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REPORT BY THE

Comptroller General

OF THE UNITED STATES



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Communication And Management Problems Hinder The Planning Process For Major Mass Transit Projects

This report discusses the policies and procedures the Urban Mass Transportation Administration uses to identify a cost-effective mass transit project. The planning procedures require that when such a project is proposed, alternative projects must also be considered to identify a cost-effective option.

Local officials on such projects generally accept the need to study alternatives but feel the process needs better management.

Management weaknesses include a lack of written guidance, ineffective communication, and decisions inconsistent with Federal policy. Some improvements have been made, and guidance is being developed.

This review was requested by Senator Charles McC. Mathias, Jr.



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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-169491

The Honorable Charles McC. Mathias, Jr.
United States Senate

Dear Senator Mathias:

This report describes how the Department of Transportation manages planning and grant processes for major urban mass transportation investments and suggests ways to improve the effectiveness of these processes. We made our review in response to your May 3, 1978, request.

We have incorporated the comments of the Department of Transportation in our report.

As arranged with your office, we are sending copies of this report to the Director, Office of Management and Budget; the Secretary of Transportation; interested committees and Members of Congress; and Federal, State, and local officials.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Thomas G. Staats".

Comptroller General
of the United States

D I G E S T

The Urban Mass Transportation Administration (UMTA) awards Federal grants to State and local authorities to plan and implement various mass transit projects. Nearly two-thirds of the \$8.4 billion in capital grants awarded through fiscal year 1978 by this Department of Transportation agency were for the construction, extension, or modernization of intracity rail systems.

Federal funding authority for such investments is discretionary, so metropolitan areas must vie for available funds. Historically, demand for the funds has exceeded the supply. Since 1974, due to the potential demand for its funds and concern about its ability to finance these projects, UMTA ^{since 1974} has required analysis of rail and nonrail alternatives when intracity rail projects are proposed so that a cost-effective option can be selected. This policy was formalized in September 1976.

ALTERNATIVES ANALYSIS AND
EARLIER PLANNING STUDIES

GAO reviewed projects in Baltimore, Maryland; Buffalo, New York; Denver, Colorado; Philadelphia, Pennsylvania; Miami, Florida; San Juan, Puerto Rico; and Washington, D.C., where alternatives analysis studies have been developed.

Local officials believed UMTA should not have required alternatives analysis studies of rail projects for which earlier planning studies had been completed. However, UMTA required the studies because of inadequate consideration of potentially less expensive nonrail alternatives in the earlier studies as well as its concerns about rapidly rising costs and its ability to fund these projects. GAO believes the request for the studies was reasonable. Further, these

complaints should diminish as new projects are planned initially under Federal alternatives analysis requirements. (See p. 4.)

Officials of two projects stated that their projects had been delayed by the analysis requirements and had thus incurred additional costs due to inflation. Officials of other projects contended that their projects had not been delayed. (See p. 5.)

Several factors must be considered in assessing the studies' impact on implementation and costs of projects. Project proposals change as a result of the alternatives analysis studies. Further, the discipline of alternatives analysis may result in more accurate cost estimates, more realistic assumptions, greater levels of information, and analysis of a full range of alternatives. The alternatives analysis requirements have resulted in the adoption of more modest projects than originally proposed, thus resulting in reduced project costs. For example, Buffalo's 1974 proposal for a \$476 million, 11-mile heavy rail system was modified after a more extensive analysis. In 1976 the city proposed instead a \$449 million, 6.4-mile light rail system. (See p. 7.)

INEFFECTIVE COMMUNICATION

Local officials generally supported the concept of analyzing alternatives as a means of assisting Federal, State, and local decision-making for transit projects. These project officials, however, expressed dissatisfaction with Federal management of the process.

Written guidance and better communication through improved monitoring, documentation, and timely feedback are needed to help project sponsors develop alternatives analysis studies acceptable to UMTA. The lack of guidance has resulted in project sponsors conducting studies that are inconsistent with what UMTA wanted. Additional time-consuming efforts have been required because UMTA took exception to alternatives analysis studies, including exceptions

on quantifiable factors such as target years to be used as decision points and discount rates for time-distributed costs and benefits.

In Buffalo, for example, UMTA did not provide written guidance to project officials, but in April 1975, it took a number of exceptions to Buffalo's January 1975 study. UMTA believed correction of the issues might require 5 months. However, it took Buffalo 10 months to submit a refined study.

Ineffective communication also delays identification and resolution of problems. UMTA did not discuss in depth its concern over a proposed method of study for Baltimore's planned rail system with Maryland transportation officials until 9 months after it became aware of the proposed method.

For several projects, problems were not identified until after final alternatives analysis studies were reviewed and then UMTA took exceptions, requiring project sponsors to develop study revisions. In the most extreme case, it took UMTA 18 months to inform the Commonwealth of Puerto Rico that its alternatives analysis study for a proposed rail project in San Juan was not technically acceptable. (See pp. 10 to 20.)

UMTA is making progress in correcting these problems. Detailed guidance is being developed and is expected to be issued by October 1979. It has also been implementing management improvements over the past 2 years. Agency documentation for three projects, which UMTA believed have benefited from these improvements, showed evidence of agency concurrences with local study plans and improved monitoring and communication. However, ineffective communication existed well into 1978. For example, a year-long period of confusion between UMTA and local officials regarding the analysis required for a low-cost alternative for Philadelphia's Frankford El project was not resolved until November 1978.

DECISIONS WERE INCONSISTENT WITH
FEDERAL POLICY

Several projects have been exempted from alternatives analysis requirements even though the September 1976 policy on major urban mass transportation investments did not provide for such exemptions. These exemptions damaged the credibility of the alternatives analysis process as a decisionmaking tool. Shortly after the September 1976 policy was issued, UMTA made a conditional \$600 million commitment for transit improvements to the city of Detroit before the study was completed; one condition was, however, that the study be completed. (See pp. 20 to 22.)

UMTA made a mass transit investment decision before major deficiencies in the alternatives analysis study were corrected. This raises questions about the significance UMTA places on the process as a decisionmaking tool. The decision was made in August 1978 when the Secretary of Transportation approved expansion of the Washington, D.C., rail system to about 100 miles and terminated the alternatives analysis effort even though major cost estimate and patronage forecast deficiencies had not been corrected. (See pp. 22 to 25.)

CAPITAL GRANT PROCESS

UMTA's acceptance of a project sponsor's preferred alternative after an alternatives analysis study has been made does not legally obligate UMTA to grant funds for the project. Project sponsors are still required to apply to UMTA for a capital grant.

The rail capital grant application review and approval process for the projects which GAO reviewed seemed to be working reasonably well. UMTA took an average of 3 months to review and approve 17 rail grant and grant amendment applications for the 4 projects reviewed that received capital grants for rail. GAO believes 3 months is a reasonable time for approval review. (See p. 29.)

Two grantees expressed concern about the paperwork required for capital grant amendment applications, but GAO believes these requirements have not appreciably hindered the timeliness of grant application preparation, review, and approval. UMTA started a review of the entire grant delivery process in January 1979. A primary objective of the review will be to determine what paperwork can be eliminated. GAO supports such an effort. (See p. 32.)

RECOMMENDATIONS

The Secretary of Transportation should:

- Apply the September 1976 Federal policy on major urban mass transportation investments to all major projects unless specifically exempted by the policy.
- Make major mass transit investment decisions only after significant deficiencies noted in alternatives analysis studies have been corrected.

The Secretary should also direct the Administrator of the Urban Mass Transportation Administration, in addition to developing alternatives analysis guidance, to improve communication with all project sponsors by consistently

- monitoring progress of studies,
- providing prompt feedback to project officials, and
- requiring that all agreements and requirements are documented.

AGENCY COMMENTS

The Department of Transportation generally agreed with GAO's findings and conclusions and supported the recommendations. However, the Department believed GAO should have recognized management improvements which are being implemented, efforts made toward guidance development since 1976, and that some technical problems were created because project

sponsors lacked objectivity and did not use available planning tools in a professional manner. Further, the Department believed GAO should have concluded that while some projects may increase in costs as a result of the alternatives analysis requirement, generally the requirement is an effective cost-saving device.

GAO recognizes the management improvements being made by UMTA and believes they are positive efforts. However, they need to be implemented consistently for all projects. GAO also recognizes UMTA's efforts to develop guidance. However, in spite of these efforts, definitive guidance has not been provided and is not expected until October 1979, over 3 years after the Federal policy was issued. GAO agrees that some problems result from lack of objectivity by project sponsors but believes that guidance and other management improvements should minimize these problems.

GAO recognizes that although some projects may have increased in cost as a result of the alternatives analysis requirement, other projects have been reduced in scope, representing a cost savings. GAO believes the alternatives analysis process, if effectively managed and applied to all major projects, is a useful and constructive tool to identify cost-effective mass transit projects.

C o n t e n t s

		<u>Page</u>
DIGEST		i
CHAPTER		
1	INTRODUCTION	1
	Scope of review	3
2	APPLICATION OF ALTERNATIVES ANALYSIS REQUIREMENTS TO PREVIOUSLY PLANNED MASS TRANSIT PROJECTS	4
	Alternatives analysis studies required for proposed projects for which significant planning efforts had been completed	4
	Effect of alternatives analysis requirements on project imple- mentation and costs	5
	Conclusions	8
	Agency comments and our evaluation	9
3	THE FEDERAL PLANNING PROCESS FOR MAJOR MASS TRANSIT PROJECTS	10
	Management of the alternatives analysis process needs improvement	10
	Alternatives analysis decisions not consistent with Federal policy	20
	Exemption of projects from alternatives analysis require- ments damaged credibility of the process	21
	Project approved before signif- icant deficiencies in the alternatives analysis study were corrected	22
	Conclusions	25
	Recommendations	26
	Agency comments and our evaluation	27
4	ADMINISTRATION OF FEDERAL GRANT REQUIREMENTS FOR MAJOR MASS TRANSIT PROJECTS	29
	Timeliness of UMTA's capital grant application review and approval process seems reasonable	29

CHAPTER	<u>Page</u>
Degree of documentation required by UMTA for capital grant amendment applications questioned by grantees	32
Conclusions	33
 APPENDIX	
I Letter dated May 3, 1978, from Senator Charles McC. Mathias, Jr.	34
II Maryland Department of Transportation, Baltimore, Maryland, fixed-guideway project summary	35
III Niagara Frontier Transportation Authority, Buffalo, New York, light rail project summary	38
IV Regional Transportation District, Denver, Colorado, project summary	41
V City of Philadelphia, Pennsylvania, Frankford El rehabilitation project summary	44
VI Metropolitan Dade County, Miami, Florida, fixed-guideway project summary	46
VII Metropolitan Bus Authority, San Juan, Puerto Rico, project summary	49
VIII Washington Metropolitan Area Transit Authority, Washington, D.C., fixed-guideway project summary	52
IX Policy on Major Urban Mass Transportation Investments, Department of Transportation, and Urban Mass Transportation Administra- tion, September 22, 1976, 41 FR 41512	56
X Letter dated March 26, 1979, from the Assistant Secretary for Administration, Department of Transportation	60

ABBREVIATIONS

DOT	Department of Transportation
EIS	environmental impact statement
GAO	General Accounting Office
UMTA	Urban Mass Transportation Administration

CHAPTER 1

INTRODUCTION

Senator Charles McC. Mathias, Jr., expressed concern that the Urban Mass Transportation Administration's (UMTA's) administration of rail planning studies and capital grant applications has caused excessive project delays. He requested that we review UMTA's policy and procedures regarding locally proposed high cost fixed-rail projects and recommend ways to improve these procedures. (See app. I.)

UMTA, a component of the U.S. Department of Transportation (DOT), is the principal source of Federal financial assistance to help localities plan, develop, and improve mass transportation systems.

When the Congress passed the Urban Mass Transportation Act of 1964 (49 U.S.C. 1601 et seq.), which established a mass transportation program, a \$75 million annual budget was directed toward preserving transit service in selected cities by converting failing private transit companies to public ownership. By the mid-1970s, UMTA's budget had grown to over \$1 billion annually and was devoted primarily to modernizing existing systems and building new facilities. Nearly \$13.6 billion has been authorized for these activities for fiscal years 1979-82. Nearly two-thirds of the \$8.4 billion in capital grants awarded through fiscal year 1978 were for the construction, extension, or modernization of fixed-guideway systems (subway, surface, or elevated intra-city rail systems).

Federal funding authority for such investments is discretionary, so metropolitan areas must vie for available funds. Historically, demand for these funds has exceeded the supply. Due to the potential demand for its funds and concern about its ability to finance these projects, UMTA started requiring analyses of alternatives for planned fixed-guideway projects in 1974. In an April 30, 1974, memorandum on capital grant criteria, UMTA's Administrator advised the Secretary of Transportation that

"Now UMTA is faced with a situation in which it (1) "owes" nearly \$3 billion for the completion of projects it has become involved in by having committed funds for some part of a larger project during 1973 or earlier; (2) faces demand for at least \$17 billion for system upgrading and major expansions in

cities now operating rapid transit; (3) foresees project proposals exceeding \$15 billion for rail or PRT [personal rapid transit] systems or significant bus fleet expansions from cities in which local financing arrangements have already been completed or are under serious consideration; and (4) anticipates demand for about \$400 million per year for buses for at least the next few years."

After examining a number of allocation techniques, UMTA decided on a process-oriented approach designed to allow each urban area to take into account its own characteristics in the planning, design, and implementation of transit improvements. In August 1975, UMTA issued for review and comment a proposed statement of policy concerning decisions on major urban mass transportation investments, such as rail projects. After reviewing industry comments and making modifications to the draft policy, UMTA issued the final policy statement in September 1976.

Essentially, UMTA's policy requires that alternative investment strategies be considered to determine which investment within a 15-year time frame best serves the locality's transportation needs; promotes its social, economic, and urban development goals; and supports national transportation objectives. The preface to the policy points out that Federal financial support will be available only for those alternatives which the analysis has demonstrated to be cost effective, where effectiveness is measured by the degree to which the alternative achieves the above objectives. The policy includes the following principles:

- Major mass transportation investment proposals should be consistent with an urban area's comprehensive long-range plan.
- A planned fixed-guideway system should be proposed for incremental implementation.
- With regard to any corridors for which fixed-guideway projects have been proposed, an analysis of alternatives should be developed, including comparing each alternative's relative costs and effectiveness and developing a draft environmental impact statement (EIS).
- Plans for a fixed-guideway project include transportation system management actions to assure greater productivity of the proposed system and to improve

the quality of transportation service in other parts of the metropolitan area which will not be served by the fixed-guideway project.

When UMTA determines--after acceptance of an alternatives analysis, an environmental impact analysis, and preliminary engineering data--that a proposed project warrants Federal support, a formal letter of intent is issued to the locality.

UMTA's acceptance of a project sponsor's preferred alternative emerging from an alternatives analysis study does not legally obligate UMTA to grant funds for the project. The project sponsor must apply to UMTA for a capital grant to accomplish specific tasks related to the overall development and implementation of the project, including detailed engineering studies, right-of-way acquisition, construction, and acquisition of mass transit vehicles and other capital items. Award of a capital grant legally obligates UMTA to participate in funding the project according to the terms of the specific grant contract.

SCOPE OF REVIEW

Our review was conducted at UMTA headquarters, Washington, D.C.; its regional offices in Atlanta, Georgia; Denver, Colorado; New York, New York; and Philadelphia, Pennsylvania; the State transportation agencies in Colorado, Florida, Maryland, New York, and Puerto Rico; and local governments, planning agencies, and transit systems in the seven urban areas of Baltimore, Maryland; Buffalo, New York; Denver; Philadelphia; Miami, Florida; San Juan, Puerto Rico; and Washington, D.C. Brief summaries of the seven projects are presented in appendixes II to VIII. We reviewed the applicable Federal mass transportation laws and regulations for major urban mass transportation investments and rail capital grant applications and records and reports pertaining to the seven projects. We also interviewed DOT, UMTA, Federal Highway Administration, and State, and local transportation officials.

We have obtained oral and written comments from the Department of Transportation and, to the extent necessary, have included them in the report. DOT's written comments have been included as appendix X.

CHAPTER 2

APPLICATION OF ALTERNATIVES ANALYSIS REQUIREMENTS

TO PREVIOUSLY PLANNED MASS TRANSIT PROJECTS

Concerns have been expressed that UMTA's requirements, particularly its alternatives analysis planning requirements, were unnecessary in view of earlier locally conducted planning studies for some projects. As a result, it was believed the requirements were contributing to long delays in obtaining Federal capital grant funds to start rail project construction and that these delays caused higher construction costs primarily due to inflation.

ALTERNATIVES ANALYSIS STUDIES REQUIRED FOR PROPOSED PROJECTS FOR WHICH SIGNIFICANT PLANNING EFFORTS HAD BEEN COMPLETED

Early major mass transit project planning studies--some dating back over a decade or more--generally addressed only the development of rail systems. As such, they were not consistent with the key principles of UMTA's September 1976 policy because they usually did not study alternate transportation modes, and they did not plan for incremental implementation of the selected system. For these reasons and because UMTA was concerned about rapidly rising costs of rail projects and the limitations of its funding resources, UMTA required alternatives analysis studies even before it finalized its September 1976 policy.

Several project sponsors complained that alternatives analysis studies should not have been required for proposed fixed-guideway projects for which significant planning efforts had been completed. For example, although from September 1976 until May 1978 UMTA and Maryland transportation officials differed on their interpretations of what additional analysis was being requested, Maryland officials said that the northwest extension to Baltimore's rail project should have been exempted from additional analysis because (1) the extension was an integral part of a combined highway/transit project for which the EIS process had been completed and (2) preliminary engineering had been completed. These officials claimed an additional analysis would have delayed construction. UMTA exempted the northwest extension from additional analysis in May 1978.

In Buffalo, both local and New York State officials believed that because alternatives had been analyzed in

previous studies, UMTA's request for an analysis of alternatives was unnecessary. UMTA, however, did not find these earlier studies adequate to identify a cost-effective alternative. One study, completed in September 1971, had considered several versions of busway and fixed-guideway systems. That study recommended a 12.5-mile, \$277 million heavy rail system. Strong citizen opposition to the aerial portions (7.3 miles) and to the proposed alignment required a reevaluation of certain portions of the proposed project. The reevaluation was completed in 1974 and recommended an 11-mile, \$476 million heavy rail system. This significant cost increase prompted UMTA to request a comparison between the proposed heavy rail system and light rail and bus alternatives to be sure that the most cost-effective project was being pursued.

Washington, D.C.'s, rail project represents another example of local concerns about requirements for alternatives analysis studies for projects for which extensive studies already had been conducted. Local officials in Washington initially objected to UMTA's September 1976 request to complete an alternatives analysis study on certain unbuilt segments of the Washington system because they believed regional benefits had already been demonstrated and that a restudy would only increase the system's cost by delaying construction. UMTA had requested the analysis because (1) construction cost escalation had completely outstripped the original financing plan, (2) direct congressional funding had been largely exhausted and construction was continuing through the transfer of interstate highway funds, (3) local governments were seeking to continue construction and were trying to avoid cost-inflating delays but had no clear financial plan, and (4) political support for the project was weakening. Further, in its June 1976 report on DOT's fiscal year 1977 budget request, the House Appropriations Committee recommended that an alternatives analysis study be performed on selected unbuilt parts of the system.

EFFECT OF ALTERNATIVES ANALYSIS
REQUIREMENTS ON PROJECT
IMPLEMENTATION AND COSTS

The alternatives analysis requirements have had different impacts on project implementation and costs. Four of the projects we reviewed have received UMTA funding for rail projects. Officials of two of these projects--Baltimore and Washington--did not attribute any construction delays or cost increases to UMTA's alternatives analysis requirements. Officials for the other two projects--Buffalo and Miami--indicated that there was an adverse effect on project construction costs due primarily to inflation during delay.

Although UMTA did not exempt the northwest extension to Baltimore's rail project from further analysis until after many months of uncertainty regarding the extent of additional analysis required, a Maryland official said that there was no delay in starting construction. This was primarily because the State had experienced delays in resolving local funding problems and in environmental and historical preservation issues at the State and local levels. The official said that even if the decision to exclude the project from alternatives analysis requirements had been made immediately, the delay would have been the same.

Although the alternatives analysis study for the Washington, D.C., project has been completed and approved by the Department of Transportation, local officials are still working to develop sources of funds for the non-Federal share of the project cost. Further, local officials in Washington did not meet their original time frame for completing their alternatives analysis study and selecting a preferred system but did not attribute this delay to UMTA. The delay was due to a local desire for greater local involvement in the study process and other technical considerations, including the addition of alternatives to be evaluated by some corridor task forces.

Dade County officials told us that Miami's alternatives analysis study carried out from 1973 to 1975 was constructive and fulfilled alternatives analysis requirements subsequently published by UMTA. A Dade County official said the study enhanced the quality and timeliness of local decisionmaking and that the 20.5-mile initial segment ultimately approved by UMTA was probably superior to the 23.5-mile segment originally proposed by Miami.

However, county officials claimed that project opening will be delayed for about a year beyond the original scheduled opening and added about \$50 to \$60 million--1 year's worth of inflation--to the project cost because UMTA's December 1976 funding commitment was for only 16.5 miles and excluded the 4-mile Hialeah segment. A county official said that as a result of this decision, the county was not able to define precisely what the final system would look like. One reason in particular was that the county had originally planned to locate system yards and shops on the Hialeah segment and those facilities would have to be relocated if that segment was built. In addition, the county was not able to prepare a final draft EIS necessary to obtain Federal funding until the system design was resolved.

Following UMTA's decision, Dade County provided additional information to UMTA and in September 1977 proposed to pay 43 percent of the cost of the Hialeah segment (rather than the normal 20-percent non-Federal share). UMTA redefined its commitment and approved the entire 20.5-mile initial segment in December 1977.

An UMTA regional official told us that the delay probably did set back Dade County's construction schedules for 1 year and added about 1 year's worth of inflation to the project cost. He believed, however, that the delay and cost increase attributed to the delay was academic because UMTA did not have sufficient funds to commit to build the entire 20.5-mile initial segment.

In the Buffalo project, a local official believed that the alternatives analysis requirement increased the system's per mile cost. He explained that the \$476 million, 11-mile heavy rail system planned by Buffalo in 1974 before UMTA's alternatives analysis requirement was imposed would have cost about \$43 million per mile while the \$449 million, 6.4-mile light rail system approved by UMTA in 1976 as a result of the alternatives analysis study will cost about \$70 million per mile. He acknowledged, however, that the estimates for the light rail system were at a more advanced stage of design than the estimates for the heavy rail proposal had been. He also stated that he believed that two-thirds of the cost increase was the result of a projected 4-year delay in opening the system. (The 1974 heavy rail proposal was estimated for completion in 1980, while the 1976 light rail proposal is scheduled to begin operations in 1984.) He also pointed out that other factors contributing to this difference included an overly optimistic initial construction schedule and increased allowances for both construction insurance and contingencies in the light rail project.

In addition to Buffalo, the alternatives analysis process had resulted in rejection of higher cost rail projects in several other cities. For example, in Denver UMTA approved a less costly all-bus alternative rather than a locally proposed light rail alternative because the analysis showed that for the foreseeable future, an improved bus system would provide equivalent transportation service and attract the same number of riders for about one-third the cost of the proposed light rail alternative. Examples in other cities not included in our review are:

--Pittsburgh, where UMTA funded a light rail alternative because, while the benefits were the same

as for an advanced guideway transit system, the analysis showed that the combined forecasted capital and operating costs of the light rail alternative were substantially lower.

--Tampa Bay, Florida, and St. Louis, Missouri, where local officials in each city concluded after their analyses that an initially proposed rail project was not cost effective.

CONCLUSIONS

Complaints that UMTA should not have required alternatives analysis studies for projects for which extensive planning had been completed are understandable because local officials believed previous planning was sufficient. However, because of the nature of earlier planning studies, the increasing demands for available UMTA funds, and the magnitude and duration of major mass transit investments, UMTA must be able to assure itself that investments are as cost effective as possible. Thus, UMTA's request for an analysis of alternatives for these projects seems reasonable. Further, complaints that alternatives analysis studies should not be required for projects for which extensive planning has already been completed should diminish as more projects are conceived and planned under UMTA's long-range planning and alternatives analysis requirements.

Officials of several projects believed their projects had been delayed by alternatives analysis requirements and thus incurred additional costs due to inflation, while officials of other projects contended that their projects were not delayed and thus incurred no cost increases due to inflation. Several factors must be considered in attempting to assess the studies' impact on project implementation and cost. Project proposals often change as a result of the alternatives analysis studies. Further, the discipline of alternatives analysis may result in more accurate cost estimates, more realistic assumptions, greater levels of information, and analysis of a full range of alternatives.

When a project proposal is unchanged by alternatives analysis, the time required to do the analysis may result in increased project costs if the project sponsor has resolved all other issues and is ready to proceed with construction. If initial project proposals were consistently reaffirmed by alternatives analysis, the value of the analysis requirement would be suspect. However, in two of the projects

we reviewed, UMTA concluded that the alternatives analysis demonstrated that projects of more modest scope were more cost effective than the projects initially proposed. Further, UMTA officials pointed out several other projects where the analysis results caused local officials to abandon their initial proposals.

AGENCY COMMENTS AND OUR EVALUATION

The Department of Transportation, in a March 26, 1979, letter (see app. X) believed we should have concluded that while some projects may increase in cost as a result of the alternatives analysis requirement, in the aggregate, the requirement is an effective cost-savings device.

We recognize that although some projects may have increased in cost due to inflation as a result of the requirement, other projects have been reduced in scope, representing a cost savings. We believe the alternatives analysis process, if effectively managed and applied to all projects, is a useful and constructive tool to identify cost-effective mass transit projects.

CHAPTER 3
THE FEDERAL PLANNING PROCESS FOR
MAJOR MASS TRANSIT PROJECTS

Local officials generally reacted favorably toward the alternatives analysis concept. Officials of one project said the requirements institutionalized good planning practices that were necessary before undertaking a major transit project. Officials responsible for another project observed that the requirements were a valid and useful tool which theoretically could provide a basis for enhancing both Federal and State/local decisionmaking. These officials, however, as well as officials of the other projects reviewed, had a variety of complaints about UMTA's administration of the process. These complaints centered on two basic issues:

- Need to improve management of the alternatives analysis process.
- Need to administer the alternatives analysis process consistently, in accordance with the September 1976 policy.

MANAGEMENT OF THE ALTERNATIVES
ANALYSIS PROCESS NEEDS IMPROVEMENT

In managing the alternatives analysis process, UMTA took numerous exceptions to studies, experienced significant delays in its own decisionmaking process, created misunderstandings with local officials, caused confusion among project sponsors, and failed to reach a consensus on some basic issues. These problems developed primarily because:

- Written guidance is needed to help project sponsors develop alternatives analysis studies acceptable to UMTA.
- Better communication with project sponsors is needed.

Although UMTA has been requiring alternatives analysis studies since 1974, no written guidance on performing such studies had been prepared as of March 1979. The September 1976 policy statement "Major Urban Mass Transportation Investments" formalized the alternatives analysis process and included basic objectives and principles and basic procedures UMTA would normally follow. However, that statement did not include guidance on conducting alternatives analysis studies.

UMTA planning officials said they believe that UMTA could not reasonably have been expected to develop alternatives analysis guidance before the policy was issued. In March 1976--6 months before the policy was issued--UMTA showed proposed guidelines to a conference of transportation officials. According to UMTA officials these guidelines were not adopted, primarily because conferees had misgivings about the draft policy and declined to discuss the proposed guidance, preferring to focus on the draft policy. At a November 1977 conference, UMTA presented an alternatives analysis overview paper which discussed different approaches taken in past studies and raised a number of issues for discussion.

An UMTA planning official said UMTA has provided all cities that perform studies with published conference proceedings, exposure drafts, and a bibliography of completed studies. The official pointed out, however, that while these documents constituted a good source of information, they were not prescriptive. Consequently, local officials have had nothing to consult other than professional literature and some guidance-related materials UMTA produced but did not sanction.

A November 1978 internal UMTA memorandum indicated that UMTA and DOT's Transportation Systems Center were then developing guidance. This guidance has been tentatively set for issuance in October 1979. The same memorandum indicated that before the September 1976 policy statement was issued, UMTA considered developing such guidance as a companion document to the policy statement but chose not to do so because (1) the policy needed to be administered on a case-by-case basis for a while to minimize disruption to ongoing planning efforts and (2) first-hand experience with a number of analyses was essential to an understanding of how detailed the technical guidance could and should be.

In addition to not providing written guidance, UMTA did not effectively communicate with project sponsors during the alternatives analysis process. UMTA did not

- actively monitor study efforts to the degree necessary to identify key issues promptly,

- communicate necessary instructions promptly to project sponsors when it became aware of study deficiencies, or

- document key agreements and requirements.

UMTA planning officials acknowledged that UMTA's communications with project sponsors, particularly in the earlier studies, such as Buffalo, Denver, and Miami, were not as effective as they could have been.

Problems resulting from the lack of guidance and effective communication contributed to a perception by some project sponsors that UMTA was unable to reach internal agreements and that UMTA used the alternatives analysis process as a stalling tactic to delay applications for funds until it had sufficient resources.

Specifically, the lack of guidance and effective communication caused (1) misunderstandings between project sponsors and UMTA regarding the identification and resolution of study issues and (2) delays in UMTA's decision-making or in communicating decisions to project sponsors. Further, UMTA took exceptions to studies conducted by each of the projects we reviewed. As a result of these exceptions, applicants were generally required to revise certain portions of their studies or perform additional studies, resulting in additional time and planning costs and, in several instances, increases in ultimate project costs due to delays.

The exceptions taken by UMTA were of two types. The first consisted of problems with quantifiable assumptions used in the studies, such as discount rates to evaluate time-distributed costs and benefits, contingency rates for construction costs, target years used as decision points, reporting formats, and so forth. The second type of exceptions was related to faulty analysis; on a number of occasions UMTA contended that analyses were not on par with professionally accepted analysis practices.

The first type of exception could have been avoided had UMTA provided guidance on assumptions to be made or had closely monitored the studies while in process. UMTA officials believe that the other problems which developed would not have been prevented with guidance or improved communication, since nothing short of direct day-to-day involvement by UMTA in the conduct of the analysis could have prevented these types of problems.

An UMTA headquarters planning official also pointed out that studies are not always the quality products they should be and that project sponsors do not always do what they tell UMTA they will do. Further, he said there is always a possibility of local deception. He concluded that detailed specifications and increased monitoring should help but there is

no way to be absolutely certain that local analysts are properly completing their studies.

Problems which arose during alternatives analysis studies as a result of the lack of guidance and/or ineffective communication are illustrated in the following examples.

In Buffalo, UMTA did not notify the transit authority of the specific requirements that should have been met until after the alternatives analysis study was completed. In April 1975, UMTA took exception to Buffalo's January 1975 study because of (1) the lack of comparability of capital costs among the transit alternatives, (2) differences in capital cost contingency rates for different transit modes, (3) the failure to project operating costs and revenues for future years, and (4) the use of an unacceptably low discount rate to evaluate time-distributed costs and benefits. UMTA believed correction of these and other technical issues would require about 5 months' additional work. UMTA agreed to fund 80 percent of the additional cost. However, it took Buffalo 10 months to submit its refined study to UMTA.

Preparation of the EIS for Buffalo's light rail system also appeared to be hampered by a lack of UMTA guidance and monitoring. A Buffalo official said the statement had to be revised a number of times and that local officials had difficulty with UMTA staff in pinning down such basic items as format, size, and a review schedule. An UMTA planning official said that when the Buffalo's EIS was being developed, UMTA had no written guidance for EIS preparation and that UMTA deliberated as much as it did because it wanted to make special efforts to ensure that the Buffalo project's EIS was prepared and formatted in such a way that it could be used as a model for other projects.

Communication problems also existed between UMTA officials and officials involved with the Buffalo project. Both local and State officials said that UMTA seemed reluctant to document its requirements, answer letters, and return telephone calls. Because much of the communication was verbal, a local project official said Buffalo's transit authority was forced to prepare letters of "negative assurance" whereby the authority would write to UMTA and outline the authority's interpretation.

A Buffalo project official also believed there should have been a single point of contact designated within UMTA

at a high enough organizational level to guide project officials through the various requirements. An UMTA New York official told us that he was the designated UMTA point of contact for the Buffalo project and that all inquiries were to be channeled through him. This was confirmed by the Director of UMTA's Office of Planning Assistance. The Buffalo project official told us that the transit authority was never notified of this designation.

In Denver, UMTA had a number of problems with a June 1975 alternatives analysis study, including (1) questionable assumptions associated with travel-forecasting procedures used in the analysis, (2) failure to adequately consider transportation system management improvements to the existing transportation system, (3) need to document clearly the impacts each alternative would have on minority, low-income, elderly, and handicapped persons, (4) need to apply sensitivity tests to the 4-percent discount rate used in the analysis, (5) need to document the reasonableness of the assumed 30-percent contingency factor used in costing out all the alternative transit systems, and (6) failure to use a short-term time frame for developing the initial increment.

With regard to the last point above, in November 1974 Denver officials advised UMTA that they would consider major investment decisions at two points in time, 1985 and 2000. Subsequently however, Denver officials decided to consider only the year 2000 in its analysis. The study submitted to UMTA did not include a 1985 decision point, an omission to which UMTA took exception. A local official stated that after its November 1974 letter to UMTA, Denver project officials decided to include only the year 2000 decision point, but that the issue was discussed with UMTA officials before the study was submitted in June 1975. UMTA headquarters officials told us that UMTA never agreed to this and claimed that the decision was made unilaterally by Denver project officials despite UMTA's continued insistence that a 1985 decision point be included.

As a result of these issues, Denver officials spent an additional 3 months preparing information to respond to UMTA's problems before UMTA was ready to reach a decision on Denver's proposed system.

In Miami, UMTA took exceptions to Dade County's alternatives analysis study in October 1975 because (1) planning in the corridor and corridor segment levels as opposed to planning for the total system was inadequate, (2) the effects of income and auto ownership on patronage demand estimates

were not adequately considered, (3) the transportation system management strategies being considered needed better documentation and explanation, (4) methods used to determine the ranking of system segments to be constructed needed to be documented and discussed, and (5) solutions for interim transit improvements for the system segments with lower priority rankings needed to be discussed.

UMTA was concerned also with the methods and assumptions used to compute operating costs and revenues, because Dade County projected an operating surplus. This was contrary to the experience of all transit systems that operated rapid rail networks.

Finally, UMTA requested Dade County to revise a present value analysis of operating and capital costs to conform with a 1972 Office of Management and Budget circular. According to Dade County and UMTA officials, this change required Dade County to develop a new computer program to re-format the analysis without any effect on the outcome of the analysis. County officials provided the additional information to UMTA in about 2 weeks.

UMTA's review and approval of Dade County's alternatives analysis study also illustrates several examples of untimely feedback. Dade County's study consisted of eight milestones representing "building blocks" in the alternatives analysis process. The milestone reports were submitted to UMTA for its review and comment from September 1974 to May 1975. UMTA headquarters staff did not review the milestone reports until August 1975, 3 months after Dade County's final milestone report was submitted. The UMTA headquarters official who coordinated UMTA's review of the study could not explain why it took 3 months to begin the review even after the final report had been submitted. UMTA's planning staff completed its review and its recommendations were forwarded to the UMTA Administrator by November 1975. However, UMTA did not announce its decision to award a grant for engineering costs related to the first stage of construction of Miami's proposed rail system until March 1976. The UMTA official could not explain why it took 4 additional months to announce the decision.

The San Juan project also illustrates problems resulting from lack of guidance and communication, including the worst example of untimely feedback we encountered. San Juan submitted its study to UMTA in October 1976. UMTA staff completed its evaluation in early 1977. However, UMTA did not send its formal comments rejecting the study to the project

sponsor until April 1978, 18 months after the study was submitted for review.

UMTA was waiting for the Governor of the Commonwealth of Puerto Rico to provide a letter of support for the project because the Commonwealth was providing all of the non-Federal share of the project. However, UMTA never asked for such a letter. The Director of UMTA's Office of Planning Assistance told us that UMTA did not directly ask the Governor of Puerto Rico for a letter of support because UMTA did not want to risk provoking the San Juan project as an election issue. (The newly elected Governor, as former Mayor of San Juan, had not supported the rail project.) However, the planning office director said UMTA did informally indicate to Puerto Rico's congressional representative in Washington that an expression of local support could help San Juan's case.

Puerto Rico's Governor sent a letter to UMTA in December 1977 supporting the rail system. In a March 1978 internal memorandum, UMTA's Director of Planning Assistance wrote to the Administrator:

"Although the final report was submitted in October 1976 and our review was completed in early 1977, we have hesitated to submit our findings for final approval until we were more certain of the amount of local support for the project."

The Director indicated that since the Governor had indicated his support for the project, it was time for UMTA's review to be finalized.

UMTA's Director of Planning Assistance told us that several factors contributed to the 4-month delay between receipt of the Governor's letter of support and UMTA's response, including (1) UMTA was shorthanded and its priorities were elsewhere, (2) the Governor's support still appeared to be somewhat equivocal, and (3) there were no deep commitments from business, labor unions, and the legislature in Puerto Rico to support such a project.

In April 1978, UMTA informed the Commonwealth that because of technical deficiencies in the study report, the Commonwealth had not fully satisfied UMTA's alternatives analysis requirements and that there was insufficient information to justify the proposed system. UMTA (1) questioned patronage forecasts due to problems in planning assumptions and the modeling process, (2) indicated the need to verify

operating and capital costs estimates by comparing them with estimated project costs in other San Juan public works projects, (3) cited problems with San Juan's evaluation methodology including questionable usefulness of some of the benefits and the calculation of time savings, and (4) indicated the need for better justifications for the rejection of a light rail option and for the location of a maintenance facility.

As a result, in August 1978, the Commonwealth submitted for UMTA's approval a detailed work program and budget for the additional studies. The studies will include an environmental impact assessment and special policy analyses. Approximately 2 years will be required to conduct these studies, with an estimated budget of \$1,371,050.

The alternatives analysis process for proposed extensions to Baltimore's 8.5-mile rail segment now under construction provides several examples of problems resulting from lack of guidance and ineffective communication. UMTA's representatives met with Maryland Department of Transportation officials in April 1976 for a briefing on the extension study. Subsequently, the State modified the study in an attempt to reflect the proposed Federal guidelines on alternatives analysis. In July 1976 UMTA informed Maryland by letter of its conditional concurrence on the study design and advised the State that "understandings" reached during the April meeting were to be upheld. However, the July letter did not specify what these understandings were, an indication of ineffective documentation.

In September 1976, after issuance of UMTA's major investments policy, Maryland's Mass Transit Administration, a component of the State Department of Transportation, orally sought guidance from UMTA as to whether an alternatives analysis study would be required for the proposed northwest extension. This project involved a rail system extension in the median of the proposed northwest expressway highway project. The project had already undergone the environmental review process and was awaiting Federal Highway Administration/UMTA approval. The State was advised by an UMTA environmental specialist that an alternatives analysis study for the northwest extension would not be necessary because the EIS was in the final stages of approval.

UMTA met with Maryland transportation officials in April 1977 again to discuss the study, which had been completed but not yet sent to UMTA. An UMTA internal memorandum indicated that no information had been volunteered by

Maryland transportation officials for a number of months. During the meeting, UMTA officials learned to their surprise (an indication of ineffective monitoring) that (1) the study did not consider nonrail alternatives and (2) the northwest extension project was not being accounted for in the analysis. UMTA believed the northwest extension was being accounted for in the analysis, but Maryland transportation officials believed it had been exempted.

In May 1977, the State submitted its draft study to UMTA's Philadelphia regional office. Apparently, UMTA's regional personnel did not recognize it as such and did not realize they had the study until December 1977. UMTA did not inform Maryland officials until October 1977 that a further study of alternatives for the northwest extension would be required.

The 5-month period from May to October 1977 was characterized by an absence of effective communication. Maryland State transportation officials apparently were waiting for UMTA's comments on the draft study, and UMTA was waiting to receive the draft study it unknowingly had already received.

UMTA did not formally raise the issue of Maryland's failure to consider the nonrail issue with Maryland officials until a meeting held in February 1978, several weeks after the draft study had been reviewed by appropriate UMTA Washington personnel. At that meeting, Maryland transportation officials agreed to perform the additional work UMTA maintained was necessary. The State forwarded a proposed work program to UMTA in April 1978. UMTA discussed the proposed study with Maryland officials in May 1978, at which time UMTA staff personnel advised the officials that a formal, detailed alternatives analysis study of the northwest extension would not be necessary. However, UMTA requested information on patronage, costs, and impacts to be derived from a bus/rail evaluation being conducted in the northwest as well as in several other corridors.

According to a Maryland transportation official, the issue was finally put to rest by UMTA's Administrator in May 1978, when he stated that he was prepared to entertain a grant application for the northwest extension. This statement was in apparent conflict with the position then being maintained by UMTA headquarters planning staff personnel.

Although Maryland State officials had initially agreed to include the northwest extension in the planned bus/rail

study, they subsequently elected to delete it on the grounds that the UMTA Administrator's May 30 comments meant that no further analysis of the extension was necessary. UMTA planning staff personnel were uncertain as to what the Administrator meant, but it appeared to them that there was at least an informal commitment on the Administrator's part to proceed with the northwest extension. The staff believed the Administrator's comments implied that no additional analysis of the corridor would be necessary, and therefore they did not intend to question Maryland's decision to exclude the northwest corridor from the bus/rail evaluation. In November 1978, the State applied to UMTA for a capital grant to perform detailed design and engineering work on the northwest extension. The application was still pending in early April 1979.

Another illustration of UMTA's untimely feedback in the Baltimore project is reflected in a conflict over whether the selected transit corridors should be analyzed sequentially or concurrently. UMTA became aware in May 1977 of the State's intention to perform a series of independent alternatives analyses on several corridors in the order of priority established in the extension study. This approach was contrary to the concurrent analyses process specified by UMTA's September 1976 major investments policy. However, UMTA did not raise this issue with Maryland transportation officials until October 1977, and they did not discuss the issue in depth until the February 1978 meeting referred to above.

A common understanding of what UMTA required was reached through further discussion in May 1978 and confirmed by letter in July. In December 1978, the State sent a draft alternatives analysis study design to UMTA. The study design calls for simultaneous consideration of candidate investment corridors, consistent with UMTA policy.

A further example of a lack of effective communication between UMTA and a project sponsor is illustrated by Philadelphia's Frankford El rehabilitation project. From September 1977 until November 1978, UMTA and the city of Philadelphia struggled to define the appropriate nature and handling of

the "no action" alternative. 1/ Correspondence between the parties during the course of the study identified the issues but did not result in a clear mutual understanding as to how the issues should be resolved. As a result, Philadelphia performed its study assuming that a "no action/minimum rehabilitation" alternative was to be considered in developing the environmental impact statement but was not to be addressed as a potential investment option requiring full alternatives analysis consideration. This misunderstanding was reflected in the draft alternatives analysis/environmental impact statement submitted to UMTA in May 1978 for a preliminary review.

UMTA took issue with Philadelphia's failure to address the no action/minimum rehabilitation alternative as a bona fide investment option. UMTA also questioned the magnitude of this alternative's cost since it had increased substantially in relation to earlier estimates during the analysis. UMTA indicated these problems would require substantial revision to the document.

This breakdown in communication delayed completing the analysis and resulted in an additional study effort, which Philadelphia estimated would cost \$65,000.

ALTERNATIVES ANALYSIS DECISIONS NOT CONSISTENT WITH FEDERAL POLICY

Our review indicated two types of decisions regarding the alternatives analysis process where the DOT/UMTA rationale appeared to be questionable:

- Decisions to exempt projects or project segments from alternatives analysis requirements.
- Final decision on a project's worthiness before significant deficiencies with the alternatives analysis study were corrected.

1/The no action alternative is a baseline alternative, involving a minimum expenditure of funds, designed to preserve the existing level of transit service while reflecting future population growth and land use changes. The baseline alternative is to be described and analyzed at a sufficient level of detail to determine its effectiveness compared to alternatives requiring significant new investment.

Exemption of projects from alternatives analysis requirements damaged credibility of the process

The preface to the September 1976 policy statement points out that an analysis of transportation alternatives and filing a final environmental impact statement will be required as a condition of eligibility for Federal assistance for a major mass transportation investment. The policy excludes rehabilitation and modernization projects and projects determined by the Administrator to be of importance as a demonstration of advanced technology.

There were several instances where UMTA decided to exempt projects from alternatives analysis requirements although the September 1976 policy did not provide for such exemptions. In Detroit, UMTA made a major funding commitment before an alternatives analysis study was completed. In Baltimore and Washington, UMTA exempted major project increments from the process.

Exempting projects from alternatives analysis requirements helps explain why some project sponsor officials believe that the process is being used as a means of supporting predeterminations of funding commitments. Specific examples of projects exempted from alternatives analysis requirements are discussed below.

Although we did not review the Detroit project, officials of several projects we did review complained about the "Detroit situation." UMTA's policy was issued in September 1976, but the following month DOT conditionally committed \$600 million for transit improvements in Detroit before an alternatives analysis study was completed. The Secretary of Transportation noted that an alternatives analysis study for Detroit had not yet been completed (it was started in the spring of 1976) and it had not been determined whether the area would be served by a heavy rail system, a light rail system, buses on exclusive lanes, people movers, or some combination of these technologies. The Secretary said he was announcing the commitment of funds at that time because the Governor and Michigan Legislature had acted promptly to enact legislation to ensure State and local support of mass transit improvements for the Detroit area.

This particular incident appears to have severely damaged the credibility of the alternatives analysis process, particularly when contrasted to the experiences of Buffalo and Denver. UMTA had made decisions on projects

in both of those cities earlier in 1976 based on alternatives analysis studies and in both cases had approved projects less comprehensive than local officials had proposed. In its fiscal year 1978 budget submission, UMTA claimed that the alternatives analysis process was beginning to pay dividends, claiming the requirement had saved over \$600 million in the two cities by demonstrating that less expensive projects than those proposed by the two cities were the most cost effective.

UMTA also exempted major segments of both the Baltimore and Washington projects from alternatives analysis requirements. UMTA's exemption of Baltimore's proposed northwest extension was discussed on page 17.

In Washington, pursuant to congressional instructions, UMTA in September 1976 requested regional officials to complete an alternatives analysis study on certain unbuilt segments of the system. UMTA suggested the Franconia route (extending southwest from Alexandria, Va., into Fairfax County, Va.), the Branch Avenue route (extending southeast from Washington into Prince Georges County, Md.), and portions of the Glenmont route (extending north from Washington into Montgomery County, Md.) be examined under a full range of rail and nonrail alternatives which would include capital and operating costs, patronage, and system benefits. Regional officials insisted that no feasible alternatives to the Glenmont line existed but expressed a willingness to evaluate the line's design standards in an effort to reduce costs. The Secretary of Transportation noted that such a review should be an element of alternatives analysis, not a substitute for it, adding that the most important cost control issue was the assurance that the line was justified. Nonetheless, the Secretary later agreed to exempt the Glenmont route from the study and instead required only that an engineering analysis of it be undertaken. The analysis led to a significant design change and a \$19 million reduction in construction costs.

Project approved before significant deficiencies in the alternatives analysis study were corrected

When an alternatives analysis study is submitted, UMTA reviews it for technical acceptability; for conformance with understandings reached between UMTA and the project sponsor during the analysis on such items as scope, methodology, and assumptions; and to confirm that the professional judgments

made by the project sponsor or its consultants are reasonable. UMTA does not use a set of specific criteria to perform this technical evaluation. According to UMTA headquarters planning staff, the evaluation is based on staff experience and available reference information. UMTA headquarters planning officials told us that UMTA's planned technical guidance (discussed on p. 11) will include "reasonability data criteria." This data will inform local officials of what the range of impacts is likely to be (based on historical data), as a consequence of specified transit improvements. The technical guidance will also require substantiation whenever forecasted impacts are significantly different from the probable range of impacts.

UMTA assesses worthiness of locally proposed projects primarily through intracity and intercity comparisons. For the intracity assessment, UMTA compares the locality's selected alternative with other alternatives studied. For the intercity assessment, UMTA compares information from the project with actual and proposed investments in other cities.

UMTA headquarters planning officials told us that during the technical cost-effectiveness review, UMTA evaluates key factors including patronage forecasts, capital costs, operating costs, urban revitalization, service to the disadvantaged, and air pollution. As the assessment progresses, UMTA usually focuses on three factors--patronage forecasts, capital costs, and operating costs.

Upon completing the review of the study and the preferred alternative, UMTA staff prepares a summary of its evaluation and recommendations. This summary is then considered by UMTA and DOT top management, usually in consultation with the Office of Management and Budget and the Executive Office of the President, to decide whether a funding commitment is to be made.

During our review, we found a significant example-- Washington, D.C.--where the decision to approve a proposed project was made before significant deficiencies and problems were corrected. The deficiencies involved cost estimates and patronage forecasts, two of the most critical factors in determining the cost-effectiveness of various alternatives.

The preface to UMTA's September 1976 policy on major urban mass transportation investments points out that a careful and systematic evaluation of the implications of alternative courses of action in advance of a Federal commitment should improve the quality of investment decisions

and that Federal support will be available only for those alternatives which the analysis has demonstrated to be cost effective. If the Department of Transportation and UMTA make these major investment decisions before significant deficiencies in alternatives analysis studies are corrected, particularly deficiencies in cost estimates and patronage forecasts, UMTA cannot be sure that the most cost-effective alternative is selected. If this cannot be assured, the usefulness of the alternatives analysis process as a major mass transit investment decisionmaking tool is diminished.

For an August 1978 meeting with local officials on the draft financial plan, UMTA prepared a summary briefing paper on financing issues of the Washington project for the Secretary of Transportation. The paper identified a number of significant technical defects with the Washington project alternatives analysis study which "prevent it from being an effective decisionmaking document" according to the Department's Assistant Secretary of Policy and International Affairs.

One problem UMTA cited was that forecasted patronage levels for all alternatives were higher than could be reasonably expected, given existing performance by rail systems in Washington, D.C., and other cities. Another problem was that the rail operating cost estimates used in the analysis proved to be low and were later--after regional officials' system selection--adjusted upward for the financial plan. UMTA believed these revised estimates were still low perhaps by more than 30 percent. Finally, bus operating costs were overestimated, according to UMTA. The issue paper concluded that had these problems been rectified in the alternatives analysis study, many of the segments comprising the adopted system would have been shown to be poor investments.

In its briefing paper to the Secretary, UMTA noted that (1) the primary concern in developing the Washington transit authority's construction schedule appeared to have been an early construction commitment to the outer suburbs and (2) the DOT objective of building the most cost-effective segments first was not reflected in the authority's proposal. One of the specific requirements in UMTA's September 1976 policy was that a fixed-guideway system should be planned for incremental implementation. Further, a DOT/UMTA March 1978 statement of policy toward rail transit reiterated the incremental development requirement and also indicated that preference would be given to initial rail segments serving densely populated central portions of metropolitan areas. This policy reflects the goal of focusing Federal transit investments on projects with the greatest potential payoff

in terms of ridership, congestion relief, help to transit dependents, and positive real estate development and revitalization impact. On that basis, UMTA thought that the inner portions of the adopted system should have the highest priority, while the lowest priority should be given to the outermost segments.

UMTA pointed out that in this regard, there was a sharp conflict between the Federal objective of cost-effectiveness and the local objective of preserving the regional compact through the distribution of rail facilities among the jurisdictions. Specifically, UMTA pointed out that the outer segments of the two lines extending into Virginia which were given priority in the authority's construction schedule were at least two to three times worse from a cost-effectiveness standpoint than were the postponed inner segments of the city routes. Furthermore, it was pointed out that the outer segments of the two Virginia lines would be among the least cost effective that DOT had funded.

After meetings on the draft financial plan with DOT, the White House, the Office of Management and Budget, and congressional committees, the authority proposed its financial plan late in August 1978 to finance rail construction and long-range operation of the bus and rail network. Notwithstanding the main concerns raised by UMTA in its summary issue paper, the Secretary, in commenting on the plan, said that the alternatives analysis procedures for future routes was finished and that he agreed with the goal of completing a 100-mile system.

CONCLUSIONS

Although local officials have generally accepted the alternatives analysis concept, they have expressed dissatisfaction with UMTA's implementation of the process. This dissatisfaction resulted from the lack of guidance and UMTA's ineffective communication. Further, local officials questioned the credibility of the process because of several questionable alternatives analysis decisions made by the Department of Transportation.

Even though UMTA had been requiring alternatives analysis studies on major projects since 1974, it has not developed written guidance to help project sponsors develop studies acceptable to UMTA. UMTA's September 1976 "Policy on Major Urban Mass Transportation Investments" and its March 1978 "Policy Toward Rail Transit" formalized the process and defined certain principles and procedures which UMTA would normally follow. UMTA planning officials believe that UMTA

could not reasonably have been expected to develop alternatives analysis guidance before the policy was issued. Lacking guidance, UMTA should have effectively communicated with project sponsors through documentation, monitoring, and timely feedback. Further, UMTA does not plan to provide definitive written guidance until October 1979, over 3 years after UMTA's policy on major mass transit investments was issued.

As a result of the lack of guidance and effective communication, project sponsors have conducted studies inconsistent with what UMTA wanted. UMTA has taken many exceptions to various studies, requiring project sponsors to redo or revise studies or conduct additional study efforts. Lack of documented agreements resulted in misunderstandings regarding the identification and resolution of various issues. Lack of monitoring resulted in UMTA not determining at an early date that a project sponsor's efforts were not going to satisfy UMTA. UMTA's failure to provide timely feedback on project sponsors' requests for guidance, interim submissions, or final reports caused frustration for project sponsors and often required them to conduct additional study efforts.

Although written guidance probably would not have eliminated all these problems, such guidance and effective communication would have expedited and simplified the process. Guidance on certain quantifiable items, such as discount rates, contingency rates, target years, and reporting formats, as well as a compilation of examples of "problem issues" on which UMTA has taken positions in early alternatives analysis study efforts should have been communicated to all project sponsors.

Decisions to exempt some projects from alternatives analysis requirements have damaged the credibility of the process as a decisionmaking tool. This has caused representatives of some project sponsors to perceive that UMTA uses the alternatives analysis process as a political tool rather than a technical tool.

Finally, UMTA investment decisions based on alternatives analysis studies for which significant deficiencies have not been corrected raise questions about how seriously the Department of Transportation and UMTA view the alternatives analysis process as a major mass transit investment decisionmaking tool.

RECOMMENDATIONS

We recommend that the Secretary of Transportation:

- Apply the DOT/UMTA policy on major urban mass transportation investments to all major projects unless specifically exempted by the policy.

--Make major mass transit investment decisions only after significant deficiencies with alternatives analysis studies are corrected.

We also recommend that the Secretary of Transportation direct UMTA's Administrator, in addition to issuing alternatives analysis guidance, to improve communication with all project sponsors by consistently (1) monitoring progress of studies, (2) providing prompt feedback to project officials, and (3) requiring that all agreements and requirements are documented.

AGENCY COMMENTS AND OUR EVALUATION

In a March 26, 1979, letter (see app. X), the Department of Transportation agreed with our findings and conclusions and supported our recommendations. However, it had several specific objections which are discussed below.

DOT believed the report did not recognize management improvements which UMTA has instituted over the past 2 years. DOT indicated these management improvements include UMTA concurrence in the scope of the analysis, formal review and approval of proposed analysis methodologies, concurrence in the alternatives to be studied, monitoring work in progress, and use of formalized milestones for interim product reviews.

UMTA planning officials explained that, with a few exceptions, UMTA has applied these management techniques to analyses started since early 1977 when its Analysis Division was created. We reviewed agency documentation for three projects which UMTA indicated had benefited from these management improvements and found evidence of UMTA concurrences with local study plans and improved monitoring and communication.

However, for the projects we reviewed, we noted instances of untimely feedback and failure to identify and react quickly to problems with ongoing studies well into 1978. Examples include the 18-month delay in responding to the San Juan study, the disagreements between UMTA and the State of Maryland over the extent of additional study required for the proposed northwest extension to Baltimore's rail project, and the year-long period of confusion between UMTA and the city of Philadelphia regarding the appropriate nature and handling of the no action alternative for the Frankford El project.

Even so, we believe the management improvements cited by DOT are positive efforts and, if uniformly applied in conjunction with the proposed guidance issuance, should

eliminate or at least mitigate the kinds of problems we noted in our review.

DOT also pointed out in its comments that it believed a number of technical problems were created because project sponsors lacked objectivity and did not use available planning tools in a professionally acceptable manner. DOT believed we should have recognized the advocacy role of project sponsors. It pointed out that this role has given rise to overoptimistic ridership and revenue forecasts, underestimated costs, and unrealistic assumptions of a non-quantifiable nature. DOT also believed that the report should have acknowledged that such problems are difficult, if not impossible, to ferret out before the analysis is completed.

We recognize the advocacy roles of project sponsors and the resulting problems with various estimates, forecasts, and assumptions. However, we believe that appropriate guidance, prestudy concurrence, and improved monitoring should minimize the extent to which many of these problems develop.

Finally, DOT believed that our report implied that UMTA's guidance effort began recently and that before this effort UMTA had done little, if anything, toward that end. DOT cited efforts toward guidance development since 1976. We have recognized these efforts in the report.

In spite of these efforts, however, UMTA has not provided definitive guidance to project sponsors and now plans to issue guidance in October 1979, over 3 years after the policy was issued.

CHAPTER 4

ADMINISTRATION OF FEDERAL GRANT REQUIREMENTS

FOR MAJOR MASS TRANSIT PROJECTS

UMTA's acceptance of a project sponsor's preferred alternative emerging from an alternatives analysis study does not legally obligate UMTA to grant funds for the project. The project sponsor must apply to UMTA for a capital grant to accomplish specific tasks related to the overall development and implementation of the project, including detailed engineering studies, right-of-way acquisition, construction, and acquisition of rolling stock and other capital items. Award of a capital grant legally obligates UMTA to participate in funding the project according to the terms of the specific grant contract.

Four of the projects we reviewed--the Buffalo light rail project, and the Baltimore, Miami, and Washington heavy rail projects--have received capital grants for fixed-guideway projects.

Officials of these projects generally had no serious complaints about UMTA's capital grant process. However, two grantees questioned the need for the extent of documentation required for capital grant amendments, and one grantee complained about the timeliness of UMTA's capital grant review and approval process.

TIMELINESS OF UMTA'S CAPITAL GRANT APPLICATION REVIEW AND APPROVAL PROCESS SEEMS REASONABLE

The capital grant application review and approval process seems to be working reasonably well. UMTA took an average of about 3 months to review and approve 17 rail grant and grant amendment applications submitted for the four projects reviewed that received capital grants for rail.

For all capital grants, a variety of statutory and administrative requirements must be met, including successful completion of all requirements relating to planning, environmental protection, public hearings, assurance of appropriate use of project improvements, employee protection, civil rights, special needs of elderly and handicapped persons, and historic preservation.

Upon receipt of a capital grant application, an UMTA transportation representative assigned to work directly with the applicant reviews the application to identify items needing clarification, additional explanation, or further justification. The transportation representative also coordinates with UMTA's Office of Planning to verify that the applicant has met all planning requirements. If necessary, the transportation representative then requests additional information from the applicant.

After the transportation representative is satisfied that the application is acceptable, he prepares an approval memorandum. He then coordinates the application with UMTA's Offices of Civil Rights, Chief Counsel, and Administration. The application and approval memorandum are forwarded to the Associate Administrator for Transit Assistance and the Administrator for approval. Upon approval, a formal announcement is made.

An UMTA transit assistance official explained that two factors account for the time required to process a rail grant: (1) the time required for UMTA to process a grant application through the various UMTA offices which have review responsibilities and (2) the time needed by an applicant to provide UMTA with additional information, when required.

The experiences of the Baltimore, Buffalo, and Washington projects in getting their rail capital grant applications approved have been similar, although their perceptions have differed. At the time of our field work in September 1978, Miami had just received the first rail grant for which it had applied after UMTA made its December 1976 commitment. Through March 1979, UMTA had approved two additional grants for the Miami project.

An official of Buffalo's transportation authority believed that UMTA's review of the authority's capital grant application for the first-year construction was not timely. The official said the application was submitted to UMTA in May 1978 and was not approved by UMTA until September 1978, even though the authority told UMTA that approval was needed by August 1 in order for contracts to be met on a timely basis.

An UMTA official in the Office of Transit Assistance said UMTA did its best to approve the grant on a timely basis but several problems had to be resolved before it could approve the grant, including a civil rights compliance problem, a claim by local utilities that the authority would not pay for utility line restoration, and a possible

environmental problem. An UMTA regional official told us that the authority's May 1978 capital grant application may have been "lost in the shuffle" for a time when UMTA program operations were decentralized in June 1978. In addition, the official said the UMTA regional office was not able to review the authority's civil rights submission immediately, because the UMTA region did not hire a person qualified to perform such a review until June 1978. However, UMTA approved the application in about 4 months, generally consistent with the time required by UMTA to approve other rail grant applications.

Maryland's Mass Transit Administration has submitted seven applications--the initial grant and six amendments--for UMTA funding for design and construction of the first segment of the Baltimore rail system from 1972 through 1978. These seven grants totaled \$435.7 million, and UMTA's review averaged less than 3 months. A Maryland Mass Transit Administration official said that agency has had no significant complaints about the timeliness of UMTA's processing and approval of Baltimore rail grant applications.

Because of the unique history of the Washington, D.C., system, a special Washington Metropolitan Area Transit Authority program team has been established in UMTA's Office of Transit Assistance. The team serves as the focal point in processing the authority's grant applications and in monitoring project execution.

Since September 1975, six rail construction grant applications totaling approximately \$1 billion have been submitted and approved. These grant applications were under review for an average of 3.5 months before approval. One grant application was not approved for 10 months, but this application was not given immediate attention by UMTA since contracts to be financed by it did not require immediate funding action. UMTA gave priority attention instead, at the authority's request, to reviewing other rail and bus grant applications by the authority where the funding was critical.

Authority officials viewed UMTA's rail grant application procedures as reasonable and could not point out specific processing steps which could be improved or eliminated.

In the past, the press and various elected officials have reported various cost delays to the rail system. The source of such information has been the authority's weekly staff report to the board of directors. The report identifies critical decision dates associated with the approved construction schedule and the decisionmakers--i.e., UMTA,

the States of Maryland and Virginia, the authority, and local jurisdictions. At times, the releases identified UMTA as the party responsible for the delay. However, authority officials said that UMTA has not been totally responsible for any delay and that the local jurisdictions have usually contributed the most to such delays. Further, they could not identify any costs specifically related to UMTA delays.

DEGREE OF DOCUMENTATION REQUIRED BY
UMTA FOR CAPITAL GRANT AMENDMENT
APPLICATIONS QUESTIONED BY GRANTEES

Two grantees expressed concern about the extent of paperwork required for capital grant amendment applications, but we believe these requirements have not been a major hindrance to timeliness of grant application preparation, review, and approval.

UMTA generally awards funds to reflect what the grantee needs in the current fiscal year. Thus, for a project which requires several years to complete, UMTA awards an initial grant to pay for that portion of the project the grantee plans to commit funds to during the year and awards subsequent grants--grant amendments--during following years to expand the authorized share of the cost. For example, from October 1972 through September 1978, UMTA had awarded an initial grant and six amendments for Baltimore's 8.5-mile rail transit system.

Both Baltimore and Miami project officials questioned the extent of documentation required by UMTA for capital grant amendment applications.

A Maryland transportation official observed that the grant amendment application and approval process could be expedited if UMTA did not require resubmission of all supporting exhibits accompanying grant amendment applications. He also believed unchanged exhibits could be incorporated by reference.

Dade County, Florida, officials also believed that the grant amendment application process is unnecessarily voluminous. The officials contend that the amendment process is in fact a local government request for funds for a project UMTA has already approved and earmarked money for. Therefore, in the opinion of Dade County officials, the amendment application should be limited to the project budget and the project justification.

An UMTA official told us that UMTA is trying informally to eliminate, to the extent possible, duplicate submissions of supporting exhibits, legal opinions, and so forth for rail capital grant amendments. An UMTA management systems official told us that in January 1979, UMTA started a review of the entire grant delivery process. A primary objective of this review will be to determine what paperwork presently required can be eliminated.

CONCLUSIONS

UMTA's grant application review and approval process seemed to be timely for rail grants and grant amendments received by grantees included in our review. UMTA took an average of about 3 months to review and approve 17 rail grants and grant amendments received by these grantees. This 3-month time frame appears reasonable. Project starts can be delayed of course if the applicant is otherwise ready to proceed except for UMTA's approval. This apparently was the case in Buffalo's rail grant application. While the application was not approved as quickly as Buffalo officials had hoped, UMTA did approve the grant in about 4 months, generally consistent with the time required to approve other rail grant applications, even though several major issues had to be resolved before the application could be approved.

Although several grantees expressed concern about grant amendment application documentation requirements, these requirements are not a major hindrance to timeliness of preparation, review, and approval. Nevertheless, duplication exists, which results in additional paperwork for the grantee. We support UMTA's planned efforts to eliminate the unnecessary paperwork.

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JAMES R. CALLOWAY
 CHIEF COUNSEL AND STAFF DIRECTOR

United States Senate

COMMITTEE ON APPROPRIATIONS
 WASHINGTON, D.C. 20510

May 3, 1978

The Honorable Elmer Staats
 Comptroller
 General Accounting Office
 Washington, D. C. 20548

Dear Mr. Staats:

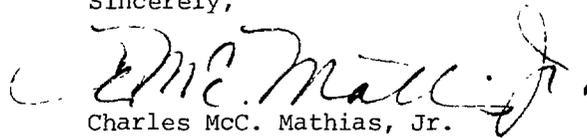
As you know, the Administration has made a commitment to reduce the amount of paper work and red tape associated with Federal programs. As a member of the Appropriations Subcommittee on Transportation, I have been concerned with the time lag between the initial application for Federal assistance and the final disposition of that application by the appropriate Federal agency.

It has come to the Committee's attention that the Urban Mass Transportation Administration (UMTA) has experienced excessive delays in those instances where fixed route, capital intensive programs such as rail transit have been proposed. Based on these observations, I request that GAO undertake an audit of the administrative procedures employed by UMTA in its Section 3 grant and Interstate Highway Transfer approval process and recommend ways to improve these procedures.

I recommend that GAO review several case histories representing fixed rail applications to determine whether such applications have been handled in an expeditious manner by UMTA. Such case study should include the Metro system in Washington, D. C., where studies and re-analysis have resulted in cost escalations of millions of dollars.

Your staff may contact the Subcommittee staff to work out an appropriate scope of the study and expected completion dates.

Sincerely,



Charles McC. Mathias, Jr.
 United States Senator

CM:dlw

MARYLAND DEPARTMENT OF TRANSPORTATIONBALTIMORE, MARYLAND, FIXED-GUIDEWAYPROJECT SUMMARYPROJECT AREA DESCRIPTION

The Baltimore, Maryland, metropolitan area, consisting of Baltimore City and the surrounding counties of Anne Arundel, Baltimore, Carroll, Harford, and Howard, had a population of 2.07 million in 1970. It is the 11th largest metropolitan area in the Nation.

Mass transit service in the Baltimore area has consisted almost exclusively of the Maryland Mass Transit Administration's 45-line bus system and limited Washington-oriented commuter rail service.

In the past 25 years, the area has experienced substantial population growth which is expected to continue but at a reduced rate. A Maryland Department of Transportation study showed that the amount of travel within the region is also growing. Automobile travel is increasing at a high rate and will result in increased congestion unless new transportation facilities are constructed. Local planners view fixed-guideway facilities as the solution to Baltimore's transit needs.

PROJECT STATUS AND PLANS

An extensive rail transit system is planned by the Maryland Department of Transportation for the Baltimore metropolitan area. An 8.5-mile heavy rail segment, currently under construction from downtown Baltimore northwest to the Baltimore city line, is scheduled for completion in June 1982. Three additional projects are proposed for the system in the near future:

- A 5.5-mile northwest extension to the line now under construction (estimated capital cost: \$99 million 1/).

1/1974 dollars.

--A 16-mile rail line extending northward from downtown Baltimore (estimated capital cost: \$149 to \$156 million 1/).

--A 9-mile rail line southward from downtown Baltimore (estimated capital cost: \$325 to \$334 million 1/).

These lines have been the subject of a \$1.8 million UMTA-funded planning study by the Maryland Department of Transportation of possible additions to the Baltimore rail transit system.

Planning is substantially complete for the northwest extension which will occupy the median of the proposed northwest expressway (relocated U.S. 140). The north and south lines are undergoing alternatives analysis as required by UMTA's major investments policy.

PROJECT EVOLUTION

The Baltimore rail rapid transit system had its origin in a 1965 plan prepared for the Metropolitan Transit Authority 2/ which recommended a long-range regional transit system consisting of six transit lines radiating outward from an inner city loop. Subsequent feasibility studies resulted in a 1968 recommendation of a similar long-range, six-corridor system without the downtown loop. Recommended for immediate implementation was a 28-mile system consisting of two rail lines radiating to the northwest and south from downtown Baltimore.

The Mass Transit Administration applied for a design and construction grant in July 1972; UMTA approved this initial grant in October 1972. At that time, total project costs for the 28-mile system were estimated at \$656 million. As better engineering data became available, the estimated costs were revised to \$1.3 billion in early 1975.

The rapidly escalating costs led to an UMTA decision in June 1975 to limit total Federal funding in the initial system segment to \$573 million. As a result of the limitation on Federal funding, Maryland transportation officials were forced

1/1974 dollars.

2/Now the Mass Transit Administration, an arm of the Maryland Department of Transportation.

to reevaluate the project. Later that year, the Maryland Department of Transportation decided to limit the initial effort to an 8.5-mile, \$721.4 million heavy rail segment extending from downtown Baltimore northwest to the city line. The remainder of the northwest and south lines were deferred. Construction on the 8.5-mile downtown segment began in December 1976, and is expected to be completed in June 1982.

NIAGARA FRONTIER TRANSPORTATION AUTHORITYBUFFALO, NEW YORK, LIGHT RAIL PROJECT SUMMARYPROJECT AREA DESCRIPTION

Buffalo, New York, is located at the eastern end of Lake Erie, near Niagara Falls, on the boundary between Canada and the United States. The metropolitan area (Erie and Niagara Counties) is 1,587 square miles and had a 1970 population of 1.3 million, with a population density of 11,205 persons per square mile in the city of Buffalo.

The area's publicly owned transit operator, the Niagara Frontier Transportation Authority, provides local bus service in the cities of Buffalo, Niagara Falls, Tonawanda, North Tonawanda, and Lockport and suburban and express service in the adjoining suburban areas. Ridership during 1977 was 43 million and has been stable during the past 3 years.

PROJECT STATUS AND PLANS

In September 1978, UMTA approved a \$50 million grant to finance construction of a section of a light rail project. UMTA also announced a revised \$359,840,000 maximum Federal funding commitment to build the rail line from downtown Buffalo to the south campus of the State University.

The light rail line is located generally along the alignment of Main Street, a major traffic artery which proceeds in a north-northeasterly direction from the Buffalo central business district. It will consist of a 1.2-mile surface section and a 5.2-mile subway section. Revenue operation is scheduled to begin in May 1984.

PROJECT EVOLUTION

Development of the light rail project followed years of study and planning. In March 1969, the New York State Office of Planning Coordination completed the Buffalo-Amherst Corridor Urban Impact Study, recommending that the Niagara Frontier Transportation Authority investigate the feasibility of a rapid transit line as the spine of future development in the corridor. The authority completed a study in September 1971 that was partially funded by UMTA

and the New York State Department of Transportation. One of the study's recommendations was that the authority design, construct, and operate a 12.5-mile rail rapid transit line in the Buffalo-Amherst corridor, with most of the line above ground. Design and construction cost was estimated at \$277 million, and the New York State Legislature appropriated \$86 million for this and other activities. After a draft environmental impact assessment was issued in November 1971, citizen opposition to certain portions of the proposed line necessitated a reevaluation of the project.

In June 1974, the authority published a new environmental impact assessment funded by UMTA and New York State as part of first-year preliminary design activity for the proposed rail line. This assessment recommended an 11-mile heavy rail transit system, with more of the line placed underground. As a result of nationwide escalation in construction costs and the need to place more of the alignment underground to meet the community's social and environmental requirements, the construction cost of the 11-mile line escalated to \$476 million. The revised estimate prompted UMTA in May 1974 to request a reanalysis of mass transit alternatives to compare the proposed 11-mile heavy rail system with bus and light rail transit alternatives to ensure that the most cost-effective project was being pursued.

The alternatives analysis study was completed in January 1975. It concluded that when all transportation and community benefits were considered, the 11-mile heavy rail alternative emerged as the best among six major transit alternatives that had been defined and analyzed from a cost-effectiveness standpoint. UMTA, however, believed that the cost/benefit ratios reported in the study were biased in favor of heavy rail. In April 1975, it requested that the authority provide an "alternatives refinement study" to adequately evaluate the Buffalo proposals.

The alternatives refinement report was submitted to UMTA in February 1976. The authority also submitted a report outlining its conclusions and recommendations for a 6.4-mile light rail system in Buffalo as the initial increment of a larger rail transit system to provide Erie and Niagara counties with eventually improved public transit service.

Design and construction cost was estimated at \$336 million. In June 1976, the U.S. Secretary of Transportation announced a "commitment in principle" to provide up to \$269 million for the Buffalo 6.4-mile light rail project, subject to satisfaction of the necessary legal and environmental clearances. All local matching funds for construction of the system will be provided by the State of New York.

In October 1976, UMTA approved a Niagara Frontier Transportation Authority grant application for \$8 million of a \$10 million budget to finance an environmental impact statement and general engineering and design activities for the light rail project. The environmental impact process was satisfactorily completed in January 1978.

In May 1978, the authority submitted a \$340 million capital grant application to UMTA to design, construct, and equip the Buffalo light rail project. Total project cost was then estimated at \$425 million. This increase from the originally estimated \$336 million was based on more substantial investigations and a refinement of project design criteria and general plans, which resulted in engineering, scheduling, and other changes that increased the project's cost. A further cost increase to \$439.8 million occurred when the authority revised its project schedule and budget, after submitting the capital grant application, to conform with the availability of UMTA funds. In September 1978, UMTA approved a \$50 million grant to the authority and agreed to increase Federal funding to a maximum of \$359,840,000, subject to the availability of future funds.

REGIONAL TRANSPORTATION DISTRICTDENVER, COLORADO, PROJECT SUMMARYPROJECT AREA DESCRIPTION

The population of the Denver metropolitan area was about 1,228,000 in 1970 and is expected to double by the year 2000. The 1970 population density was 335 persons per square mile in the metropolitan area and 5,406 in the central city. The land area was 3,660 square miles, of which about 293 were urban and 95 were in the central city.

The Regional Transportation District is an independent political subdivision of the State of Colorado created by statute in 1969 to develop, maintain, and operate a transportation system for a six-county region which includes the Denver urban area. Since early 1974, the district has operated a bus system. The district also performs transportation planning in coordination with the Denver Regional Council of Governments and the Colorado Department of Highways.

PROJECT STATUS AND PLANS

Since July 1976, just after UMTA rejected its proposed light rail project, the district has worked on transportation systems management actions to improve operating efficiency and management in the short term. The district has also been involved in long-range planning which includes fleet modernization and expansion, maintenance and storage facilities, and development of vital transit centers and corridors. The 1979-1983 Transit Development Program, projected \$221.8 million for capital expenditures, of which \$162.5 million was expected to be obtained from Federal funds.

PROJECT EVOLUTION

The U.S. Department of Transportation discussed a rapid transit demonstration project with the district in mid-1970. In October 1972, Transportation Secretary Volpe announced the Department's decision to go ahead with a 100-percent federally funded personal rapid transit demonstration project in downtown Denver. The initial Federal investment was to be about \$11 million.

Secretary of Transportation Brinegar announced in July 1973 that it would not be prudent to expend research and

development funds on a personal rapid transit demonstration project. Instead, the Department intended to proceed with personal rapid transit development at a test location. The Secretary directed Denver representatives to perform a complete analysis of alternatives and more detailed planning for the personal rapid transit system.

Also in July 1973, the district's board of directors adopted a comprehensive plan for the development, maintenance, and operation of a multimodal mass transportation system.

In September 1973, local voters authorized the district to issue up to \$425 million in revenue bonds and a one-half-percent sales tax to develop an integrated, multimodal public transit system. Proceeds from these sources were projected to fund one-third of the estimated capital cost of developing the integrated transit system over a 10-year period. Proceeds from the sales tax were to be applied first to payment of debt service on the bonds but could also be used for capital improvements and capital equipment and to finance district operations.

The district's alternatives analysis studies, prepared primarily during 1974 and 1975, included conceptual and preliminary engineering. The studies were estimated to cost about \$5.3 million. UMTA funded about \$560,000, which it considered to be 80 percent of the cost of the alternatives analysis required.

The district provided UMTA over 1,500 pages of alternatives analysis reports in June 1975, in which six modes of transportation were compared. The district concluded that an 80-mile, two-way guideway automated rapid transit concept was the most cost-effective system. UMTA staff reviewed the alternatives analysis studies between June and December 1975 and met with district officials in December 1975 to discuss the studies in detail. At that meeting, the district provided a November 1975 evaluation of an exclusive bus system to UMTA. The district also furnished additional studies between January and April 1976 to respond to UMTA's concerns. The final report, dated April 1976, recommended construction of a 22-mile light rail system in the north-south direction, costing approximately \$492 million (1974 dollars).

In June 1976, UMTA informed the district that providing engineering or construction funds for development of the proposed light rail system in Denver was premature because (1) for the foreseeable future, an improved bus system would provide equivalent transportation service at substantially less cost, (2) the light rail proposal did not compare favorably with applications from other cities in terms of cost-effectiveness, and (3) Denver's long-term need for rail transit and potential community development benefits was not sufficiently clear at that time to compete successfully with bus alternatives or the needs of other cities. However, UMTA informed the district that it was prepared to make a loan for advance acquisition of land and buildings and to consider substantial funding for further improvements in the bus system. On July 16, 1976, UMTA and the district jointly announced that, based on UMTA's assessment of the district's analysis of bus alternatives in the north-south corridor, Federal investment in a range of \$100-200 million in improved bus service would appear to be justified. From July 1976 to June 1978, the district received UMTA capital assistance and improvement grants totaling nearly \$54 million.

CITY OF PHILADELPHIA, PENNSYLVANIA,FRANKFORD EL REHABILITATION PROJECT SUMMARYPROJECT AREA DESCRIPTION

The city of Philadelphia is at the center of a nine-county Pennsylvania and New Jersey Delaware Valley area, having a total 1977 population of about 5.18 million. The transit system serving this region has changed little in recent years and consists of 646 miles of commuter rail, 64 miles of subway/elevated lines, and 1,567 miles of surface trolley and bus lines. The area transit system is focused on travel to, from, and within the city of Philadelphia.

PROJECT STATUS AND PLANS

One of three rail rapid transit lines within the Philadelphia metropolitan area, the Market-Frankford line, extends eastward from 69th Street through the downtown central business district then northeast to the Bridge Street terminal. The Frankford Elevated is a 6.75-mile portion of this transit line, carrying an estimated 110,000 riders daily between the northeast terminus and the downtown area. Construction on the "El," as it is commonly called, began in 1915 and was completed in 1922. The El is owned by the city of Philadelphia and operated by the Southeastern Pennsylvania Transportation Authority.

Because of chronic structural problems, an extensive rehabilitation project was proposed by the city in 1975 to extend the El's useful life. At UMTA's request, the city performed a detailed analysis of alternative investment options. Based on this study, UMTA concluded that only rehabilitation alternatives merited further consideration and advised the city that it was prepared to entertain an application for a preliminary engineering grant.

PROJECT EVOLUTION

Since 1970, the El has been the subject of a number of detailed inspections and engineering studies prompted by concerns over its chronic structural problems. The most recent evaluation (1975) recommended an immediate repair program for the short term (5 years) and an extensive structural rehabilitation for the long term. The short-term repair program was completed in October 1976.

The rehabilitation planning process began shortly after the 1975 study. In July 1975, an UMTA technical studies grant provided funds for an alternatives analysis study. The study began formally on August 1, 1976.

The initial phase of the analysis considered a variety of rehabilitation and replacement possibilities. In February 1977, four alternatives were selected for detailed study: (1) rehabilitate the existing structure and upgrade stations, (2) rehabilitate and add a third track for express use, (3) rehabilitate and add a single track right-of-way separated from the existing facility, for express use, and (4) rehabilitate and add express bus service. UMTA concurred with the city's choice of alternatives in June 1977, and the detailed alternatives analysis phase began shortly thereafter.

The draft alternatives analysis study and draft environmental impact statement were submitted to UMTA for preliminary review in May 1978. In June, UMTA notified the city that additional work on these documents would be necessary. Five months later, in November 1978, UMTA informed the city that the major urban mass transportation investments policy no longer applied because the city's draft study indicated that only rehabilitation alternatives merited further consideration. UMTA advised that it would entertain a preliminary engineering grant application to rehabilitate the El.

METROPOLITAN DADE COUNTY, MIAMI, FLORIDA,FIXED-GUIDEWAY PROJECT SUMMARYPROJECT AREA DESCRIPTION

Metropolitan Dade County is located in south Florida. Miami, Miami Beach, and Hialeah are the most heavily populated areas of the county. As of April 1, 1976, the county's population was estimated at 1,449,300 and was characterized by large numbers of transit-dependent persons.

Publicly owned mass transit operations began in 1962. Operating entirely with buses, public transportation carried 41.4 million revenue passengers in its first year. By 1976, ridership had grown to 63.4 million revenue passengers.

PROJECT STATUS AND PLANS

As of September 1978, Dade County was completing final engineering and right-of-way acquisition preparatory to constructing its rail system. The approved project, a 20.5-mile elevated fixed guideway, is estimated to cost \$819.5 million--\$632 million of it funded by UMTA. Early in September 1978, Dade County submitted its application to UMTA for \$552 million to finance construction of the approved rail transit system and related activities through September 30, 1983. Through March 1979, UMTA had approved capital grants totaling over \$113.9 million for the Miami rail project.

PROJECT EVOLUTION

Dade County began studying the addition of a viable rapid transit component to its transportation system in 1968. A series of studies, funded in part by UMTA, completed in 1972, recommended developing a fixed-guideway rapid transit system and tentatively identified vehicle technology and extent of the system. The plan consisted of 54 miles of fixed guideway with 54 stations and extensive local feeder and express bus improvements. Dade County voters responded favorably to this recommendation in a November 1972 referendum, approving the issuance of \$132.5 million in bonds to match State and Federal contributions for constructing a rapid transit system.

In late 1972, UMTA awarded Dade County a \$2.4 million technical studies grant for preliminary engineering of the 54-mile transit system. By the summer of 1973, the prime consultant firm for this grant was chosen with UMTA's concurrence. In the fall of 1973, the scope of the work under the grant was broadened, due to UMTA's concerns regarding the experimental vehicle technology proposed in the 1972 plan and deletion of about 76 miles of expressway from the county's master transportation plans that resulted from public hearings.

In December 1973, UMTA approved Dade County's contract with the consultant firm for a program of alternatives analysis. This study, as approved, reevaluated the methodologies used in the 1972 study; for example, travel demand estimating techniques. In July 1974, UMTA approved a grant to staff a Dade County management team to monitor the consultant's efforts and effectively manage all aspects of the alternatives analysis study.

Meanwhile, the consultant's study was progressing. A series of eight milestones representing "building blocks" in the alternatives analysis process had been established. Each set of milestone documents was reviewed, evaluated, and modified by citizens' groups and public officials as well as through the public hearing process conducted by the county's commissioners. Each milestone report was also submitted to UMTA for its review and comment. Milestone reports were published between August 1974 and May 1975.

On March 11, 1975, Dade County applied to UMTA for a \$62.8 million capital grant primarily to design and acquire the right-of-way for an initial 23-mile segment of a planned 48-mile fixed-guideway rapid transit system. Before acting on Dade County's grant application, UMTA reviewed the county's alternatives analysis study. This review began in August 1975. UMTA identified a number of shortcomings in Dade County's analysis; some, considered critical, dealt with assumptions or techniques employed in the study.

In October 1975, UMTA met with Dade County officials to discuss the alternatives analysis. As a result of questions raised at this meeting, Dade County 2 weeks later submitted additional information to UMTA.

In November, UMTA's staff completed their alternatives analysis review and made their recommendations to UMTA's Administrator. The Administrator announced his decision on March 4, 1976, approving \$15.1 million initially to begin engineering of Miami's fixed-guideway rail transit system.

UMTA also approved Dade County's proposed first segment in principle, provided the county studied ways to lower the initial cost of the system. Among the items to be reconsidered were the length of the first segment, the feasibility of light rail technology, and the location of yard and shop facilities. On October 21, 1976, Dade County submitted its final response to UMTA's questions. The revised proposal called for an initial 20.5 miles of guideway and a yard and shop facility at Hialeah in north Dade County rather than south Dade County as originally proposed.

In December 1976, UMTA committed \$575 million to finance construction of a modified 16.5-mile first segment of the fixed-guideway system. UMTA deleted 4 miles of fixed guideway and the yard and shop facilities from the north end of the system, as proposed by Dade County in October, and directed the county to locate a site for a yard and shop facility along the approved 16.5-mile system.

In September 1977, Dade County submitted a premium funding proposal to UMTA offering to finance about \$43 million of the estimated \$100 million required to construct the 4 miles of fixed guideway and yard and shop sites previously deleted. Dade County also submitted additional information regarding operational and environmental problems associated with the potential yard and shop sites along the UMTA-approved 16.5-mile system. In December 1977, UMTA approved the premium funding package, accepting Dade County's arguments for the 20.5-mile system it had proposed in October 1976.

METROPOLITAN BUS AUTHORITY, SAN JUAN,
PUERTO RICO, PROJECT SUMMARY

PROJECT AREA DESCRIPTION

San Juan, situated on the north coast of the Commonwealth of Puerto Rico, is the business, trade, cultural, and government center of the island, as well as its capital city. The 140-square-mile metropolitan area had a 1970 population of 851,000, with a population density of 8,004 persons per square mile in the urbanized area. Forty-three percent of the households had no cars, but there is still considerable highway congestion throughout the day in the north-south spine.

The principal mass transportation carrier in the San Juan metropolitan area is the Metropolitan Bus Authority, a public corporation within the Commonwealth's Department of Transportation and Public Works. Bus ridership during 1975 was 43 million, compared with 47 million in 1972 and 66 million in 1963.

San Juan has an extensive public transit service that carries almost as many passengers as the authority. "Publicos" are privately owned passenger cars or small vans licensed by the Commonwealth to carry passengers for a fare over semi-fixed routes but at no fixed schedule. About 2,000 publicos operate within the metropolitan area without external financial support. The publicos are not allowed to operate in the north-south spine, and there are no transfer privileges between the publicos and the authority.

PROJECT STATUS AND PLANS

In April 1978, UMTA advised the Department of Transportation and Public Works that its alternatives analysis study proposing heavy rail, busways, special bus priority lanes, and provisions for publico feeder service was deficient and that additional studies should be undertaken to correct the deficiencies. The department submitted a detailed work program and budget in August 1978 for the additional studies, and UMTA approved a grant to help promote these studies in September 1978. About 2 years will be required to conduct the studies at an estimated cost of nearly \$1.4 million.

PROJECT EVOLUTION

The study and planning effort for the San Juan project dates back to 1964-67, when a comprehensive land use and transportation study was conducted by the Puerto Rico Planning Board and the predecessor to the Department of Transportation and Public Works. The study's objective was to develop a network of high-capacity urban highways and a rapid transit system serving a multicenter plan of six major activity centers. It was intended that a balanced transportation system, together with an adequate land use plan, could cope with the ever-increasing problem of traffic congestion and accidents in the metropolitan area. The study recommended a 27-mile rapid transit system running north-south and east-west.

In 1969, route location, vertical alignment, and vehicle technology studies were initiated. UMTA awarded \$713,800 to help fund these, corresponding to two-thirds of the estimated cost of these preliminary engineering, design, operating, and financial studies. On completion of these studies in 1973, UMTA requested that additional tasks be undertaken, including environmental impact analyses, further preliminary engineering, implementation planning, station impact and access analyses, and more detailed discussion on the selection of the system's technology. UMTA awarded grants totaling \$1,468,720 during 1974 and 1975 for these technical studies.

During a January 1975 meeting with the Department of Transportation and Public Works, UMTA discussed the need to carefully document an alternatives analysis study for the San Juan project. In June 1975, UMTA suggested that the main thrust of the scope of work should be focused on determining the most cost-effective increment. The alternatives analysis for the San Juan project began in November 1975, and UMTA granted \$371,868 for this study.

A draft environmental impact analysis for the project, initiated in March 1974, was submitted to UMTA by the Department of Transportation and Public Works in February 1976. According to department records, UMTA asked that further work on the environmental impact analysis be suspended, because changes might have to be made to it as a result of the alternatives analysis.

In February 1976, the Department of Transportation and Public Works submitted a special status report that had been requested by UMTA in December 1975 to (1) document the results of existing studies to show how the department arrived at the need for rapid transit in the north-south and east-west corridors, (2) justify the first increment of the proposed system, and (3) discuss the availability of local funding. The report recommended a 12.6-mile rapid transit line, estimated to cost about \$500 million, running in a general north-south alignment through the central corridor area. However, UMTA believed that the information presented in this special report was not sufficient to enable UMTA to make a funding decision on the project.

In October 1976, the Department of Transportation and Public Works submitted the alternatives analysis draft report to UMTA. The study concluded that the most cost-effective initial increment would be a "poly modal" system, which proposed 14.9 miles of heavy rail, two busways totaling over 7 miles, special bus priority lanes, and provisions for public feeder service. This system would provide service to all the major corridors and activity centers in San Juan and also would provide for future flexibility to add to the system and convert busways to rail if needed.

In April 1978, UMTA advised the Department of Transportation and Public Works that the alternatives analysis study was deficient due to problems in planning assumptions, modeling process, patronage forecasts, evaluation methodology and justification of the preferred alternative. UMTA recommended that the department undertake additional analysis to correct these deficiencies and begin work on a draft environmental impact statement. After meeting with UMTA in May, the Department of Transportation and Public Works agreed in July 1978, to undertake the additional studies.

The department submitted for UMTA's approval a detailed work program and budget in August 1978 for the additional studies to be conducted. About 2 years will be required to conduct these studies with an estimated budget of \$1,371,050. UMTA approved a grant to finance these tasks in September 1978.

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY,WASHINGTON, D.C., FIXED-GUIDEWAY PROJECT SUMMARYPROJECT AREA DESCRIPTION

Because it is a city of national and international significance as well as a regional center, Washington, D.C., is unique. Its metropolitan area, one of the Nation's fastest growing, is 2,400 square miles and includes the District of Columbia and parts of Maryland and Virginia. An exceptionally high portion of the region's jobs are in the center of the city.

The region's major highways include an interstate beltway, four interstate highways, and parkways along the banks of the Potomac River. The highway system is one of the most congested in the Nation during peak hours. The bus system, which was privately owned and deteriorating, became publicly owned in 1972. After congressional authorization, construction began on the area's rail system in 1969.

Rail service opened to the public in Washington, D.C., in March 1976 and was extended into Virginia and Maryland in July 1977 and February 1978, respectively. By December 1978, 30.8 miles and 34 stations were operational. In September 1978, UMTA approved a \$198.8 million interstate transfer capital grant that will enable the region to complete construction on three additional routes. The addition of these lines will fulfill the terms of the region's interim capital contributions agreement of March 1977, which provided local funding for a 60-mile rail system.

PROJECT STATUS AND PLANS

In May 1978, the region's alternatives analysis study was essentially completed when it selected a 101-mile system. Based on the alternatives analysis selection, the Washington Metropolitan Area Transit Authority in June 1978 sent a draft final report on the study to UMTA for review. The Department of Transportation announced in August 1978 that it agreed with the goal of completing such a system.

PROJECT EVOLUTION

Early Federal Government initiatives stimulated progress in developing an effective public transportation system for Washington, D.C. The Congress passed legislation in 1952 mandating preparation of plans for a regional transportation system and in 1955 provided a \$400,000 grant for a mass transportation survey. That plan recommended a major highway building program together with an extensive bus and rail transit system. In 1960, the Congress established a temporary Federal agency to develop plans for a comprehensive transit system and, in 1965 authorized rail construction funds on a two-for-one, Federal/non-Federal matching basis.

The Washington Metropolitan Area Transit Authority, a permanent regional body responsible for planning, financing, developing, and operating the region's transit facilities, was created in 1966. The authority adopted a 97-mile regional system in March 1968 with a capital cost of \$2.5 billion. The authority's financial plan provided for the capital costs to be funded by a combination of Federal and local grants, on a two-for-one matching basis, and revenue bonds. Local bond referendums were approved in November 1968. In February 1969, the authority adopted a 98-mile revised system.

The authority had set groundbreaking for October 1968. However, a continuing impasse in the Congress over constructing interstate highways in Washington, D.C., delayed the groundbreaking until December 1969, when legislation was enacted which assured the authority of Federal financial support and permitted rail construction to start. Following the groundbreaking delay and increased cost escalation, the capital cost to complete the system was reestimated upward in 1970 to about \$3 billion. The financial plan was revised in 1971 and legislation was enacted in 1972 to provide for additional local grants, a Federal guarantee of revenue bonds, and a 25-percent Federal interest subsidy for the bonds. Delays in carrying out the construction program and a high rate of escalation in construction costs resulted in another revised cost estimate in November 1974 to \$4.5 billion. By 1976, the estimate to complete the system had risen to \$5 billion.

Because cost escalation had completely outstripped the original financial plan, UMTA's Administrator in September 1976 requested regional officials to implement a capital and operating costs financial plan for the system and, pursuant to congressional instructions, complete an alternatives analysis on certain unbuilt segments of the rail system. Regional officials established a joint policy steering committee to oversee the study.

UMTA specified three routes for alternatives analysis. Two were subsequently included in the study while the third was excluded after much debate between the Department of Transportation and the steering committee. In addition to these two routes, the steering committee, at the request of local officials, also included in the alternatives analysis the unbuilt segments of two other routes.

In February 1977, the steering committee selected and contracted with a consultant consortium to carry out the analysis. In addition, task forces were formed to provide oversight on each of the corridor efforts. The steering committee, with UMTA concurrence, defined the alternatives for study, selected the study methodology, and specified the assumptions and evaluation method to be used. The committee set up an evaluation process, also concurred with by UMTA, that reduced the number of possible corridor combinations through a series of intermediate selection stages.

In January 1978, the steering committee selected four alternate regional system combinations to be compared with the previously adopted regional system. The consultants submitted a report on the comparisons to the committee. The report was distributed in March 1978 to Federal, State, and local agencies for review and comment. UMTA, after a preliminary review, asked that the report be supplemented with incremental data. The consultant submitted certain incremental information to UMTA and the committee in April 1978. On May 11, 1978, the committee passed a resolution recommending the construction of a 101-mile rail system which was similar to the adopted regional system. The consultant submitted the alternatives analysis draft final report to the committee on May 26, 1978. The committee transmitted the study to UMTA in June 1978.

Based on the steering committee's selection of a preferred regional system, the authority adopted a proposed financial plan in August 1978. Commenting on the proposed financial plan in August 1978, the Secretary of Transportation agreed with the goal of completing the proposed system. He also noted that the alternatives analysis procedure for future routes was finished.

federal register

WEDNESDAY, SEPTEMBER 22, 1976



PART II:

DEPARTMENT OF TRANSPORTATION

**Urban Mass Transportation
Administration**



**MAJOR URBAN MASS
TRANSPORTATION
INVESTMENTS**

41512

**DEPARTMENT OF
TRANSPORTATION**

**Urban Mass Transportation Administration
MAJOR URBAN MASS TRANSPORTATION
INVESTMENTS**

Statement of Policy

The purpose of this notice is to issue a Statement of Federal Policy with respect to decisions on major urban mass transportation investments assisted under the Urban Mass Transportation Act of 1964, as amended. The need for such a Statement has resulted from the growing complexity of the UMTA capital program and the increasing demands placed upon the available funds.

At the outset of the urban mass transportation assistance program in 1964, the \$75 million annual budget was directed toward the preservation of urban transit service in selected cities through the conversion of failing private transit companies to public ownership. A decade later UMTA's annual capital assistance budget exceeds \$1 billion, and is primarily devoted to modernizing existing transit properties and constructing new transit facilities. Not only has the magnitude and duration of Federal transit investments increased and changed significantly but the number of potential recipients has grown. The pressure of these competing demands requires the Department of Transportation to ensure that the available Federal resources are utilized in the most prudent and effective manner.

In the interest of making all urban areas aware of the procedures which are followed and the issues considered in Federal decisions to participate in the financing of locally initiated major mass transportation investments, the Department of Transportation is promulgating this Statement of Federal Policy. The policy represents a process-oriented approach designed to allow each urban area to take into account its unique characteristics in the planning, design and implementation of transportation improvements. As a condition of eligibility for Federal assistance, the policy requires that alternative investment strategies be considered in order to determine which investment best serves the locality's transportation needs, promotes its social, economic, environmental and urban development goals, and supports national aims and objectives. The policy stresses the need to consider combinations of transit modes and technologies appropriate to the service requirements of specific corridors, and requires major fixed guideway systems to be implemented incrementally, with priority given to the most immediate needs of the locality.

This Statement of Policy has been developed in concert with Federal, State and local transportation and planning officials, transit operators, public interest groups and other parties potentially affected by the Policy. Comments and opinions from these diverse groups have been sought by UMTA through individual solicitations, through interest

NOTICES

groups such as the American Public Transit Association (APTA), and through two major UMTA-sponsored consultative conferences (Airlie House Conference and Hunt Valley Conference).

The Policy Statement was first issued for public comment on August 1, 1975 (FR, Vol. 40, No. 149). Sixty-eight responses were received from local, State and transit agencies, metropolitan planning organizations and other interested parties. These comments led to a revision of the Statement and the addition of a description of UMTA procedures. By spelling out clearly the process by which it makes major capital grant decisions, UMTA hoped to increase its own accountability and add a measure of predictability to the discretionary grant award process.

The revised Statement of Policy was discussed at a working conference held under the auspices of the Transportation Research Board at Hunt Valley, Maryland on March 29 through April 1. In arriving at this final Statement of Policy, UMTA has taken careful account of the views and comments expressed at that conference and throughout the 20-month consultative process.

The following significant changes have been made from the initially proposed text of the Statement as issued in the Federal Register on August 1, 1975.

The section entitled "Extent of Federal Commitment" which appeared in the earlier version of the Policy Statement has been deleted. The proposition that the Federal Government might provide funding for alternatives which the local analysis had determined as not cost-effective is deemed to be inconsistent with the Federal obligation to ensure prudent and effective use of the taxpayers' money. The Department's policy of confining Federal financial support to cost-effective alternatives remains unchanged.

Review of the comments received indicated also the desirability of removing certain ambiguities and making certain clarifications in the Policy Statement. These changes are discussed below.

1. A number of respondents felt that no single overall measure of transportation cost-effectiveness could fully reflect all of the significant issues which must be considered in reaching responsible decisions. A single measure was not the intent of the policy. The statement now makes it clear that multiple measures of cost and of levels of effectiveness should be considered, and that effectiveness is measured by the degree to which the proposed investment meets the locality's transportation needs, promotes its social, economic, environmental and urban development goals, and supports national objectives.

2. Some comments interpreted the emphasis on a short planning horizon as a rejection of the concept of comprehensive metropolitan planning. The policy does not challenge the concept of long range planning, and UMTA recognizes the need for such planning as a means of giving an overall direction to metro-

politan development. However, UMTA believes that it is not prudent for either a locality or the Federal Government to make a massive commitment to a fixed course of action for mass transportation based solely on the necessarily speculative projections that must characterize plans which target 30 or 25 years in the future. Changing social priorities, demographic shifts, environmental concerns, accelerated inflation and other unanticipated developments can drastically alter even the most carefully conceived long range plans. It is desirable therefore to base immediate investment decisions on a shorter planning horizon. The sections on "Long Range Plan" and "Incremental Development" now bring out more clearly these considerations.

3. A number of respondents felt that a 10-year horizon for the short term analysis was too close in the future to permit investments, such as advanced acquisition of rights-of-way, that pay off only in the long run. These comments are well taken. Considering the long lead times that are required for most fixed guideway projects, a somewhat longer planning horizon is justified. The policy has now adopted a horizon of up to 15 years, counting from the time the analysis was carried out. Since major fixed guideway projects take up to 5-8 years to complete, this is tantamount to a 7-10 year horizon from the date of initial start-up operation.

4. Several comments expressed doubt about the feasibility of the incremental approach to transit system implementation because of the need to offer benefits more or less simultaneously to the entire region. UMTA agrees that there must be some geographic equity in transit development. But the incremental approach is not inconsistent with an equitable distribution of transit benefits. An "increment" of the plan may contain a package of projects designed to benefit an entire metropolitan area. For example, the initial "increment" of the plan may include express bus service in exclusive lanes, new fringe parking facilities, improved feeder services in suburban communities, as well as the first localized segment of a fixed guideway system.

5. The original conception of requiring Transportation System Management improvements in the operation of the existing transportation system as an alternative to the construction of new facilities was felt by many observers to be too confining. The policy now distinguishes between two concepts: the need to assess the potential of low-cost alternatives (e.g. express bus service in reserved lanes) as a discrete option to more capital intensive alternatives; and the need to employ various types of Transportation System Management actions to support and complement (but not substitute for) the proposed fixed guideway investment.

6. A more precise definition of a "major urban mass transportation investment" was urged by several respondents. This point has been clarified by bringing under the coverage of the policy all proj-

NOTICES

41513

ects involving new construction or extension of existing fixed guideway systems, except projects identified by UMTA as part of a demonstration program (such as the proposed "Downtown People Mover" demonstrations). Projects involving rehabilitation or modernization of existing facilities are not within the scope of the alternatives analysis requirement. Fixed facilities by nature of their permanence and irreversibility have potentially the greatest impact upon the urban area in terms of land use, financial burden, and urban growth. Decisions concerning construction of new fixed facilities, therefore, deserve particular care, regardless of their financial scope.

7. Questions were raised concerning the relationship of the Environmental Impact Assessment to the analysis of alternatives. The Policy now explicitly integrates the two processes and calls for the circulation of a final Environmental Impact Statement prior to a decision on the award of the preliminary engineering grant.

Issued in Washington, D.C. on September 9, 1976.

WILLIAM T. COLEMAN, JR.,
Secretary.

FEDERAL POLICY ON ASSISTANCE FOR MAJOR URBAN MASS TRANSPORTATION INVESTMENTS

Since the beginning of this decade, the Federal Government has provided an increasing share of the Nation's capital investment in urban mass transportation. In the years ahead, as more and more communities seek Federal financial aid to improve and expand their mass transportation systems, it is more essential than ever that Federal funds be effectively and efficiently utilized.

Since each metropolitan area has differing characteristics, Federal mass transportation assistance cannot be based on standardized prescriptions. Rather, Federal support should be flexible, relying heavily on local ability to assess present and anticipated transportation needs, identify and evaluate alternative opportunities for improvement, and initiate needed actions.

The Federal Government does, however, have a strong interest in ensuring that Federal funds available for mass transportation investments be used prudently and with maximum effectiveness. While there are no simple or standard procedures that will guarantee this outcome, a careful and systematic evaluation of the implications of alternative courses of action in advance of a Federal commitment should improve the quality of decisions. To this end and analysis of transportation alternatives and the filing of a final Environmental Impact Statement will be required as a condition of eligibility for Federal assistance for a major mass transportation investment. Federal support will be available only for those alternatives which the analysis has demonstrated to be cost-effective, where effectiveness is measured by the degree to which an alternative meets the locality's transportation needs, promotes its social,

economic, environmental and urban development goals, and supports national aims and objectives.

A major mass transportation investment for purposes of this Statement is any project which involves new construction or extension of a fixed guideway system (rapid rail, light rail, commuter rail, automated guideway transit) or a busway, except where such project is determined by the Administrator to be of importance as a demonstration of advanced technology. Rehabilitation and modernization projects are not included in the scope of this definition.

The analysis of alternatives shall be carried out as part of a comprehensive transportation planning process in accordance with the following principles:

A. LONG RANGE PLAN

Proposals for major mass transportation investments shall be consistent with an urban area's comprehensive long range plan which articulates the overall direction for metropolitan development and identifies major transportation corridors.

The long range plan should reflect an awareness that different levels and types of transportation service may be needed in different portions of the metropolitan area. Each major corridor should be considered individually to determine the level and type of service that will best meet its projected requirements.

The long range plan should further recognize the need for local community-level transit service as well as for express line-haul connections that foster region-wide accessibility.

As an example, a comprehensive transportation plan may call for the construction of a rail rapid transit line in a corridor of heavy demand, a "people mover" to facilitate local circulation in the central business district, a light rail network or busways to serve intermediate capacity corridors in the lower density portions of the metropolitan area, and fleets of fixed route buses and flexibly routed paratransit vehicles acting as feeders and distributors to the higher capacity line-haul systems and providing neighborhood circulation service in the local communities within the metropolitan region.

The long range plan should be reassessed and revised periodically as part of a continuing transportation planning process to reflect changes in local goals, priorities and long range forecasts; to respond to new land development and travel patterns; to adapt to new technologies as they are developed; and to adjust to the impact of previously implemented actions.

B. INCREMENTAL DEVELOPMENT

Where an area's comprehensive long range transportation plan calls for the creation of a fixed guideway system, the system should be proposed for implementation incrementally. Initial segments of the system should be proposed in corridors which can justify the need for fixed guideway service within 15 years of the date of the analysis. Each segment should be capable of justification on its own merits.

Corridors which cannot justify fixed guideway transit service within 15 years of the date of the analysis should be provided with levels and types of service appropriate to their needs, with the level of service being progressively upgraded as demand develops. Incremental developmental aims to ensure that high priority corridors receive initial attention; that appropriate balance is maintained between the transportation requirements of the entire region and those of local communities within the region, and between long range and short range needs for transportation improvements; that flexibility is preserved to respond to changing technology, land use patterns and growth objectives; and that the fiscal burden is spread over a long period of time.

C. EVALUATION OF ALTERNATIVES

In the interest of improving the quality of the local planning and investment decisions, any metropolitan area which intends to apply for Federal assistance for a major mass transportation investment must undertake an analysis of transportation alternatives with regard to any corridors in which fixed guideway facilities have been proposed for implementation. The analysis should consider a range of alternatives, including improvements involving better management and operation of the existing street and highway network e.g. through provision of reserved lanes for buses and other high occupancy vehicles.

This analysis should assess each alternative's capital and operating costs; ridership attraction; capital and operating efficiency and productivity; effects on modal choice, level of automobile use, environmental impacts and energy consumption; impact on land use and development patterns; extent of neighborhood disruption and displacement; job creation impact; and such other factors as are considered important by the local community.

The analysis should also compare the relative costs and effectiveness of each alternative, where effectiveness is measured by the degree to which the alternative meets the locality's transportation needs, promotes its social, economic, environmental and urban development goals, and supports national aims and objectives.

As part of the analysis of alternatives, a draft Environmental Impact Statement shall be prepared jointly by UMTA and the applicant in accordance with published guidelines.

D. TRANSPORTATION SYSTEM MANAGEMENT

Plans for a fixed guideway project should include transportation system management (TSM) actions to enhance the project's accessibility and convenience and to improve the quality of transportation service in other parts of the metropolitan area which will not be served by the fixed guideway project. Supportive TSM actions shall include the provision of adequate bus and paratransit feeder services and parking facilities at transit stations, and may include

41514

other measures aimed at increasing transit ridership and reducing unnecessary use of private automobiles within the transit corridor.

E. PUBLIC INVOLVEMENT

There should be full opportunity for the timely involvement of the public, local elected officials, and all levels of government in the alternatives analysis process. This involvement should be initiated early, so that all affected groups have an opportunity to influence the process in a timely and constructive fashion, particularly as to the alternatives to be considered, measures of effectiveness to be used, actions to be taken to minimize or avoid adverse effects and priority actions for implementation.

After completion of the draft Environmental Impact Statement a formal public hearing shall be held as required by the Urban Mass Transportation Act of 1964, covering both the analysis of alternatives and the draft Environmental Impact Statement.

PROCEDURES

This section states the procedures which UMTA will normally follow in reviewing the alternatives analysis, in implementing the Environmental Impact Statement requirement of the National Environmental Policy Act of 1969, and in making funding commitments to support major mass transportation investments.

1. The initial phase of the alternatives analysis process shall involve a preliminary analysis leading to the development of a citizen involvement mechanism, the choice of appropriate demand forecasting techniques and cost-effectiveness analysis methodology, the designation of a priority corridor(s), and the selection of a small set of promising transportation alternatives for analysis. UMTA must concur in these elements of analysis before the applicant may proceed with a detailed evaluation of the alternatives.

2. After obtaining UMTA's concurrence, the applicant shall proceed with the alternatives analysis and the preparation of a proposed draft Environmental Impact Statement (EIS). The

NOTICES

proposed draft EIS shall be combined in a single document with the results of the alternatives analysis and shall be prepared jointly by UMTA and the applicant in accordance with published UMTA guidelines. Each alternative selected for study shall be presented at the same level of detail.

The applicant shall designate, in a separate document to be submitted simultaneously, the preferred cost-effective alternative which he recommends for implementation, and state a rationale for his choice. The recommended alternative shall be described in terms of its corridor location, length of initial segment(s), technology, horizontal and vertical alignment, grade separation, station location and other relevant factors. This document shall clearly state that any recommendation is solely that of the applicant and that UMTA's judgment is reserved until the environmental process is complete.

Upon receipt of the combined alternatives analysis and proposed draft Environmental Impact Statement, UMTA will undertake a review of the document to ensure that the analysis has been carried out in conformance with UMTA policy and UMTA guidelines. This review will normally be completed within 90 days of the receipt of the draft alternatives analysis and proposed draft EIS.

4. After the consolidated alternatives analysis and proposed draft Environmental Impact Statement has been found in conformance with UMTA guidelines, UMTA will circulate it for comment. During the circulation period the applicant will hold a public hearing on the document and may, at applicant's option, include in such hearing consideration of any application for a grant for preliminary engineering on the applicant's preferred alternative.

5. At the end of the circulation period UMTA and the applicant will address the questions and comments received, correct any deficiencies in the analysis, and begin preparation of a final Environmental Impact Statement on a recommended alternative. The final EIS shall be prepared at the same level of detail as the draft EIS.

The final Environmental Impact Statement may also incorporate UMTA's decision with respect to a preliminary engineering grant, subject to the condition of satisfactory completion of the 30-day circulation period required for the final Environmental Impact Statement. This decision will be based upon a comparison of projects emerging from the alternatives analysis process.

UMTA may admit projects into preliminary engineering whose combined cost exceeds available Federal contract authority. This will be done in anticipation of any of several possibilities: the withdrawal of projects as a result of changing local priorities; a local decision to use non-Federal resources to finance more than 20 percent of total cost; or changing conditions such as the availability of detailed cost estimates which might lead to a later decision that a particular project cannot be Federally financed.

6. During the execution of preliminary engineering, the applicant will be expected to complete all the steps which must precede a full Federal commitment of capital grant funds to the project. These steps include providing evidence of firm commitment of the non-Federal capital share, providing evidence of State and/or local consensus regarding the financing of operating deficits, and planning for and gaining financial commitment to necessary supportive actions to promote effective utilization of the proposed fixed guideway system.

7. Upon completion of the preliminary engineering phase, the applicant may prepare a capital grant application for the construction (including final engineering and right of way acquisition) of the proposed project, and shall hold a public hearing thereon.

8. A definite funding commitment by UMTA for construction in a specific dollar amount will be made upon review of the capital grant application, the transcript of the public hearing and the detailed cost estimates emerging from preliminary engineering. The decision will be based upon a comparison of projects then pending.

[FR Doc.76-27667 Filed 9-21-76;8:45 am]



ASSISTANT SECRETARY
FOR ADMINISTRATION

OFFICE OF THE SECRETARY OF TRANSPORTATION

WASHINGTON, D.C. 20590

March 26, 1979

Mr. Henry Eschwege
Director, Community and Economic
Development Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Eschwege:

We have enclosed two copies of the Department of Transportation (DOT) reply to the General Accounting Office (GAO) draft report, "Need for Urban Mass Transportation Administration to Improve Management of Its Planning Requirements for Major Mass Transit Projects."

The Department is in general agreement with the findings and conclusions GAO reached based on its review of the chosen case studies. The Department also supports the report's recommendations, which are designed to avoid a recurrence of the problems GAO found in the case studies. We are particularly gratified by the fact that GAO found the alternatives analysis requirement warranted, and endorsed its continued application. Since the need for the requirement has been questioned in some quarters, GAO's reaffirmation of its purpose and value are welcome. At the same time, we are mindful of GAO's criticisms of our past administration of the requirements. There is clearly room for improvement in this regard, and the GAO recommendations are beneficial to us. However, we do have several objections to the report which have an important bearing on how the report will be interpreted. These objections are discussed in detail in the enclosed statement.

If we can further assist you, please let us know.

Sincerely,


Edward W. Scott, Jr.

Enclosure

DEPARTMENT OF TRANSPORTATION REPLY
TO
GAO REPORT OF FEBRUARY 22, 1979
ON
NEED FOR URBAN MASS TRANSPORTATION
ADMINISTRATION TO IMPROVE MANAGEMENT
OF ITS PLANNING REQUIREMENTS FOR MAJOR
MASS TRANSIT PROJECTS

SUMMARY OF GAO FINDINGS AND RECOMMENDATIONS

Based on GAO's review of seven case studies of projects subject to UMTA's major investment requirements, the following conclusions were reached: 1) project sponsors are generally supportive of the requirements in principle; 2) project sponsors are dissatisfied with UMTA's management of these requirements; 3) project sponsors have been handicapped by the lack of UMTA written technical guidance; 4) project sponsors objected to the Department's inconsistent application of these requirements; and 5) project sponsors are generally satisfied with UMTA's capital grant review and approval process.

GAO made four recommendations designed to avoid a recurrence of the problems observed in the case studies: 1) the Department should consistently apply its policy on major urban transportation investments; 2) the Department should make major mass transit decisions only after significant technical problems with alternatives analysis studies have been resolved; 3) UMTA should expedite development and issuance of alternatives analysis guidance; and 4) UMTA should strengthen communication with project sponsors.

SUMMARY OF DEPARTMENT OF TRANSPORTATION POSITION

The Department is in general agreement with the findings and conclusions GAO reached based on its review of the chosen case studies. Specific exceptions are noted in this position summary. The Department also supports the report's recommendations, which are designed to avoid a recurrence of the problems GAO found in the case studies.

The Department is particularly gratified by the fact that GAO found that the alternatives analysis requirement warranted, and endorsed its continued application. Since the need for the requirement has been questioned in some quarters, GAO's reaffirmation of its purpose and value are welcomed. At the same time, we are mindful of GAO's criticisms of our past administration of the requirements. There is clearly "room for improvement" in this regard, and the GAO recommendations are beneficial to us. However, we do have several objections to the report which have an important bearing on how the report will be interpreted.

First, the report fails to acknowledge that UMTA has already instituted management improvements which have minimized, if not eliminated entirely, the sorts of management deficiencies observed in the case studies. Studies currently being undertaken by project sponsors are being monitored more closely and more effectively by UMTA. Second, the Department feels strongly that the alternatives analysis requirement is an effective means of reducing

project costs. We believe the case studies examined offer conclusive evidence of this and believe that the report should have offered a definitive conclusion in this regard. Third, the Department feels that the report fails to assign responsibility for faulty analysis to project sponsors, and acknowledge that faulty analysis has been a primary cause of unforeseen time delays. Fourth, the Department feels that the report does not do justice to UMTA's continuing efforts to produce written technical guidance over the past three years.

Each of these objections is the subject of more detailed discussion in the position statement which follows this summary.

With regard to the specific report recommendations, the Department is committed to consistent application of its policy, and to properly timed decisions with respect to the analyses its policy requires. Differences of opinion by analysts within the Department are to be expected regarding the technical adequacy of these analyses, however, and the Department obviously must exercise its discretion to make decisions even when such differences arise.

UMTA is committed to the issuance of written technical guidance within the next several months, and to continued, effective project monitoring and timely responses.

Collectively, these Departmental resolves should avert problems that have arisen in the past.

POSITION STATEMENT

As noted in the position summary, the Department is in general agreement with the findings and conclusions GAO reached based on its review of the chosen case studies. The Department also supports the report's recommendations. These recommendations are either adopted already or close to adoption. The specific corrective actions we have taken or intend to take can be best described in the context of our objections to the report.

(1) Failure to acknowledge management improvements already instituted by UMTA

Although the Congressional request required GAO to review all phases of UMTA's rail project handling, and this necessitated an examination of case studies which were far advanced in terms of project processing, GAO failed to account for continuing improvements in UMTA's management of these projects, because GAO confined its examination to a set of case studies which are among the oldest projects (i.e., the first projects processed by UMTA under its current policy). The GAO report implies that findings from the case studies are indicative of present UMTA management practices, which is not the case. Moreover, even among the case studies that were examined, GAO did not note management improvements by comparing pre-policy and post-policy projects.

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GAO found repeated instances in the case studies where UMTA cited analysis deficiencies after the analyses were completed that could have been averted if UMTA had more effectively monitored the analyses while they were in progress and approved key quantitative assumptions prior to their use. The Department believes the management improvements UMTA has instituted over the past two years are directly responsive to the needs GAO identified, and have minimized the sorts of problems GAO found in the case studies. Specifically, these improvements include:

- (1) formal UMTA concurrence in the scope of work at the outset of the analysis.
 - (2) formal review and approval by UMTA of the analysis methodologies proposed for use in the analysis before the analysis proper gets underway
 - (3) formal UMTA concurrence in the alternatives to be studied;
 - (4) continuous monitoring of the analysis while it is in progress by a multi-office review team under the overall direction of UMTA's Office of Planning Assistance; and
 - (5) formalized milestones for interim product reviews to ensure that the analysis is "on course".
- (2) Absence of a definitive conclusion about the impact of the alternatives analysis requirement on project costs

The primary impetus for the Congressional request was a belief in some quarters that the alternatives analysis requirement is counter productive to governmental interests, because such a requirement ultimately results in higher costs to the government for project implementation on account of added inflation. The GAO report correctly points out that any attempt to compare project costs before and after alternatives analysis in an effort to conclude what impact the analysis requirement has had on project costs is complicated by the fact that project scopes are often changed as a result of alternatives analysis, as well as the fact that the cost estimates themselves may not have been produced with equal rigor. While this is true, the report fails to point out that the project scope reductions represent a cost saving to all levels of government, and that this is the real benefit of the analysis requirement. Moreover, the cost savings are substantially greater than the cost escalations of those projects which are left unchanged by alternatives analysis. Thus, we believe the GAO report should have concluded that while some projects may indeed increase in cost as a result of the analysis requirement, in the aggregate, the requirement is an effective cost saving device.

Failure to assign responsibility for faulty analysis to project sponsors

The GAO report makes several vague references to the fact that not all the technical problems UMTA raised in retrospect in the case studies would have been averted even with improved management during the course of the analyses and available written technical guidance. We believe the report should have acknowledged more directly that a number of technical problems were a consequence of failures on the part of the project sponsors to be objective in their analyses, and to employ available planning tools in a professionally acceptable manner. We believe the report should have acknowledged the advocacy role of the project sponsors and pointed out that such advocacy has given rise to over optimistic ridership and revenue forecasts, underestimated costs, unrealistic assumptions of a non-quantifiable nature, etc. No less importantly, we believe the report should have acknowledged that such problems are difficult, if not impossible, to ferret out before the analysis is completed.

(4) Failure to fully acknowledge UMTA's continuing efforts to produce technical guidance, and interim products developed

The GAO report implies that UMTA's technical guidance development effort is of recent origin, and that prior to this effort UMTA had done little if anything, toward this end. In fact, the technical guidance development effort has been underway for some time, beginning with the technical annotations UMTA prepared for discussion at the Hunt Valley Conference in March, 1976. Conference attendees declined to discuss the annotations, however, since they had misgivings about the draft policy in existence at the time, and wanted to focus the discussion on necessary policy changes. Thus UMTA temporarily suspended its technical guidance development effort until after the final policy was issued in September 1976. A second conference was held in November 1977 to discuss UMTA's thoughts on the need for guidance. UMTA prepared an Overview Paper of past analysis experience and issues possibly warranting guidance for discussions at this Airlie House conference. Airlie conferees made a number of specific guidance related recommendations at the conference, which are the framework of the guidance development effort now underway, including research UMTA has commissioned as per the conferee's suggestions. This is expected to culminate in comprehensive guidance in October 1979.

In short, UMTA has proceeded on the guidance development effort deliberately and in close consultation with its constituents. In the interim, UMTA has, as noted earlier, strengthened its management of these analyses so that guidance could be provided on an as needed basis in lieu of written guidance.

The Department also does not feel that it is reasonable for UMTA to be faulted for not having written technical guidance prior to the issuance of the formal Federal policy requiring alternatives analysis. The analysis was not a regulatory mandate before the policy was published in final form. Thus problems cited in connection with pre-policy case studies (i.e., Buffalo, Miami, and Denver) should be characterized as management deficiencies, rather than problems resulting from a lack of written guidance. This is an important qualification, in our view, since we have recognized past management problems ourselves, and taken steps to correct them.

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9

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