality service we feel we are now providing. An UMTA grant in late 1970 of \$19 million permitted the Metropolitan Transit Authority, the predecessor to our transit administration, to buy 370 new buses and to buy the largest private bus company in the Baltimore region. A current grant application to UMTA for \$5 million, of which we have just recently received approval, will enable us to add an additional 100 buses and buy out the remaining operators in the region.

The Department believes that, in addition to this bus system, the realization of the full potential of improved public transportation requires the implementation of a rail rapid transit system for the Baltimore area. The advantages of speed, comfort, reliability, and frequency of service clearly indicate the superiority of transit operations on grade-separated exclusive rights-of-way.

Our efforts to achieve this type of system took a giant step forward last fall with approval by UMTA for two-thirds funding for the first year of expenditures for the phase I system. Phase I is 28 miles long, with 20 stations, and consists of two routes converging in the downtown area of Baltimore. The first 2 years of implementation are principally occupied with final design, property acquisition, and utility relocation, followed by heavy construction in 1975. The entire phase I system is currently scheduled to be operational in 1978.

Joint operation of the bus and rail system will be the responsibility of a single agency, our Department's Mass Transit Administration.

Washington

As I mentioned earlier, the role of the Maryland Department of Transportation in the Washington metropolitan area is somewhat different from its role in Baltimore principally because of the nature of the region. It is generally agreed, and the Department concurs, that the most efficient and effective means of providing urban transit service is through a single, region-wide operator. In Washington, this realization has led to the creation of the Washington Metropolitan Area Transit Authority. The Authority has been building Metro, the nation's most ambitious rail rapid transit system, and is now in the process of acquiring all of the region's private bus operators.

Although the Authority is the operator in the region, the Maryland DOT still has a responsibility for transit service inasmuch as approximately 40 percent of the region's population are Maryland citizens contributing to the Transportation Trust Fund. Accordingly, the 1972 Consolidated Transportation Program specified that the remaining obligation of the Maryland counties for the construction of Metro, \$161 million, be wholly assumed by the Maryland Department of Transportation. In addition, we are funding 75 percent of the Maryland counties' share for the acquisition and modernization of the bus system. The Department does feel, however, that any operating subsidies are properly the responsibility of the entity that determines the magnitude of these subsidies, the local operator. Hence, we do not participate in operating subsidies for the system in Washington, as we would in Baltimore.

For both the Baltimore and the Washington rail systems, the Department, with assistance from UMTA, will conduct station access studies to identify means of improving highway access to the stations. Because in the suburban stations nearly all the patrons arrive by either feeder bus or automobile, sufficient highway access is essential for the success of the rail system.

Commuter Rail

The Maryland DOT may also become involved in the provision of commuter rail service to the Washington area. The Penn Central and B&O Railroads currently operate a limited commuter rail service through the Maryland suburbs into Union Station. Although patronage has been increasing, both railroads continue to be unable to provide adequate service in the face of escalating operating deficits.

To prevent the continued deterioration and probable collapse of the commuter rail operation, the Maryland DOT is now in negotiations with the railroad companies. These negotiations will likely result in the railroads providing improved service on a contract basis and the state providing an operating subsidy.

Nonmetropolitan Area

The Maryland DOT recognizes that not all of the transit needs of Maryland are within the Baltimore and Washington metropolitan areas. In the nonmetropolitan areas of the state there is a significant portion of the population that does not have access to automobiles, including the aged, the young, the poor, and people unable or unwilling to drive automobiles.

In response to these needs, many of the state's small cities, including Ocean City, Salisbury, Hagerstown, Frederick, Annapolis, and Cumberland, have existing bus companies, either privately or publicly owned. However, as is typical around the country, the service so provided is generally inadequate, unreliable, and deteriorating. It is also typical about the country that small cities are unsuccessful in securing UMTA funding for improved transit systems because (a) they generally lack the experienced full-time technical staff capabilities that exist in the larger metropolitan areas, and (b) they cannot afford the time or personnel to become adequately familiar with the ever more complex red tape associated with federal grant requests.

To rectify these deficiencies, UMTA is currently negotiating a program with us under which the Maryland DOT will function as the grant recipient through which UMTA transit planning funds within the state will be administered with the exception of the Washington metropolitan area. Communities not interested in seeking state financial

or technical participation still will be free to seek UMTA assistance on their own as they have in the past.

These funds would then be applied in small urban areas that desire to lay the groundwork for transit improvements. UMTA is enthusiastic about this approach, in that it would eliminate a great deal of paper work associated with the processing of numerous small technical studies grant applications and the educational groundwork that UMTA would have to lay with each of these smaller communities where the experience with federal grant applications is limited.

Under this program, the Maryland DOT would provide technical and management assistance to areas expressing an interest in transit development, thereby serving as an interface between the community and UMTA. The Department would then provide three-fourths of the local share for communities that are found to qualify for such assistance. The UMTA funds would be administered as a block grant to the state with the requirements and study designs for each project to be worked out through a close relationship between Maryland DOT and UMTA technical staffs.

After the planning has progressed to the appropriate level, the Department would assist the local area (as represented by the city, the county, or, perhaps, a local transit authority) in the preparation of a capital assistance grant application to UMTA. As in the Washington example, the Maryland DOT would provide up to 75 percent of the local share for this grant. The remaining 25 percent and the operating subsidies, if any, would be the responsibility of the local jurisdiction.

With this arrangement, control over transit operations will be located primarily at the local level, in order that the service provided is responsive to the maximum extent practical to local desires. At the same time, federal and state financial assistance will make it possible to translate these desires into reality. To ensure that this process works smoothly, the Maryland Mass Transit Administration has created a new Division of Transit Development to administer this program.

One such desire that generates enthusiasm at the local level, and at Maryland DOT, is the extension of these small urban area bus lines into sparsely populated rural areas. Rural residents who do not have access to automobiles are virtually cut off from employment, medical services, and shopping. In Maryland, these people number in the hundreds of thousands. It is hoped that financial support of the urban systems from the public sector will enable these systems to reach out to this transit-dependent population.

Recently, the Department sponsored a statewide seminar for county and local officials to explain our proposed program of small area transit assistance. We had an attendance of more than 75 officials representing all regions of the state. The response of this group and the cooperation we received from UMTA were really gratifying. Our biggest problem now appears to be finding the staff time to do full justice to all of the communities that have shown interest in the program.

CONCLUSIONS

I hope that this overview of the Maryland DOT's transit programs has given an appreciation of the breadth of participation that is made possible by the organizational and financial framework of our Department. All types of expenditures—planning, capital, and operating—can be made in response to a specific area's needs, as determined by the Department. These expenditures can be made anywhere in the state, and they can be made without reference to their modal source.

Thus, Maryland perhaps has a better opportunity than any other state in the country to provide transit service on a statewide basis and to respond to our full range of transit needs. Whereas many of our programs are just getting started, we believe we are going to move very quickly and, we hope, very effectively.

In a very short time period, funding for transit implementation at the state level in Maryland has gone from zero to approximately \$400 million of currently programmed improvements.

Our programs within the state are comprehensive and diverse. We feel that is an absolute necessity. Transit programs must be designed for individual application and must be flexible enough to satisfy the full range of local needs and aspirations.

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