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COMPARATIVE ANALYSIS OF THE SAN DIEGO TROLLEY AND THE PORTLAND BANFIELD LIGHT RAIL PROJECTS TO DETERMINE THE NATIONAL POLICY IMPACTS AND IMPLICATIONS OF UMTA FINANCIAL AND TECHNICAL ASSISTANCE

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I. INTRODUCTION

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The purpose of this study was to assess the impact of the Urban Mass Transportation Administration's (UMTA) financial assistance and related guidelines and regulations on the process, timing and scope of the development or expansion of urban rail and light rail systems. The methodology applied used San Diego and Portland as case studies to evaluate national policy implications of federal assistance and recommend changes if and where considered appropriate.

The study reviewed and analyzed the contrasting approaches used in San Diego and Portland, the former which proceeded without UMTA assistance and the latter which proceeded with it. The analysis covered the similarities and differences in the conceptualization, planning, financing, engineering and construction processes and their relationship to the decision-making procedures.

The study drew upon the reports prepared by the San Diego Association of Governments, Portland Tri-Met, Sheldon Edner of Portland State University, and System Design Concept, Inc., all under contracts with UMTA. The analysis prepared by this study was based, in part, on the work done under those contracts plus intensive interviews in San Diego and Portland with key officials involved in the process, as well as interviews and discussions with appropriate UMTA officials, both at the regional offices and in Washington, D.C. The study also reviewed and analyzed relevant transportation and urban development plans, policies and reports pertinent to San Diego and Portland, along with federal legislation, regulations, directives and Congressional guidance to determine their consistency and relevancy.

The focus of this report is on the implications and effectiveness of federal financial and technical assistance carried on by the Urban Mass Transportation Administration in its effort to assist local governments to achieve their urban transportation goals.

In general, the study concludes that:

1. Federal financial and technical assistance for transit development brings with it advantages and disadvantages.

2. Federal financial assistance administered by UMTA requires a rigorous analysis of local plans and proposals, which adds time to the project schedule and causes some unnecessary cost increases. However, when considering the magnitude and importance of a rail project, the additional time is not a major consideration, especially if there exists a strong local consensus and financial commitment in support of the transit project.

3. UMTA's role could be made more effective if its rules, regulations, guidelines and procedures were consolidated and codified into a "users handbook" to clarify the technical process and relate them to decision milestones.

4. UMTA, DOT and Congress should formally recognize the dual decision-making process regarding rail transit projects which includes (1) qualifying for federal assistance through a technical review process, and (2) ranking for funding through a political review process.[1]

These and other findings and recommendations are discussed in Section VI.

Kellogg has attempted to look objectively at the real and perceived pros and cons of federal financial assistance administered by UMTA, with the intent of determining what changes would (1) improve the facilitation of such assistance, and (2) maintain and perhaps improve the effective use and monitoring of federal monies.

This report covers the comparisons of the two projects and their similarities and differences. It includes an analysis of UMTA rules, regulations and directives, and it discusses the implications of UMTA participation. This is followed by the principal findings, conclusions and specific recommendations.

Kellogg believes there are substantial opportunities to minimize risks on large scale projects and has suggested a proposed risk assessment, risk management and value engineering program to be used in future major transit investment projects. This is included as an appendix.

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[1]For purposes of this report the term "political process" refers to organizing and fusing local consensus for a commitment to financing, implementing and maintaining a particular fixed guideway transit system.

II. BACKGROUND

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In September 1981, the city of San Diego inaugurated new rail transit service between downtown San Diego and the U.S./Mexican border. When the initial ground breaking took place in 1979, this 16-mile line represented the first new "street car" or "light rail" system planned and built in the United States since the 1930s, and the first rail system built without federal funds since the Lindenwold Line.

Seven months later, in April 1982, Portland's Tri-Met broke ground for the 15-mile Banfield Transitway Project, incorporating highway improvements along with the first new light rail line to be built almost entirely with federal "interstate transfer" funds.

These actions focused attention on two systems with many physical and technical similarities, but large differences in political and financial characteristics. San Diego's rapid planning and development process, virtually on schedule and within its initial cost constraints, and Portland's successful application of federal interstate transfer funds focused attention on the pros and cons of local governments and transit agencies using federal financial and technical assistance for designing and building new systems or expanding existing ones.

In the course of Kellogg's investigation, a number of critical issues were identified pertaining to the impact of UMTA's rules, regulations and directives on the planning, engineering, financing, implementation and decision-making process. Some issues are directly related to one or more of UMTA's regulations, guidelines and involvement, while others are related to the perception by grantees and local governments of UMTA's policies or approach. For example, some local officials perceive that UMTA's procedures and requirements are dilatory rather than representing a logical technical and fiduciary process. This problem seems further aggravated by "guidance" from Congressional Committees regarding discretionary funds and by their actions to appropriate funds for specific transit projects, which are not always consistent with the administration's own current goals or policies.

When attempting to evaluate the national policy impacts and implications of federal financial involvement, this inconsistency is important. It appears that UMTA is caught in the middle of a conflicting triangle - heavy demands for funds from local governments and agencies - constant constraint on commitments for funds by OMB - and confusing signals from Congress, depending on constituent needs of the moment. One could almost conclude that it is a thankless task and may contribute to the rapid turnover of Administrators, which to some extent is also part of the problem, since continuity and interpretation of policy is an important aspect of UMTA's discretionary grant program regarding fixed guideway projects.

Inconsistency in implementing policies for federal transit assistance apparently has made it difficult to come up with a clear and definitive set of rules related to funding commitments. This issue was raised by almost everyone interviewed, whether for or against federal assistance.

Another issue raised throughout the study was the importance of local consensus regarding a project which is locally acceptable, versus the importance of a technical process designed to achieve the most "cost-effective" project acceptable to UMTA. These are not always the same. Decisions in both San Diego and Portland were highly politicized and emphasized the need to give special weight to the politics of consensus. Kellogg analyzed this apparent conflict and has attempted to sort out the differences and clarify the relationship between the technical process and the local political process.

The experience of San Diego and Portland in planning and implementing similar light rail transit systems presents an opportunity to assess the significance of federal participation and the best way to manage it. The fact that San Diego is now hoping to proceed with a second rail segment - this time with federal assistance - and is still striving to remain within realistic and acceptable time and cost constraints tells us that federal financial assistance is needed, welcomed and can work. Where commitments mutually exist, procedures can be streamlined. Under the right terms and conditions, federal assistance is desirable and wanted by virtually all cities. The issue is: What is the best role for UMTA and how can it be structured to sort out the qualified projects and facilitate implementation?

III. COMPARISON OF SAN DIEGO AND PORTLAND LIGHT RAIL PROJECTS

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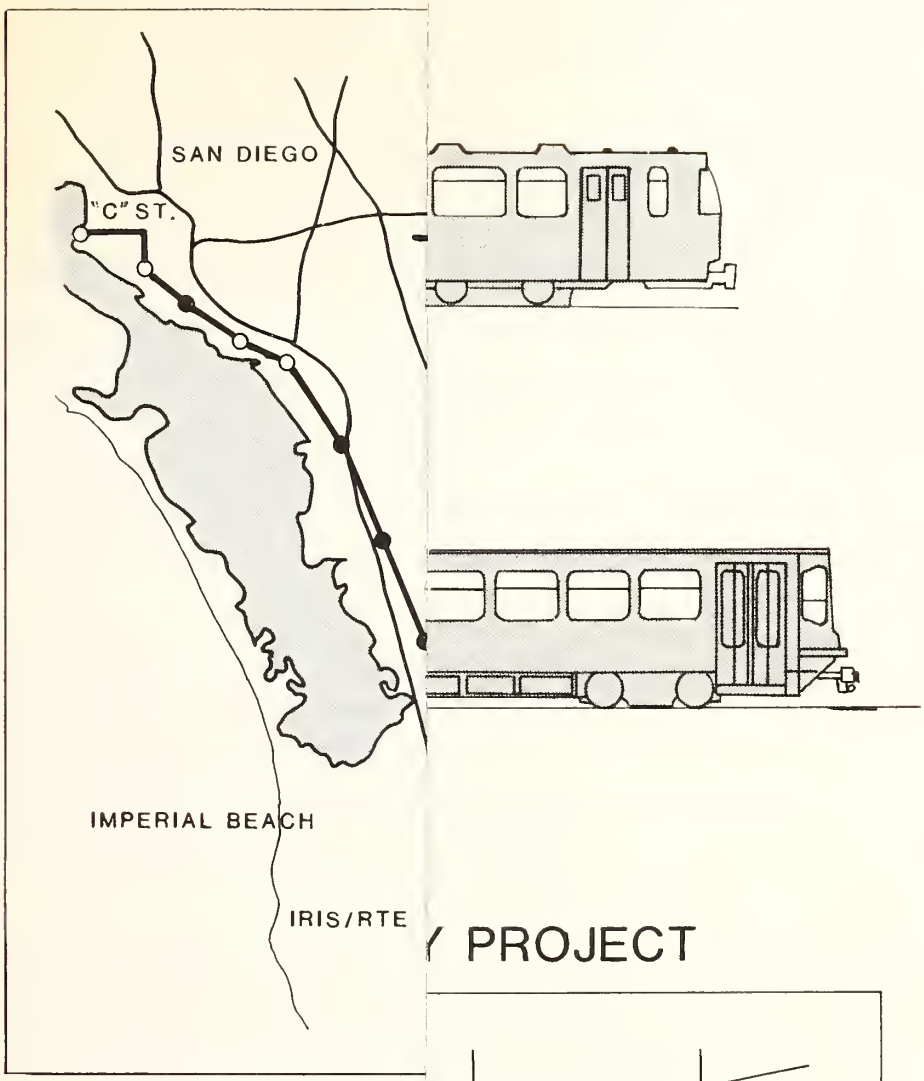
GENERAL

There are many similarities between San Diego and Portland that can be compared and evaluated. There are also many differences that make the comparison difficult to evaluate. In any case, the study and analysis of the two projects do offer some important insight into the planning and implementation process and into the best role for UMTA.

Regarding the similarities, both cities are in the west and serve as regional centers. Both rail systems are basically the same length - Portland, 15 miles; San Diego, 15.9 miles. Both are relatively straight line systems, running from the center of the downtown area to a peripheral area. Both are light rail systems and use similar vehicles. (Figure 1) Both systems (to some extent) use existing rights-of-way, and both systems are being built in roughly the same time frame - late 1970s to mid-1980s. Both systems resulted from unique local political initiative and sudden availability of funds. Both had substantial involvement and support from the state.

Regarding the major difference, San Diego proceeded without federal financial and technical assistance, using primarily state funds, while Portland is using maximum federal financial aid along with local and state funds. San Diego's system was built by a newly formed organization whose sole purpose was to engineer and build a specifically designated rail project with limited funds. Portland's system is part of a transitway project including highway improvements and is being built by the regional transit agency in coordination with the State Highway Department. The San Diego Trolley is consistent with local land use development objectives, but this was not its primary objective. Portland's system, on the other hand, was the outgrowth of specific planning and urban development objectives resulting from local consensus building. The project was viewed as only one tool to achieve larger urban development goals. San Diego's leadership came from a forceful state senator who was a rail transit advocate and committed to getting something done. Portland's leadership came from an equally forceful and popular mayor, committed to revitalizing the central core.

SAN DIEGO 'S



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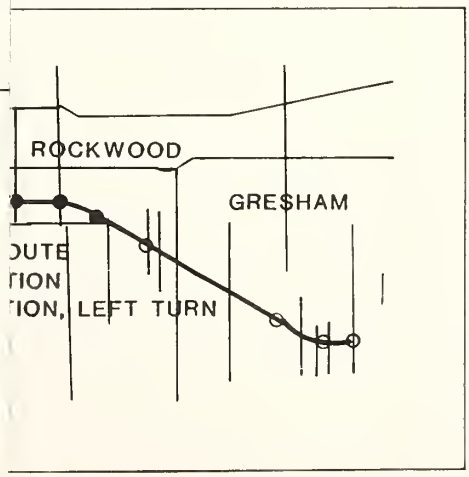

FIGURE 1

UMTA - LIGHT RA

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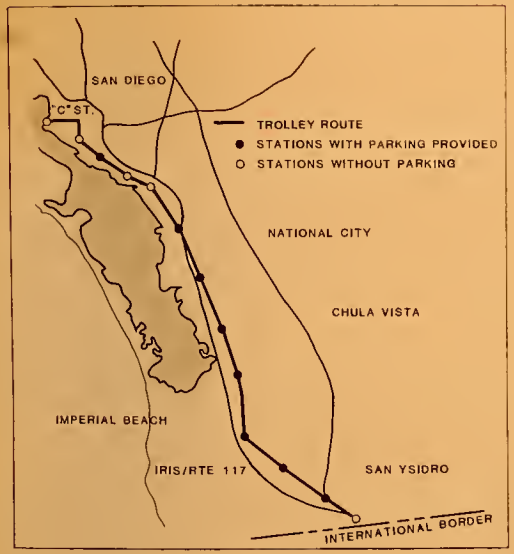
SAN DIEGO TROLLEY PROJECT



LIGHT RAIL VEHICLES

SAN DIEGO

TRI-MET

PORTLAND BANFIELD TRANSITWAY PROJECT

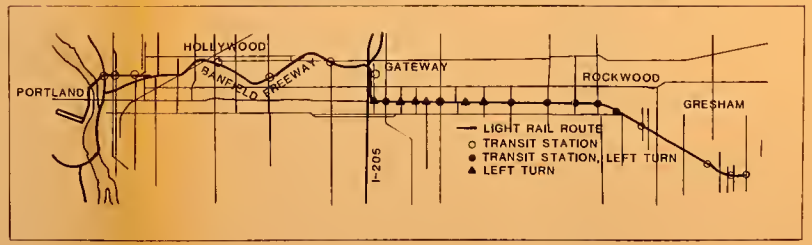


FIGURE 1

UMTA - LIGHT RAIL ANALYSIS	ALIGNMENTS AND VEHICLES	KELLOGG

From the local point of view, UMTA's involvement initially was not a major issue in either case. The overall system-wide transportation planning was underway in both communities and, during the past ten years, was funded primarily with FHWA and UMTA funds. However, San Diego's interest to do something was activated by state legislation which required quick action. After seeking local agreement on the need for a project, both San Diego and Portland performed similar technical tasks. They chose a corridor which was identified by the system-wide studies; studied alternative alignments; studied alternative modes, i.e., all bus, bus/rail, etc.; prepared environmental impact reports; chose a preferred alternative; sought local consensus; and shaped the initial project around available funds and a minimum operable segment. However, the quality and depth of detail of the technical evaluations vary considerably. Portland's DEIS and FEIS are in much greater detail and more comprehensive than San Diego's EIR, which was rather superficial in comparison. Portland was required to prepare more specific information in each step and to negotiate with UMTA, FHWA, and the U.S. Department of Transportation along the way. Yet depending on one's perception, Portland's process was not greatly protracted. Instead, it appears that their greater concern was focused on knowing whether or not and when UMTA would make a decision.

San Diego had the luxury of state legislation which set definitive parameters regarding specifications, financing and time constraints, plus the availability of almost the full right-of-way at a reasonable cost. Furthermore, if something was not done within a certain time frame, the earmarked tax funds would have been withdrawn and used elsewhere.

San Diego's dollars came from a state-initiated referendum approved by a majority of 62 percent, which made funds available to counties who were prepared to build rail transit systems. Under this provision, San Diego decided to build a guideway as quickly as possible. State legislation enabled San Diego to establish a new organization and gave incentives to complete a project with a fixed time frame.

On the other hand, while Portland had a definitive source of funds in the federal interstate transfer pot, it could afford to proceed at a somewhat more deliberate pace because the pot was increasing as a result of a technicality - automatic escalation of the cost estimate for the withdrawn interstate highways, which would be used as the basis for funds made available for the Banfield Transitway Project. That escalation would cease in 1985 and would cause Portland to make a prompt decision.

One key factor in both San Diego and Portland was the availability of a large sum of earmarked money which appeared prior to the alternatives analysis phase and which required little, if any, local (city or county) match or risk.

In summary, the following observations can be made about the two projects:

1. They have many physical and procedural similarities.

2. They resulted from different local political factors:

   - San Diego reacted to a "take it or leave it" state legislative mandate.
   - Portland proceeded through extensive local consensus building.

3. The major organizational difference is that the San Diego Metropolitan Transit Development Board was autonomous. Since it did not use UMTA funds, no coordination was required with federal agencies and minimum coordination was required with other local or state agencies, except to meet CALTRANS and California CEQ, OSHA and PUC requirements.

   Portland, on the other hand, had no single autonomous agency with a clear mandate. This had to be negotiated as the project took shape. Portland not only had to satisfy similar state requirements, but also those of UMTA, FHWA, NEPA, Congress, OMB and the Secretary of Transportation. Furthermore, because of the interstate transfer funds and the local decision to include highway improvements as part of the project, many FHWA rules and regulations had to be satisfied, which, ordinarily in an UMTA assisted project, would not have been required.

4. In general terms, they performed similar technical planning, engineering and environmental review tasks, but Portland was required to do so in much greater detail.

5. If UMTA had participated in San Diego, the planning and review process would have been more rigorous and might have delayed or precluded the decision to proceed with the south bay alignment. A cost effective

analysis was not done to the depth of the Portland analysis, and procedural matters might have delayed action on the SD&AE right-of-way acquisition when that became available.

In Portland, while UMTA participation accounts for some delay, it was not, by itself, responsible for unreasonable delays or excessive cost increases. On the other hand, FHWA involvement presented its own set of rules and further complicated the procedure.

6. San Diego undertook its project with a mandated single-minded purpose - to build a fixed rail system, cheaply and quickly, in order to use money made available from the state legislature. Minimal consideration was given to the cost-effectiveness of the southern corridor or its particular role in accommodating urban growth. However, SB101 was based on meeting certain overall land use and transportation criteria.

   Portland's decisions were rooted in the role of a fixed guideway as a means to achieve urban development and transportation goals and to enhance the role of the center city.

7. It is likely that under existing federal policies, rules and regulations, San Diego would not have received federal construction grant assistance and could not have proceeded had not special funds been made available by the state of California. Portland, according to UMTA officials, had passed their Section 3 test of eligibility for construction grant assistance, but its ability to obtain a full funding commitment was clearly enhanced by the strong local political consensus and availability of sufficient interstate transfer funds.

It is difficult, and even a little dangerous, to draw specific conclusions from comparisons of the two projects because each grew out of particular local conditions. It is possible, however, to identify numerous pertinent findings regarding the transit development process and UMTA's relationship to it. This is the subject of Section VI of this report.

FEDERAL AND LOCAL GOALS AND OBJECTIVES

The purpose of this section is to compare the local and state policies, goals and objectives affecting the San Diego Trolley Project and the Portland Transitway Project with those at the federal level, in order to determine their impact, if any, on the willingness of the federal government to approve the projects for assistance.

Background

What is or should be the principal thrust of UMTA's policies and objectives regarding urban transit? One criticism by local governments and agencies about UMTA's role focused on its failure to serve as an "advocate" for expanding or building new urban rail systems. In the interviews, comparisons were made to FHWA, whose nationwide staff functions as partners in helping to build state highway systems. This may not be a fair comparison. For one thing, the interstate highway program reflected a national goal to be carried out by the states. This arrangement set the stage for a continuing and cooperative relationship. In this case, federal and state goals were essentially the same. Furthermore, federal funds for state and urban highways were apportioned to each state in the nation for use in that state's urban and rural areas.

In contrast, urban transit funds historically have been distributed on an incremental basis to areas of (1) greatest need, or (2) most effective grantsmanship. The national goals for federal assistance to urban mass transit are difficult to state in simple terms and are not universally applicable, especially for fixed guideway systems. First, there is the primary goal to improve urban transportation. Secondly, there is the federal interest in maintaining economically healthy and viable urban centers. But this is more difficult to treat definitively, and essentially it becomes a local interpretation of how best to meet these goals. Furthermore, UMTA finds itself as the manager of a limited amount of funds to be disbursed to a wide variety of areas and projects, not easily measured by any single national goal such as the interstate highway system.

Nevertheless, there are recorded policies, goals and objectives that should serve as the basis for establishing criteria for federal assistance.

Federal Policies, Goals and Objectives

In order to evaluate implications of UMTA assistance, it is important to reflect on federal policies affecting UMTA's role. The following goals and/or objectives relating to major transit investments are taken from the Urban Mass Transportation Act of 1964, as amended; the Department of Transportation UMTA External Operating Manual; and the Federal Register:

Urban Mass Transportation Act of 1964 as amended Section 2(b) (2)

To encourage the planning and establishment of area-wide urban mass transportation systems needed for economical and desirable urban development, with the cooperation of mass transportation companies, both public and private.

To assist in the development of improved mass transportation facilities, equipment, techniques, and methods . . .

Department of Transportation, UMTA External Operating Manual, Chapter II, Section B-GRANTS

First, to re-invigorate public transportation in order to provide service that will attract new riders regardless of their social or economic group for the purpose of their journey . . .

Second, by providing better general service and developing special services, to provide greater mobility for substantial groups of people who are totally dependent on public transportation. . . .

Third, to promote transit as a positive force in influencing and supporting desired development patterns in urban areas and in improving environmental conditions. This objective entails arranging land-use patterns and transportation networks so that each affects the other favorably, in accordance with local development objectives, the ultimate intent being to reduce or minimize the need for transportation facilities and the urban space demands made by them. . . .

Federal Register, Volume 41, Page 41512, Statement of Policy, Major Urban Mass Transportation Investments, September 22, 1976

. . . The statement (policy 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.

. . . Requires major fixed guideway systems to be implemented incrementally, with priority given to the most immediate needs of the locality.

Code of Federal Regulations, 23CFR, Part 450, Planning Assistance and Standards, Subpart A, Urban Transportation Planning

The purpose of this subpart is to implement . . . the Urban Mass Transportation Act of 1964 as amended . . . which requires that each urbanized area, as a condition to the receipt of federal capital or operating assistance, have a continuing, cooperative, and comprehensive transportation planning process that results in plans and

programs consistent with the comprehensively planned development of the urbanized area.

In summation, the above stated goals and objectives are intended to:

- Ensure that local transportation planning goals and objectives are consistent with local urban development planning goals and objectives.
- Re-invigorate public transportation in order to attract new riders.
- Provide greater mobility for people who are totally dependent on public transportation.
- Promote transit as a positive force in influencing and supporting desired urban development patterns.
- Promote transit as a positive force in improving environmental conditions, such as air pollution.

The San Diego Region

In order to determine whether the San Diego Trolley Project and the San Diego transportation policies, goals and objectives are consistent with those of the federal level, it is necessary to understand the history of the formulation of these policies, goals and objectives. Most of the local planning and policy development has been supported by FHWA and UMTA research and planning grants. The formulation of transportation policies for the San Diego Region was started as early as 1964 with the creation of a San Diego County Joint Powers Agreement for Transportation Planning. (A continuing transportation planning program for the San Diego Region existed since the early 1950's; however, this planning focused primarily on roads and highways.) A local Joint Powers Agreement included all incorporated cities, the County, the Port District and the State Division of Highways. Under the Agreement, a Transportation Policy Coordinating Committee and a Transportation Technical Coordinating Committee were formed. The Transportation Technical Coordinating Committee began developing a work program to conform with the Federal Aid Highway Act of 1962 requirements.

In 1966 a group consisting of the Secretary of the League of California Cities, the County's Chief Administrative Officer, and the City Managers, was formed to

later became known as the Comprehensive Planning Organization for San Diego County (CPO), incorporated the technical and policy advisory committees of the 1964 Joint Power Agreement. During its first year, the CPO focused on preparing a comprehensive long-range transportation and land use plan for the San Diego Region.

By 1967, regional transportation goals had been established and were incorporated in the long-term "General Plan for San Diego 1990." Although the 1967 regional transportation goals were based on both transportation and land use planning issues, they did not give much consideration to a future transportation system which would incorporate various modes of transportation.

After 1970, such multi-modal consideration was included in an extensive long-range transit and highway planning program for the San Diego Region. This comprehensive transportation planning program was carried on for a period of approximately five years and resulted in the 1975 San Diego Regional Transportation Plan (RTP).

In preparing this plan, the CPO evaluated a number of land use and transportation alternatives. Based on the evaluation of these alternatives, the CPO Board, in 1974, adopted a set of regional land use and transportation policies. The land use policies favored controlled growth; the transportation policies favored using transportation to structure urban development. These policies are summarized as follows:

POLICY I. THE REGIONAL COMPREHENSIVE PLAN AND LOCAL PLANS AND PROGRAMS SHOULD BE DIRECTED SPECIFICALLY TOWARD DEVELOPMENT AND ENHANCEMENT OF EXISTING URBAN COMMUNITIES AND THE MAINTENANCE AND ENHANCEMENT OF RURAL COMMUNITIES WITHIN THE REGION.

POLICY II. NEW EMPLOYMENT OPPORTUNITIES SHOULD BE LOCATED IN EMPLOYMENT CENTERS DEVELOPED AS AN INTEGRAL PART OF BOTH EXISTING COMMUNITIES AND NEWLY DEVELOPING SUBURBAN COMMUNITIES. THE SIZE AND NUMBER OF THE EMPLOYMENT CENTERS WOULD DEPEND ON THE SIZE AND CHARACTER OF THE COMMUNITY WITHIN WHICH THEY ARE

LOCATED; THE TYPES OF EMPLOYMENT IN EACH COMMUNITY EMPLOYMENT CENTER SHOULD BE CONSISTENT WITH THE AVAILABILITY AND PRICE RANGE OF HOUSING IN THE SURROUNDING COMMUNITY.

POLICY III. THOSE ACTIVITIES WHICH REQUIRE REGIONAL MARKET OR SERVICE AREAS SHOULD CONCENTRATE IN EMPLOYMENT AND SERVICE CENTERS. THESE CENTERS SHOULD BE LOCATED AT THE FOCAL POINTS OF THE REGIONAL TRANSPORTATION SYSTEM.

POLICY IV. LOCAL JURISDICTIONS SHOULD USE THE LOCATIONS OF REGIONAL TRANSIT FACILITIES AS A FOCAL POINT FOR LOCAL DEVELOPMENT PLANS FOR ACTIVITIES PROVIDING EMPLOYMENT OPPORTUNITIES AND FOR HIGHER DENSITY RESIDENTIAL DEVELOPMENT.

In addition to the inclusion of the Regional Development Policies, the CPO Board of Directors adopted the following Regional Transportation Policies in January 1974:

1. The provision of transportation facilities is one of the region's most important public services. As such, the provision of both regional and local transportation facilities should be done in a way that is consistent with and assists in the implementation of overall regional and local growth and development policies.

2. The regional transportation plan should consist of coordinated "Multi-Modal Systems" designed and operated to serve the varying travel requirements in the region and its several communities, and to provide the citizens of the region's urban communities with a realistic choice of travel mode.

3. The regional transportation plan should emphasize the coordinated development and operation of travel facilities. The coordinated development of transportation corridors, interchanges, and stations is vital to the achievement of this policy.

4. Local transit networks should be fully coordinated with the regional transit networks to provide the region's citizens with realistic accessibility opportunities to the region's economic, educational, cultural, and recreational opportunities, and to needed public services.

5. Regional and local transportation facilities should be developed to minimize the adverse social, economic, and environmental impacts caused by their construction and/or operation. Potentially adverse impacts on people, their neighborhoods and communities, property values, recreational, cultural, historical facilities, and open spaces should be defined and communicated to the public as part of the decision-making process for both regional and local transportation facilities.

6. Regional and local growth and development facilities and regional and local transportation systems should be directed to minimize the region's energy requirements and maximize improvements in air quality.

7. In the design and operation of regional and local transportation facilities, special attention should be given to the needs of people with low mobility, including people with low incomes, the elderly, the young, and the handicapped.

8. New construction and reconstruction of regional and local transportation facilities should give priority to:

   a. The multi-modal requirements of transportation corridors.

   b. The complementary relationship between transportation access and land development, and the multi-use potential of transportation corridors created by regional and local transit and highway systems. Joint development and/or multi-use of transit and highway rights-of-way should be pursued to the fullest extent possible.

9. The regional transit system should be designed and operated to maximize pedestrian and local feeder access to transit terminals and stations in the region's urbanized areas. The need to change travel modes or transfer en route should be minimized.

10. Where cost-effective, regional and local transit systems should take maximum advantage of the most advanced and proven automated equipment available.

11. The design and operation of local transit networks should be consistent with the character of the area to be served.

12. Centre City San Diego and other intensively developed regional-scale and community centers should be served by appropriately designed people/goods moving circulation and distribution systems.

As part of the Basic Transportation Policies, the CPO Board of Directors adopted the following specific goals and parameters for the regional transit system:

1. An intermediate capacity, fixed guideway transit network that serves high demand travel corridors and:

   a. Operates on exclusive rights-of-way, but uses existing public rights-of-way for guideway locations where consistent with service policies.

   b. Provides high levels of express and local service in areas served.

   c. Is conveniently accessible by walking, by auto, and by local transit feeder service to the residents of the region's urban areas.

   d. Has significant effect on land development patterns and assists in the implementation of overall regional and local development policies.

2. An express bus network providing high levels of transit service in those regional transportation corridors having only moderate travel demands. The express bus network should:

   a. Provide efficient service in selected moderate demand corridors until - if and when - travel demands justify higher capacity fixed guideway transit service.

   b. Operate on exclusive highway lanes or exclusive busways, and receive preferential treatment on freeway ramps where needed for more efficient service.

   c. Be implemented and operated in coordination with the intermediate capacity, fixed guideway network and community-scale feeder service to produce a total regional transit system. . . .

Following the formulation of these stated policies, the CPO, in May 1974, initiated a Transit Development Program study for the purpose of refining adopted transportation policies, identifying transit corridors, evaluating acts, refining patronage, and determining financial feasibility. During this study, conventional heavy rail, light rail and advanced technology systems were evaluated. As a result of this study, guideway and express bus corridors were identified; these corridors were later adopted as part of the 1975 Regional Transportation Plan, and included the north, east and south corridors which MTDB considered before choosing the south line. At this point in time, based on the previous studies, the CPO favored a $2 billion heavy rail transit alternative comparable to BART.

Senator James Mills, a rail transit advocate concerned about the high cost of the proposed heavy rail system and the bad press the BART system was receiving at the time, initiated legislation (Senate Bill 101) to create a transit development board in San Diego County specifically to construct and operate exclusive public mass transit guideways in that county. The bill was passed by the California Legislature and created the Metropolitan Transportation Development Board (MTDB), which officially began operations on January 1, 1976.

An analysis of the following excerpts from the Senate Bill 101 language provides insight as to how the bill influenced the formulation of policies by the MTDB in the latter part of 1976:

> 120262. (a) The legislature finds that it is in the public interest that the construction of exclusive public mass transit guideways commence as soon as possible so that their operation may also commence as soon as possible. Therefore, in planning and constructing such guideways, the board shall give priority consideration to guideway technology presently available and in use.
>
> (b) Such a guideway system shall be planned in such a manner that it may be constructed, and brought into operation on an incremental basis so that available fiscal resources may be utilized as early as possible. If the guideway system is a medium capacity system, it will be capable of being upgraded to a higher service capacity when necessary.
>
> (c) To the extent feasible, transportation rights-of-way of public entities shall be utilized to minimize the cost of construction.
>
> 120263. Priority for guideway development shall be given to meeting the transportation needs of area-wide corridors of travel. In the event the Transit Development Board determines that a guideway system intended solely for an activity center is appropriate, the approval of the State Transportation Board shall be necessary prior to the use of funds allocated from the State Highway Account in the State Transportation Fund for such a guideway system.

Article 5, Section 120300, of Senate Bill 101 assigned responsibilities for long-term planning to the San Diego Association of Governments (SANDAG, formerly CPO) and short-term transportation planning and development to the San Diego Metropolitan Transportation Development Board (MTDB):

Article 5. Transportation Planning

120300. The Council of Governments which includes the area of the board (MTDB) shall be responsible for long-term transportation system planning in said area.

Such planning shall be directed to, among other things:

(a) Identification of corridors of travel.
(b) Definition of the transportation problems of each corridor.
(c) Definition of the transportation goals for each corridor's affected local jurisdiction, to be supported by transportation investment decisions in each corridor.
(e) Recommendation of priority corridors for guideway development.
(f) Recommendation of the mix of alternative transportation modes appropriate for deployment in light of transportation needs and goals for each corridor.
(g) Recommendation of environmental, economic, energy, and social policies that should guide transportation investment decision within corridors.

120301. With respect to the area under its jurisdiction, the board shall be responsible for near-term operational planning directed to:

(a) Determination of the amount of funds available for transportation development.
(b) Selection of appropriate transportation technology.
(c) Determination of capacity for exclusive public mass transit guideway technology.
(d) Determination of operating performance criteria and costs for such guideway system.
(e) Location of routes and access points to the guideway system.
(f) Overall staging of the guideway system.

During its initial year of operation in 1976, the MTDB engaged Thomas H. Lipscomb as a consultant to assist in formulating an approach for development and implementation of a transit guideway system. Mr. Lipscomb was retired from the Army Corps of Engineers and had previous light rail transit experience.

Assisted by Mr. Lipscomb and based on two reports prepared by him, "Feasibility of Guideway Transit in San Diego, A Low Cost Approach to a First Increment," and "Most Feasible First Increment Guideway for San Diego, A First Approximation," the MTDB adopted a set of principles to serve as the foundation for design, development and operation planning of the San Diego Trolley. These principles included the following:

- The corridor should extend a long distance and offer high-speed operation.
- The rail transit line capital cost should be low.
- The rail transit line should be primarily at grade and primarily with exclusive right-of-way.
- The rail transit system operating costs should be low and should attempt to meet operating costs out of fares.
- Project planning should measure the impact of the proposed transit system on residential growth.

The above principles were later incorporated as the "Project Objectives" in the DEIR and FEIR prepared by the MTDB.

Guided by the adopted principles and the mandate of SB101, the MTDB, in September 1977, after nine months of further transit planning and alternatives evaluation, selected light rail as the appropriate transit guideway technology.

In evaluating whether the stated transportation planning and development policies, goals and objectives affecting the San Diego Trolley Project had a direct impact on the project and were consistent with those at the federal level, the following comments are provided:

- Historically, transportation planning and development in the San Diego Region were performed in coordination with state and regional land use planning goals and objectives. This was consistent with the federal goal to promote transportation systems to influence and support desired development patterns in urban areas and to improve environmental conditions.
- The creation of the MTDB under SB101, with the stated purpose to "commence construction of exclusive public mass transit guideways as soon as possible . . . " and to give "priority consideration to guideway technology presently available" while satisfying the goals and objectives of Senator Mills and other light rail transit advocates, was not based on any stated federal policies or objectives at the time.
- The requirement under SB101 that the "guideway system shall be planned in such a manner that it may be constructed and brought into operation, on an incremental basis" was consistent with the federal policy that fixed guideway systems were to be implemented incrementally.

- The low cost principles relating to capital and operating expenditures of the fixed guideway system, adopted by the MTDB, were consistent with federal policies requiring transportation systems to be "cost effective," but the specific requirements in the bill tended to preclude the full range of alternatives to be studied under AAI and AAII.

Clearly there were no major conflicts with federal goals and objectives. However, the various policies promulgated by state legislation and by CPO/SANDAG had a direct influence on the location, scope, mode and technology of the ultimate project.

The Portland Region

The formulation of specific policies affecting the development and implementation of a light rail system in Portland did not begin until about 1973. However, previous transportation planning activities, prior to this time, had some impact on these policies which evolved subsequent to 1973, and are therefore presented here for background.

The first major transportation study for the Portland Metropolitan area - the Portland-Vancouver Metropolitan Area Transportation Study (PVMATS) by the Oregon State Highway Department - was initiated in 1959. This study focused entirely on automobile-based transportation systems to meet future regional transportation demands projected through 1990.

This highway orientation changed in 1969 when the Oregon State Legislature, responding to the need to reinforce state-wide public transportation use, passed legislation providing a public tax subsidy for transit use within specified transit districts in the major urban areas of the state. As a result of this legislation, the Tri-County Metropolitan Transportation District (Tri-Met) was formed in the Portland area. Tri-Met immediately purchased the private bus companies in the area and began an improvement program with the intent to increase ridership throughout the three-county (Multnomah, Clackomas and Washington) service area.

At the same time, in 1969, the Columbia Region Association of Governments (CRAG), which served as the regional planning organization, initiated a comprehensive long-range regional planning process and concluded that the metropolitan area should greatly expand its public transportation network through: (1) exclusive transitways, (2) reserved lanes for buses, and (3) an extensive system of park-and-ride stations.

In 1972 the Downtown Plan, prepared by the city of Portland, emphasized the rejuvenation of the Portland downtown as the major activity center. Specific objectives cited in the plan placed emphasis on:

- Enhancement of downtown as the retail, office, cultural and entertainment center of the metropolitan area.
- Increasing the number of residential units in the downtown area.
- Balancing transportation mode uses.
- More efficient use of right-of-way and vehicles.
- Reducing the reliance on use of the automobile and increasing the use of public transit.
- Planned use of land around transit stations.
- Improving public transportation services to downtown.
- Reduction in the need for parking in the downtown area.

During this early 1970 period, a consensus began to build among regional planners, politicians and citizens that an effort should be made to limit urban sprawl and development in the suburbs. While this was placing a burden on public facilities and depleting the environment, not much real work had been done to support development of the downtown area through controlled land use policies and transportation planning, which considered alternative public transportation modes.

Then in 1973, two key events occurred which supported the redevelopment of the Portland downtown area, and greatly influenced and led to the eventual planning and construction of the Banfield Transitway Project.

The first key event was the formulation of a Governor's Task Force (GTF) which was composed of policy-level representatives from surrounding counties, the Oregon Department of Transportation (ODOT), Tri-Met, CRAG, and the Port of Portland. The GTF was chaired by the Mayor of Portland, Neil Goldschmidt. This task force was created in response to general concerns that prevailing planning practices were becoming insensitive to both citizens' concerns and environmental problems, as well as concerns about impacts of unrestrained growth on surrounding rural land and the ability of the community to effectively provide public services to such areas.

The Federal Aid Highway Act of 1973 provided that states and local jurisdictions could withdraw an interstate segment from the interstate highway system and use the available funds for mass transportation projects. As a result, the GTF began a planning program which deleted the Mt. Hood freeway from the system as an assumed project, and instead focused on corridors with the potential to accommodate the Mt. Hood travel demand. The GTF also examined a range of possible transit modes which might be employed in the region, including bus guideways and light rail transit.

The Mt. Hood freeway was subsequently withdrawn, and the monies from this project were programmed to fund transportation projects in the state, including a major portion for the Banfield Transitway Project.

The second key event occurred in 1973 with the passage by the Oregon Legislature of Senate Bill 100 (SB100) which established a state-wide land use planning process.

Senate Bill 100 clearly provided support to those who favored land use and transportation policies that would increase the vitality of the Portland Central Business District and would limit growth away from the core city.

During the next two years, work programs focused on identifying priority corridors for needed capital improvements and for alternative modes of transportation. In

1975 four corridors were selected as candidates for major transportation improvements, and in 1976 the Banfield corridor was selected as the priority corridor. Under the lead of ODOT, a Draft Environmental Impact Statement (DEIS) was started for capital improvements in the Banfield corridors. Although a fixed guideway system was initially considered as an alternative, it was dropped in favor of rubber-tired alternatives. The DEIS work was continued through 1977 without considering a fixed guideway transit system.

However, in 1977 Tri-Met, who until this time had assumed the strict role of being a bus company, completed a 1990 Plan which indicated that a fixed guideway system should be considered for the Banfield corridor. The 1990 Plan included the following goals:

- Support regional policies for growth without major new investments in highway capacity by developing and operating a transit system which provides travelers with an attractive alternative to the private automobile.
- Develop and implement a transit financing program to support the construction and operation of the system through 1990.
- Improve productivity with capital and operating investments and sound, innovative management policies.
- Make a major contribution to the improvement of the regional environment and the livability of urban neighborhoods.
- Maximize energy conservation and efficiency in the design and operation of the transit system.
- Improve transit mobility for the transportation disadvantaged.
- Encourage growth patterns within the regional land use plan which support efficient transit service.

The board of Tri-Met then decided that it should take a more active role as a lead agency in transportation planning and development. With the 1990 Plan in mind and with Tri-Met assuming a stronger role as a participant in the preparation of the DEIS for the Banfield corridor transit project, light rail was reinstated as an alternative mode for consideration, and eventually decided upon as the best alternative.

In analyzing the local planning policies, goals and objectives which developed, it is clear that efforts were made to assure that land use and transportation planning actions were consistent in their overall purpose, to reactivate the downtown area as the primary activity center and to limit growth to areas in and around the core of the city.

Comparing these policies, goals and objectives to those at the federal level reveals that they were consistent and in compliance with all the federal policies, goals and objectives, and had a definite impact on the location, scope and technology of the ultimate project.

PLANNING AND DECISION MAKING

The planning and implementation of both the San Diego and the Portland projects involved many federal, state, and local planning and decision-making participants. Figure 2 summarizes and compares the key participants for both projects.

Because the San Diego Project was funded 100 percent from state funding sources, approvals and decisions were not required at the federal level. The Portland Project, on the other hand, was funded 84.9 percent from federal funding sources, and therefore, required approvals and decisions at the federal level. At the federal level, the key participants included the U.S. Congress, the U.S. Department of Transportation, the Federal Highway Administration (FHWA), the Urban Mass Transportation Administration and EPA. The U.S. Congress and U.S. Department of Transportation were involved with political decisions affecting the Portland Project while FHWA, UMTA and EPA, to some extent, were involved with technical reviews and evaluation.

At the state and local levels, both projects involved similar numbers and types of participants.

In both regions, transportation planning, prior to the selection of light rail as the preferred alternative mode of public transportation, focused on similar land use and development issues. There was also a general consensus at the local and state

levels in both regions to de-emphasize the development of new freeways and reliance on the automobile, and to instead emphasize and promote the use of public transportation.

However, with respect to decision-making and the selection of a preferred alternative mode of transportation, the process was considerably different.

In San Diego, the system-wide transportation planning and alternatives analysis was performed in the early 1970s by the Comprehensive Planning Organization (CPO) and was fairly well completed by 1975. Then, in 1976, the Metropolitan Transit Development Board was created by Senate Bill 101 with specific purpose to plan, develop and construct a fixed guideway system. Legislation had already been approved prior to creation of MTDB to fund a fixed guideway system with California gas tax revenues and sales tax revenues.

With the objective to develop a fixed guideway system and the funding available, the MTDB was able to perform the technical analysis and evaluation required for the selection of the preferred alternative mode rather independently. Although the technical work performed by MTDB was coordinated with other local agencies and governments, detailed reviews and approvals required by an UMTA funded project were not required. The MTDB was required to prepare an environmental impact report (EIR) for the South Bay Light Rail Project for review and approval by the California Resource Agency, the equivalent of the National Environmental Protection Agency. The draft EIR was completed on February 28, 1978 and the final EIR was completed five months later in August 1978. All during this process, the MTDB had to obtain consensus and approval of its technical work from other agencies such as the California PUC, California Transportation Commission, the California Department of Transportation, the city of San Diego, and the county of San Diego.

After less than three years of technical analysis and evaluation, the MTDB in January 1979 initiated final design engineering for the South Bay Line.

In contrast to the San Diego Project, the planning and decision-making process for the Portland Project was complex and involved a formal sequential approval process.

SANFIELD PROJECT

FEDERAL LEVEL PARTICIPANTS	NSPORTATION NISTRATION TATION ADMINISTRATION
STATE LEVEL PARTICIPANTS	• CALIFORNIA B100) • CALIFORNIA F TRANSPORTATION • CALIFORNIA ATION AND DEVELOPMENT • CALIFORNIA DEPARTMENT • CALIFORNIA T S COMMISSION • CALIFORNIA H ON COMMISSION • PORT DISTRIC E • COASTAL CO F ENVIRONMENTAL QUALITY
LOCAL LEVEL PARTICIPANTS	• COMPREHENS CIATION OF GOVERNMENTS SAN DIEGO TAN TRANSIT DISTRICT • SAN DIEGO A • LOCAL AGEN DISTRICT • CITY OF SAN ITY • METROPOLIT

FIGURE 2

UMTA - LIGHT RAIL ANA

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	SAN DIEGO TROLLEY PROJECT	PORTLAND BANFIELD PROJECT
FEDERAL LEVEL PARTICIPANTS	NONE	• U.S. CONGRESS • U.S. DEPARTMENT OF TRANSPORTATION • FEDERAL HIGHWAY ADMINISTRATION • URBAN MASS TRANSPORTATION ADMINISTRATION
STATE LEVEL PARTICIPANTS	• CALIFORNIA LEGISLATURE (SB101) • CALIFORNIA DEPARTMENT OF TRANSPORTATION • CALIFORNIA RESOURCES AGENCY • CALIFORNIA PUBLIC UTILITIES COMMISSION • CALIFORNIA TRANSPORTATION COMMISSION • CALIFORNIA HIGHWAY COMMISSION • PORT DISTRICT • COASTAL COMMISSION	• OREGON LEGISLATURE (SB100) • OREGON DEPARTMENT OF TRANSPORTATION • OREGON LAND CONSERVATION AND DEVELOPMENT COMMISSION • OREGON STATE HIGHWAY DEPARTMENT • OREGON PUBLIC UTILITIES COMMISSION • OREGON TRANSPORTATION COMMISSION • GOVERNOR'S TASK FORCE • OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY
LOCAL LEVEL PARTICIPANTS	• COMPREHENSIVE PLANNING ORGANIZATION FOR SAN DIEGO COUNTY • SAN DIEGO ASSOCIATION OF GOVERNMENTS • LOCAL AGENCY TASK FORCE • CITY OF SAN DIEGO • METROPOLITAN TRANSIT DEVELOPMENT BOARD	• COLUMBIA REGION ASSOCIATION OF GOVERNMENTS • TRI-COUNTY METROPOLITAN TRANSIT DISTRICT • CITY OF PORTLAND • METROPOLITAN SERVICE DISTRICT • PORTLAND PORT AUTHORITY

FIGURE 2

UMTA - LIGHT RAIL ANALYSIS | PROJECT PLANNING AND DECISION MAKING PARTICIPANTS

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During the early 1970s, transportation planning in the Portland region was predicated on meeting transportation needs through the expansion and continued development of the region of highways and roads, with buses being the only form of public transportation.

Then, in 1973 a Governor's Task Force was appointed by the Governor to evaluate, on a system-wide basis, the feasibility of alternative modes of public transportation. At this, the Columbia Region Association of Governments had responsibility for overall regional land use and transportation planning.

Based on the work performed by the Governor's Task Force, a decision was made in late 1975 to request the withdrawal of the planned Mt. Hood Freeway and to transfer the funds from this project for use on other public transit projects in accordance with the interstate transfer provision of the 1973 Federal Aid Highway Act. Approval for Mt. Hood freeway withdrawal and transfer of funds had to be obtained from the U.S. Department of Transportation (USDOT).

Although approval for the withdrawal was not provided by the USDOT until mid-1976, the Oregon Department of Transportation (ODOT), in mid-1975, initiated the evaluation of alternative modes of transit for four corridors which had been selected as priority corridors by the Governor's Task Force. The technical work program performed by ODOT was initially developed in accordance with established procedures of the Federal Highway Administration (FHWA).

Then, in January 1977 Tri-Met, the regional public transit agency (then operating buses only), which until this time had been a passive participant relative to the work being performed by ODOT, decided to take on a more active role. It should be noted that Tri-Met's decision was prompted by ODOT's earlier decision to drop light rail transit from consideration as a usable alternative for the four corridors it was evaluating. At this point, ODOT and Tri-Met became equally involved in the evaluation of alternatives of the four designated priority corridors.

Because light rail or some other form of fixed guideway system were now being considered viable transit modes, it was required that UMTA become involved in the technical review and approval process.

In contrast to the San Diego Project, with the MTDB being the sole agency responsible for the planning and development of a fixed guideway project, the planning and development of the Portland Project was performed jointly by ODOT and Tri-Met. Procedurally, this complicated the planning and decision process at the local level.

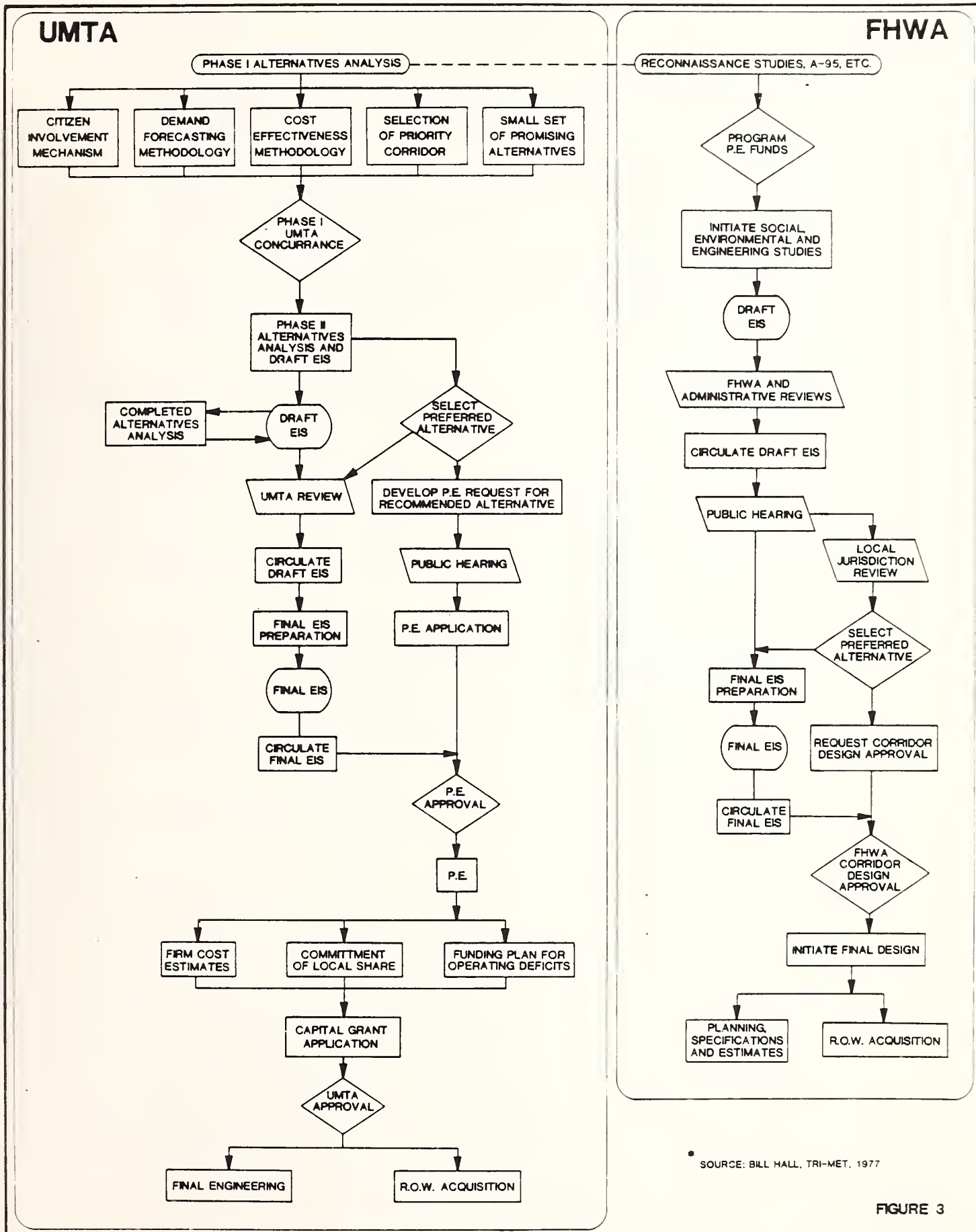
The review and approval process at the federal level was also complicated due to the involvement of FHWA and UMTA. Both of the agencies had procedural requirements for the review and approval of the technical work being performed by ODOT and Tri-Met. These procedural requirements and the processes for evaluation unfortunately were not similar in all cases.

During the interviews performed by Kellogg, a procedural flow chart developed by Bill Hall of Tri-Met was obtained, which according to Mr. Hall, illustrates the comparison of FHWA's and UMTA's review and approval process. This chart is included as Figure 3 of this report.

The chart illustrates the dissimilarities of the two processes. The most significant difference is in the relative sequencing of requirements for performing alternatives analysis, environmental impact analysis, and preliminary engineering.

In contrast to the San Diego Project, which took less than three years from the creation of MTDB in 1976 to initiation of final engineering in 1979, Portland took five and one-half years, from the beginning alternatives analysis for the four selected corridors by ODOT in 1975 to the initiation of final engineering for the Banfield Transitway Project in 1981. The longer time for planning and development of the Banfield project can be attributed to the following factors:

- Joint responsibilities of FHWA and UMTA for review and approvals of technical work being performed by ODOT and Tri-Met.
- Joint responsibilities for preparation of technical studies.
- Technical work details and requirements for the alternatives analysis, environmental impact analysis and preliminary engineering work, were more rigorous and comprehensive. Comparison of the draft and final environmental impact report prepared for the Banfield Transitway Project were much more detailed and comprehensive than the reports prepared for the San Diego South Bay Light Rail Project.



* SOURCE: BILL HALL, TRI-MET, 1977

FIGURE 3

UMTA - LIGHT RAIL ANALYSIS	FEDERAL PLANNING/ ENGINEERING PROCESS*	KELLOGG

- Much more effort and time spent at the local level involving citizens and communities to get their input for development of the Banfield Transit Way Project.

- Development of the Banfield Transitway Project was much more complex in that it involved the development of a light rail transit guideway and the reconstruction of the Banfield freeway.

- The funding for the Banfield Project was much more complicated and involved funding from the state, Tri-Met, UMTA and the FHWA, after first taking steps to withdraw the Mt. Hood freeway from the Interstate System.

KEY MILESTONE EVENTS RELATING TO THE SAN DIEGO AND PORTLAND PROJECTS

Presented in this section is a bar chart schedule, Figure 4, reflecting the key milestone activities and events relating to systems planning, alternatives analysis, environmental impact statements, preliminary and final engineering, and construction. A detailed chronology of events relating to both projects is included in the appendix of this report.

The schedule is an "as implemented" schedule, and represents data gathered from multiple sources during Kellogg's study. Because some interpretation was required as to which activities were part of regional planning, systems planning, and project planning, the designation noted may not be totally accurate.

It is interesting to note from analysis of the schedule the similarities and dissimilarities of the processes to evaluate, develop and implement the two projects.

Also considering the time required, the number of participants involved and the costs associated with the overall process, it is apparent that a work program manual, which provides detailed instructions and description of requirements for preparing the necessary technical analysis to qualify a project, would be beneficial. During interviews of personnel involved with the Portland Project, the complaint was varied about having to respond to changing requirements for UMTA officials and not being provided with clear directions and instructions for preparing technical studies. It was generally felt by those interviewed that the practice of changing the requirements and lack of clear instructions contributed in

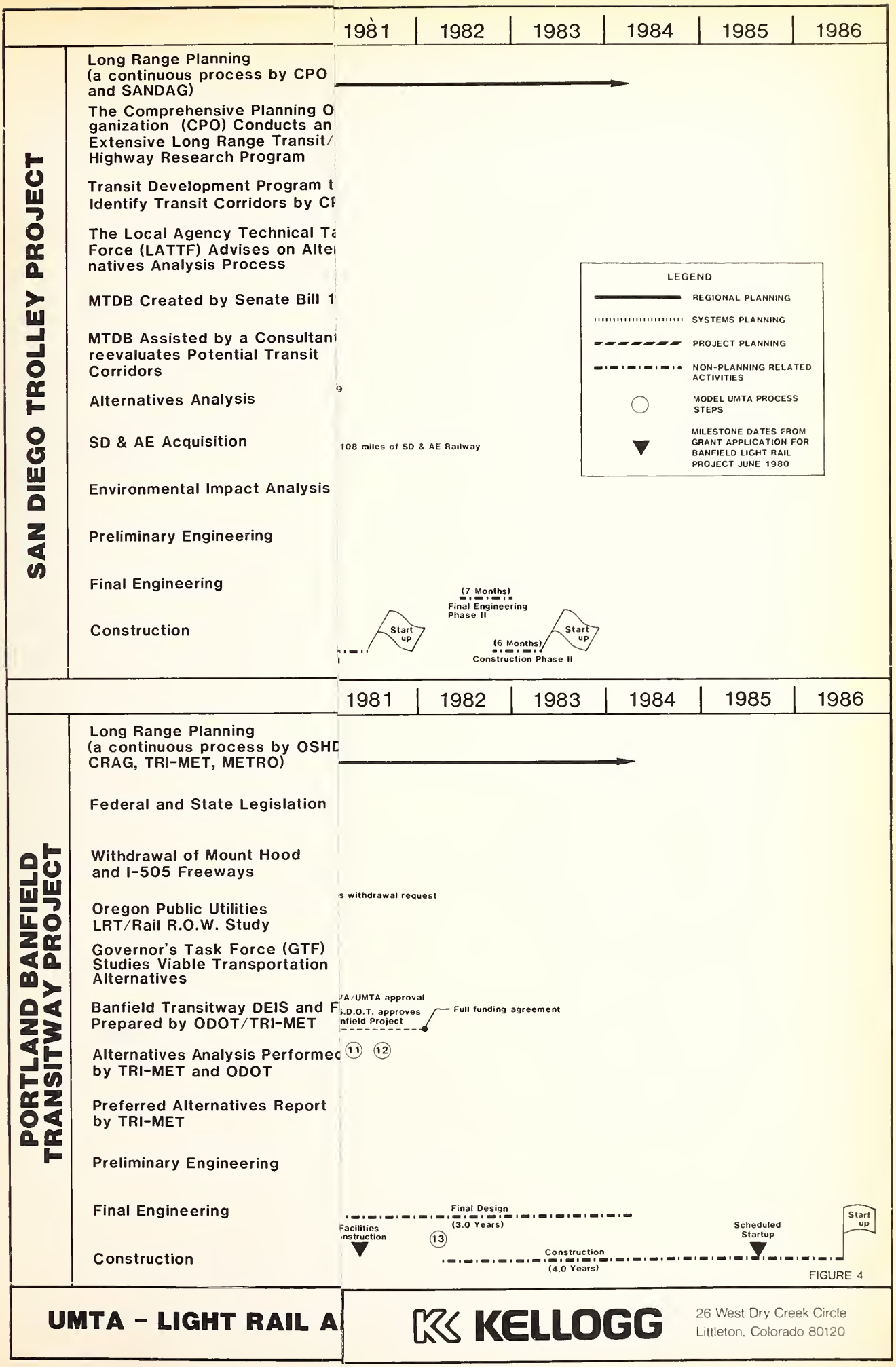


FIGURE 4

UMTA – LIGHT RAIL A

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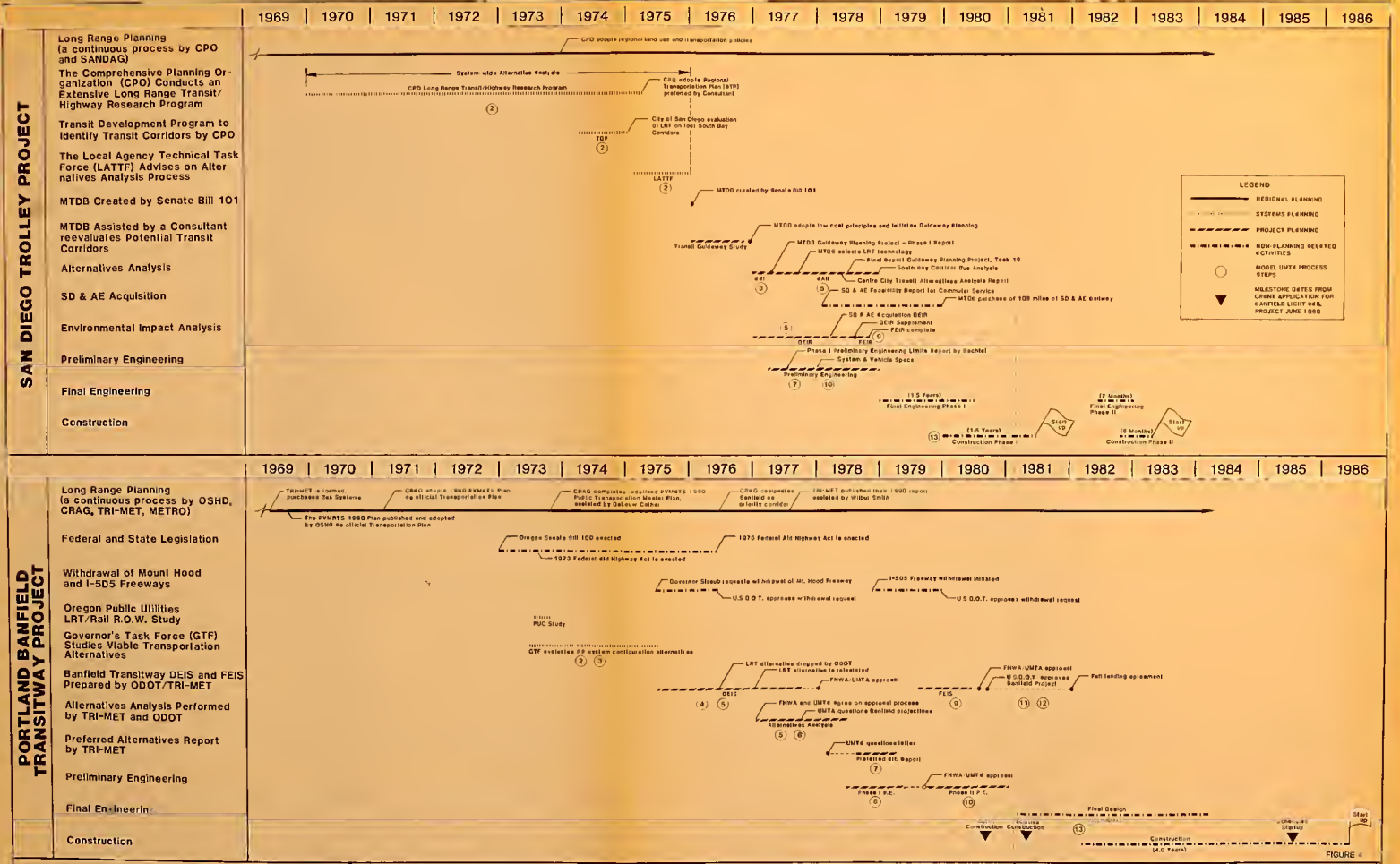

FIGURE 4

UMTA – LIGHT RAIL ANALYSIS

COMPARISON OF KEY WORK PROGRAM MILESTONES

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part to delaying the technical analysis and final decision by UMTA to give approval for final engineering. It is impossible to determine to what extent this may have contributed to delaying a decision.

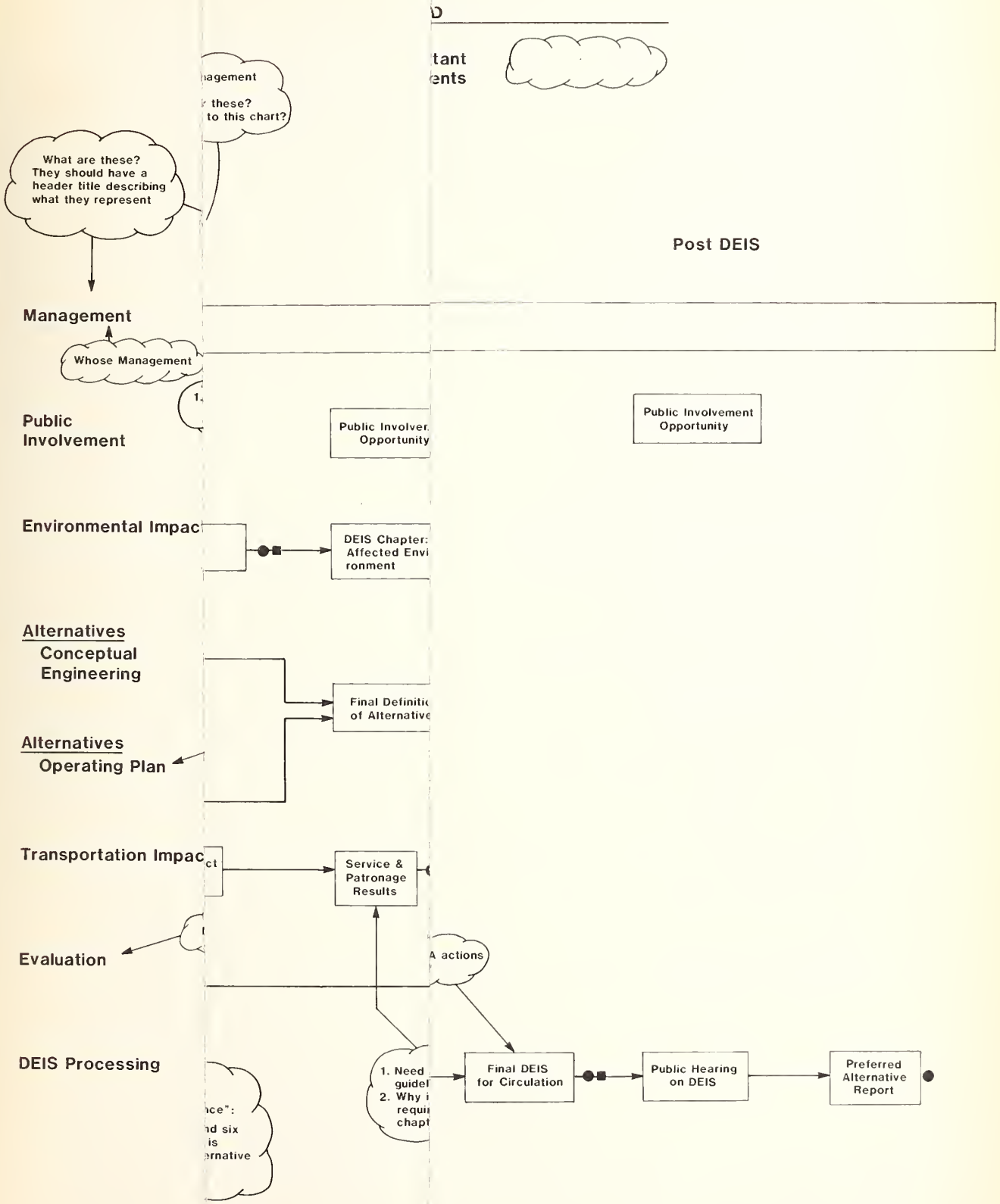
PROCEDURAL GUIDELINES

A project work program manual (other than the External Operating Manual) was not available during the technical work for the Portland Project because UMTA, in 1975, was and still is a relatively dynamic federal agency with changing policies and guidelines, and the interstate withdrawal/substitution process was relatively new. A manual has not yet been developed; therefore, the description of requirements and instructions for preparing technical studies remains unclear and disorganized.

With this in mind, Kellogg has reviewed a draft outline of UMTA procedures for preparing an alternatives analysis study. The UMTA procedures were dated September 1983 and included a conceptual flow chart illustrating the process (Figure 5). These draft procedures are not official and are not sufficient to help clarify the requirements for preparing an alternatives analysis. (Specific comments and critiques by Kellogg have been noted on the flow chart.)

In an attempt to clarify the overall process for evaluating major capital investments, Kellogg prepared a "Model UMTA Process for Evaluation of Major Investments" flow chart, Figure 6, which identifies 13 major steps in evaluating a proposed project. The flow chart reflects official rules as described in four separate federal regulation documents dating from September 22, 1976 through October 30, 1980. Although this flow chart provides a clearer broad overview, it is not in sufficient detail and does not make reference to specific regulations to serve as a meaningful guide to a grantee.

There still exists a need to develop a work program manual which condenses current regulations and instructions and eliminates all outdated regulations and requirements for use by UMTA technical personnel and grantees.



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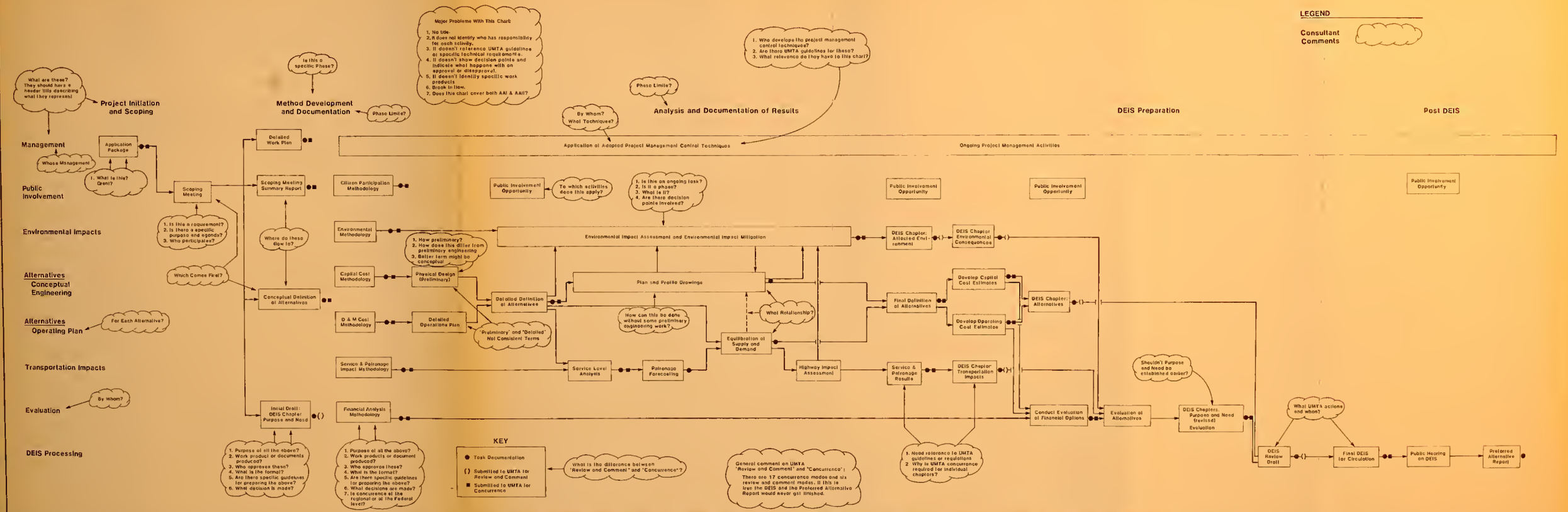
MENTS ADDED)

FIGURE 5



COPY OF FLOW CHART PREPARED AND DISTRIBUTED BY UMTA AT AUGUST 3, 1983 ALTERNATIVES ANALYSIS WORKSHOP (WITH CONSULTANTS COMMENTS ADDED)

FIGURE 5

URCE: 41FR41512, SEPTEMBER 22, 1976
43FR9428, MARCH 7, 1978
43FR57478, DECEMBER 7, 1978
45FR71986, OCTOBER 30, 1980

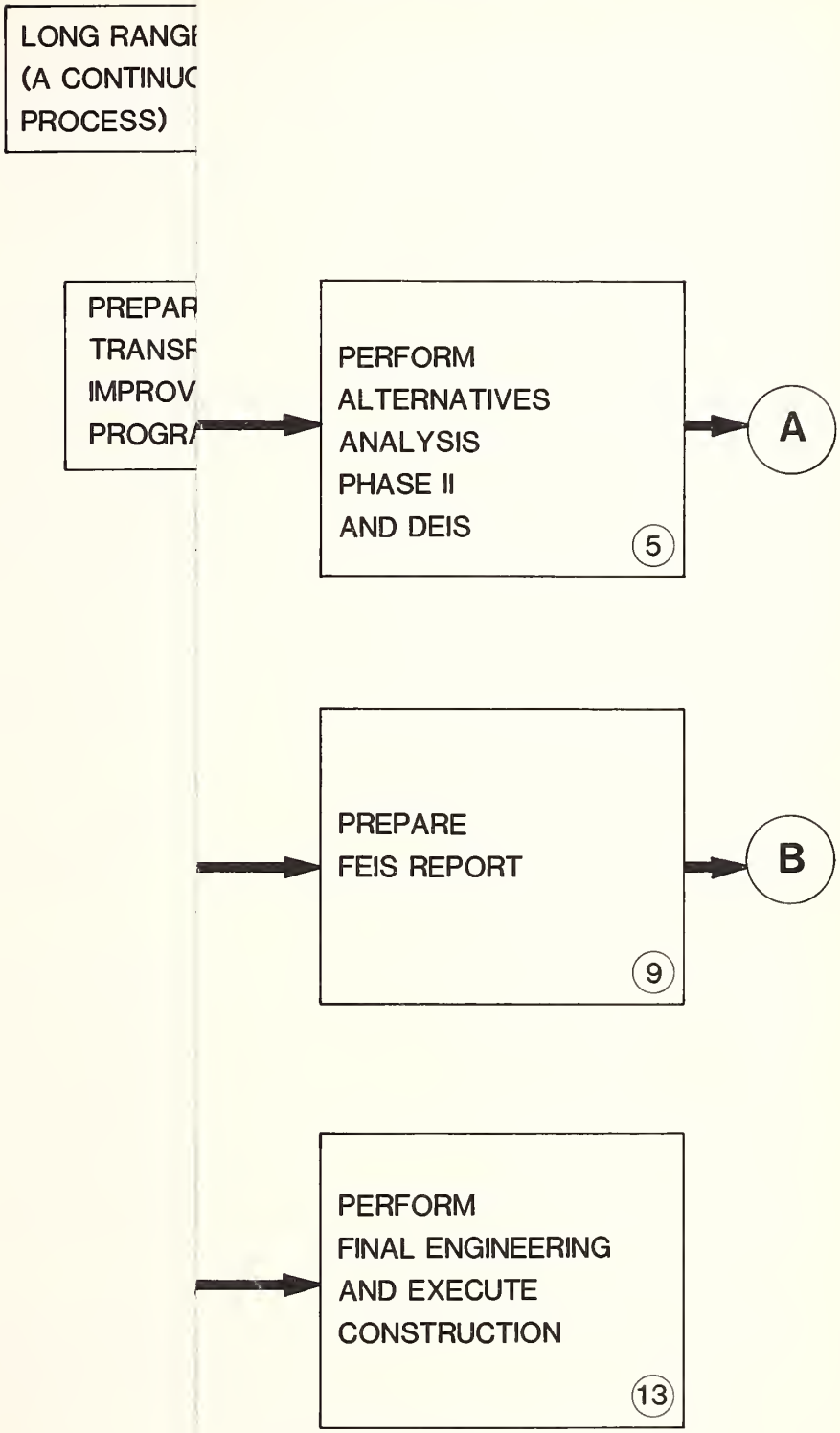


FIGURE 6

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* SOURCE. 41FR41512, SEPTEMBER 22, 1976
43FR9428, MARCH 7, 1978
43FR57478, DECEMBER 7, 1978
45FR71986, OCTOBER 30, 1980

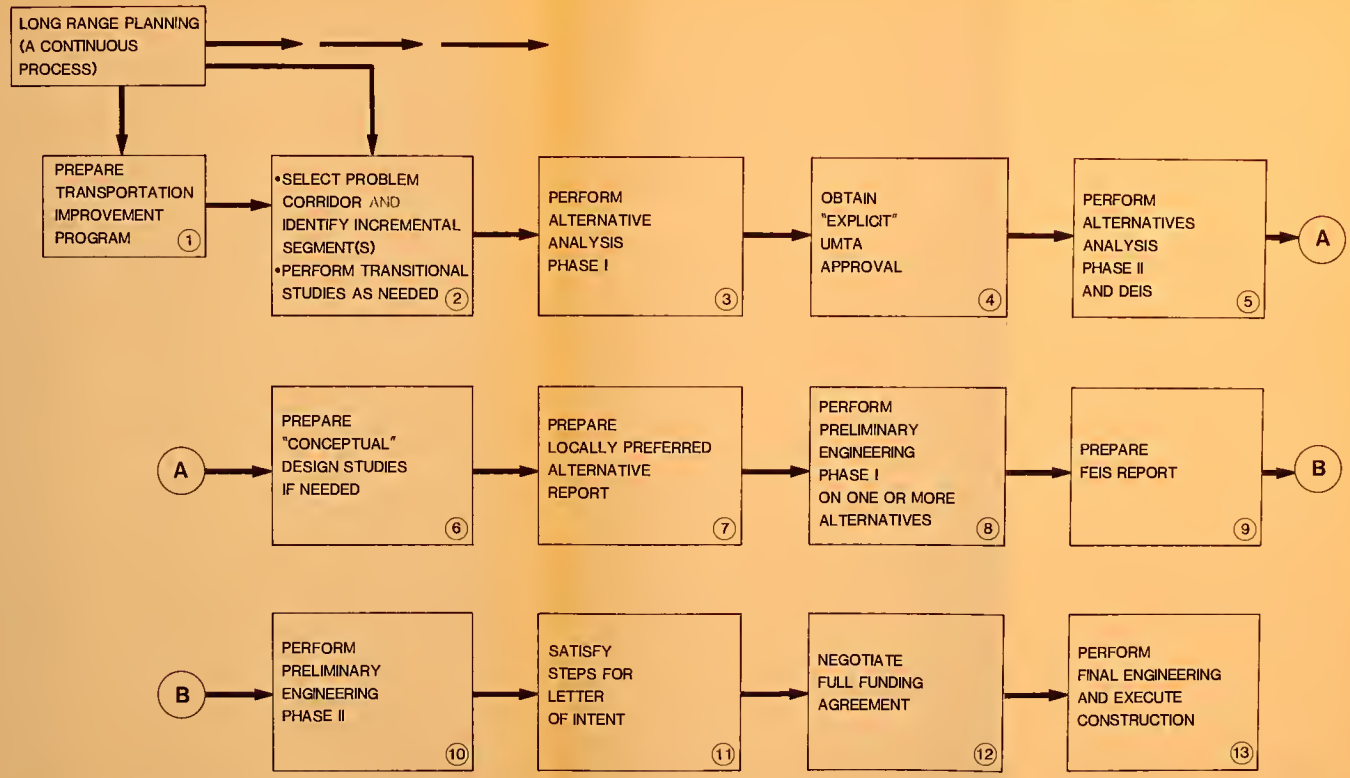

FIGURE 6

UMTA - LIGHT RAIL ANALYSIS

MODEL UMTA PROCESS FOR EVALUATION OF MAJOR INVESTMENTS*

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PROJECT COSTS AND FUNDING MECHANISMS

The San Diego Project was implemented in two phases. Design and engineering for Phase I were started in January 1979 and were completed two and one-half years later in June 1981; Phase II engineering and construction were started in April 1982 and completed 13 months later in May 1983. Actual Phase I costs in 1980 dollars were $81.6 million; actual Phase II costs in 1982 dollars were $35 million.

The Portland Banfield Project is being implemented in a single phase but is significantly different because it consists of two modes of transportation - an LRT segment and a highway segment. The total project schedule for design, engineering and construction is six years, beginning in March 1981, with completion planned for mid-1986. The total cost for the Banfield Project is $309.7 million, with the LRT portion and the highway portion being $211.7 million and $98 million respectively. These amounts are reflected as 1985 dollars and are based on 1980 cost estimates provided in the Banfield Transit Project Final Environmental Impact Statement, inflated at 12 1/2 percent per year through 1985. This project will benefit from an actual rate of inflation lower than predicted.

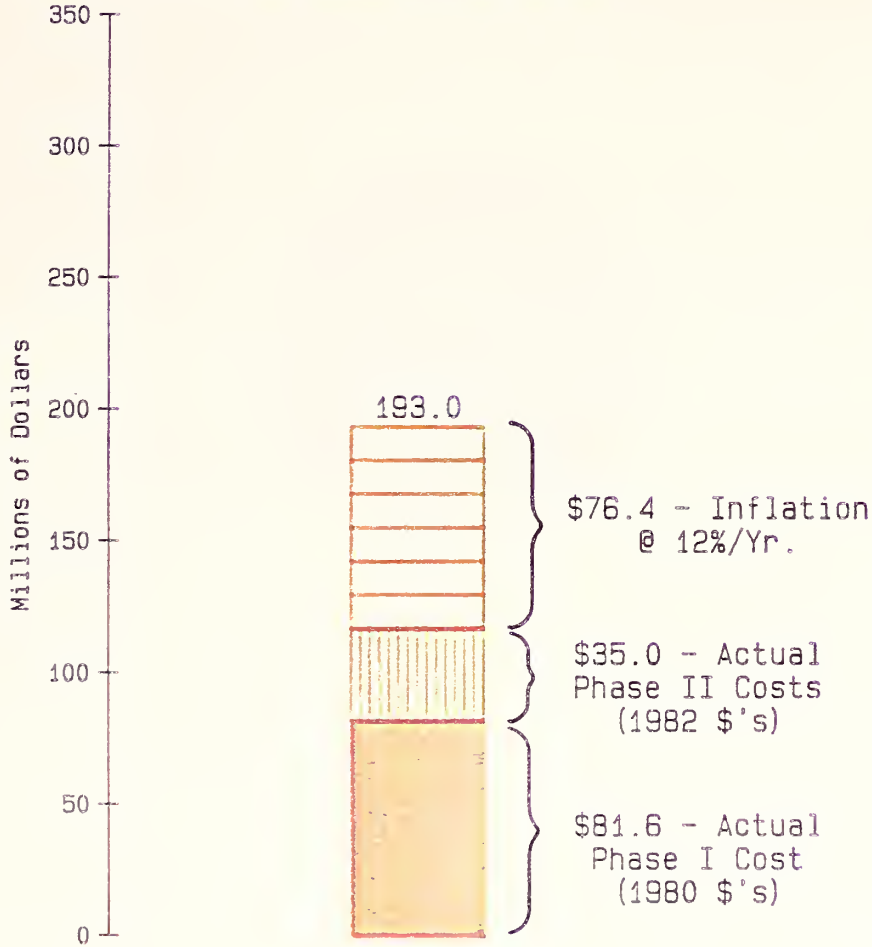
Figure 7 provides a comparison of project capital costs for the San Diego Project and the Portland Project.

To make an accurate comparison of the costs of the two projects, it was necessary to calculate costs to the same base year. Therefore, actual costs for the San Diego Project were inflated at 12 percent per year to arrive at comparable 1985 dollars. Inflating the actual costs for the San Diego Project to comparable 1985 dollars, it is interesting to note that the costs for the LRT portion of the Banfield Project are comparable to the costs for the San Diego Project. Comparison of these figures points out the impact of time delays on inflation of costs.

The pie chart comparisons of project funding sources in this section, Figure 8, illustrate the sources of funding for the San Diego Project and the Portland Project.

SAN DIEGO TROLLEY PROJECT

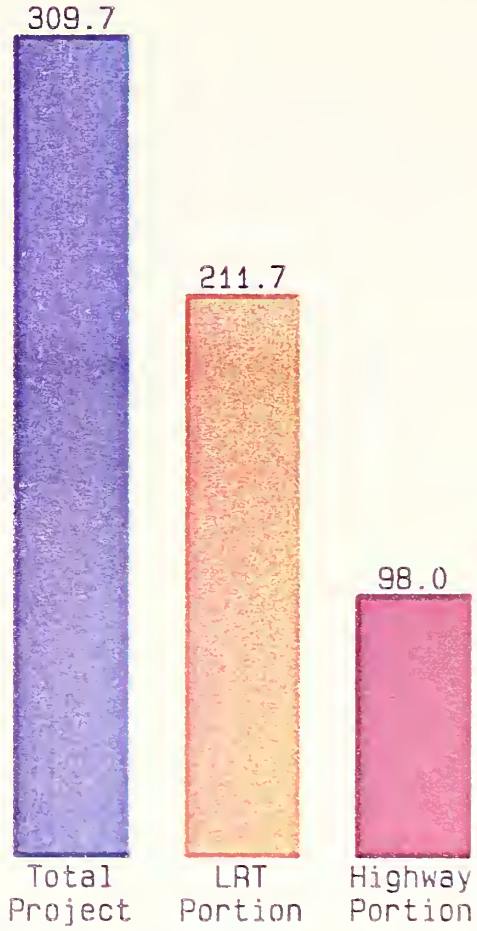
(Actual Project Costs* Inflated @ 12%/Yr. to Arrive at 1985 Dollars.)



* Source: MTDB San Diego Trolley Project Summary Fact Sheet, 1983.

PORTLAND BANFIELD PROJECT

(Projected Costs in 1985 Dollars. Based on 1980 Cost Estimates Inflated @ 12%/Yr. to 1985.)**



** Source: Banfield Transitway Proj., FEIS August, 1980.

COMPARISON OF PROJECT CAPITAL COSTS

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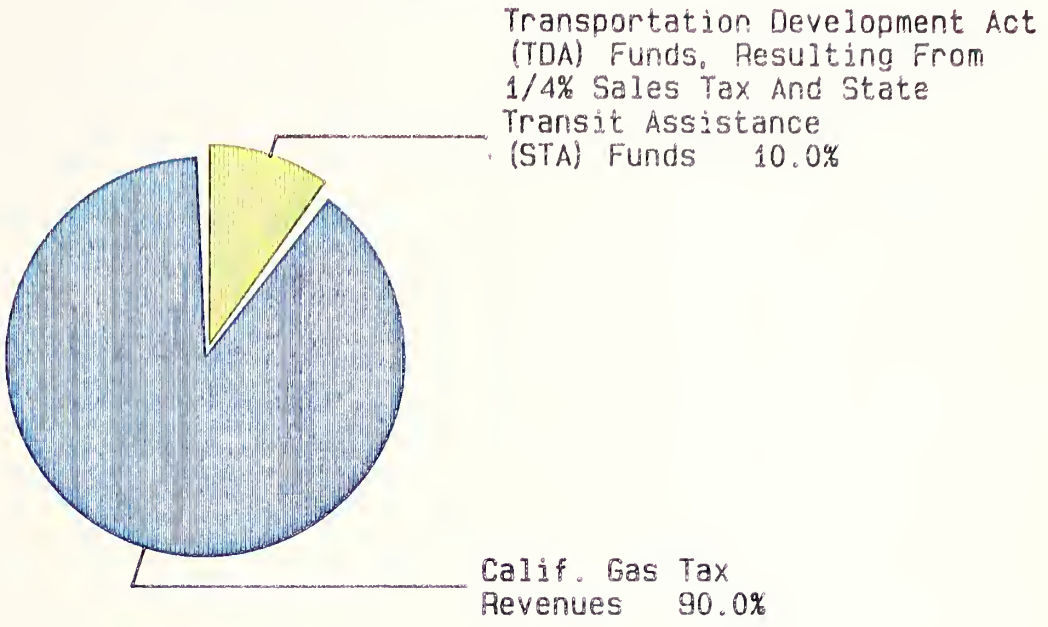
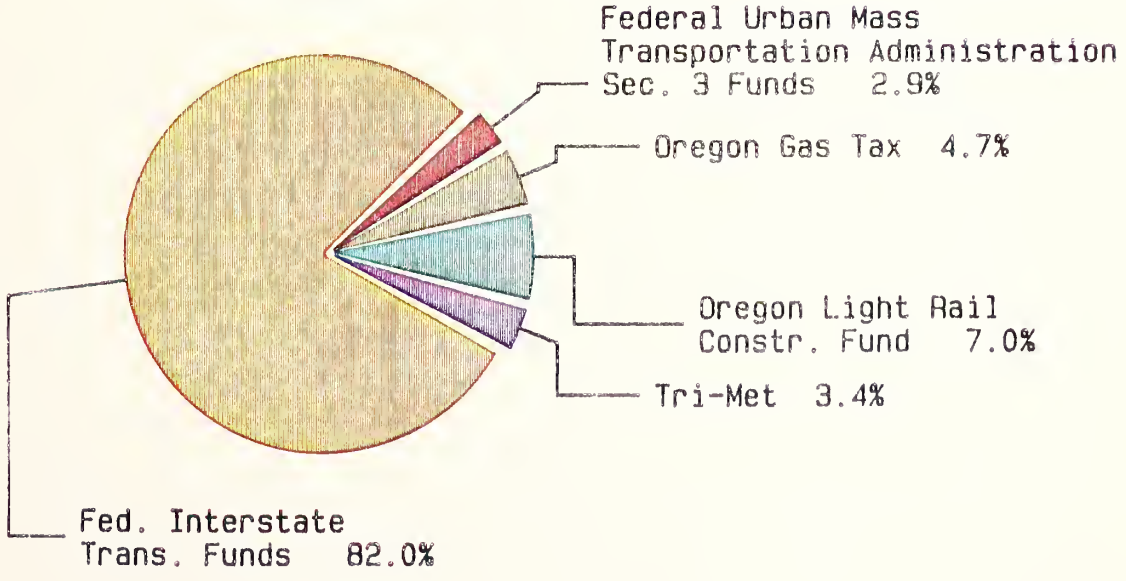
SAN DIEGO TROLLEY PROJECT



PORTLAND BANFIELD PROJECT



COMPARISON OF PROJECT FUNDING SOURCES

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The San Diego Project was funded 100 percent by state authorized funding sources, while the Portland Project received federal funding of 84.9 percent and state and local funding of 15.1 percent. It is interesting to note that, with all the involvement from UMTA, only 2.9 percent of the project was funded directly from federal UMTA Section 3 discretionary funds; the remainder of federal funding was provided through interstate transfer funds.

In Kellogg's opinion, the provisions of the Davis-Bacon Act did not impact a comparison of the costs. California had, at that time, a state form of Davis-Bacon wage requirement and relatively high wage scales which probably would have put the San Diego contract on an equal footing with the Portland contract. A non-federally funded project in another state may well have benefited from exclusion of Davis Bacon wage requirements. The issue is not so much in the law itself but how it is administered in terms of the method of determining the prevailing wage.

For the purposes of this study, Kellogg assumed that the "prevailing wage" in both instances was determined by using the then Labor Department practice of selecting that wage rate which was in use for 30 percent or more of construction. This is generally represented by the union wage rate for the building trades.

Of more significance to the comparison is the use of innovative procurement practices. Both Portland and San Diego used innovative procurement practices such as two step procurement and/or design-build forms of contracting. As discussed in Section IV, UMTA could provide a service by assisting grantees to develop improved project management capabilities and research innovative procurement practices which are within OMB guidelines for recipients of federal grants and which may offer significant cost savings.

SYSTEM SPECIFICATIONS AND ENGINEERING

The specifications and engineering characteristics of the San Diego Trolley and Portland Banfield LRT are very similar. This is displayed in Figure 9, Comparisons of System Specifications. The most notable similarities are in length of line, vehicles, fare collection, guideway configuration, city center in street segment

and average speed. These commonalities are probably the origin of a continuing desire to compare the two projects.

However, as it has been noted in this report, there are many dissimilarities in project origination, planning and implementation, as well as some differences in facilities, operation and engineering that are related to study objectives and background.

1. Staff and Consultants

MTDB and Tri-Met involved both established staff and employed consultants in planning and implementing the projects. However, MTDB operated with a slimmer staff, assisted heavily by CALTRANS, and used a single prime consultant, Bechtel Corporation.

In Portland, Tri-Met adopted an approach which maintained strong in-house technical and management control, and staffed up accordingly. The Banfield Project team also includes consultants for transit, with ODOT managing the highway portion of the work. For each phase, the work was scoped to fit the needs of each project and the consultants were selected at the time of requirement. Different consulting firms were selected for Preliminary Engineering (PBQ&D) and Final Design (Bechtel). Other consultants, including a systems consultant, were also employed.

2. Procurement

San Diego, with the benefit of significant financial incentives for staff and with local staff control, demonstrated unusual speed in procurement activities, and employed techniques for expediting procurement that might not have been approved by UMTA. For example, the majority of the procurement contracts were awarded within four months after the go-ahead for project implementation was given. This included selection of an "in production" vehicle through a statement of interest and negotiations process.

San Diego also used outline performance specifications for procurement. This allowed a speedier development of bid documents. However, this technique shifts work scope for detailed design and additional risk to the construction contractor and can result in higher bid prices. San Diego learned this when the Traction Power Contract bids came in 30 percent over budget.

MTDB indicates that value engineering incentive clauses were used to advantage on the South Line. The Portland Banfield Project specifications also contain a value engineering incentive clause.

San Diego also learned from experience when they ordered the running rail, attempting first to use the lightest section possible, but learning through a later order that a heavier section could be obtained for the same or lower cost due to availability and proximity of the source.

Portland found an innovative way to stay within UMTA Third Party Contracting Guidelines and yet achieve procurement goals for systems and equipment.

A form of two-step procurement common to DOT activities and recommended by UMTA study was used very effectively. This process involves development of performance specifications which are furnished to potential manufacturers. These manufacturers then submitted their qualifications without cost. Those that qualified were asked to prepare detailed specifications, describing how equipment would be manufactured and furnished. Costs were also submitted and selection was made.

The Tri-Met Project Manager suggested a further refinement wherein finalists are paid a lump sum for the effort involved in preparing final specifications.

This procedure has several advantages:

- Specifications are prepared by manufacturers who have "production experience." Engineers who know performance objectives then review for compliance.
- Conflicts between pieces of equipment caused by federal "or equal" clauses are avoided.
- Reliability and maintenance experience can be warranted by a single supplier as a single point of contact, rather than having to go to several suppliers.

3. Design Criteria

San Diego attempted to use the SD&AE right-of-way with as little rehabilitation cost as possible. For instance, 50 to 60 percent of the old wood ties were retained. Also, the old mainline single track alignment was retained. However, this proved to be a problem in Phase II, when monies for double tracking were made available because the single track locations and siding configuration did not provide for the best transitions to a double track layout. San Diego now finds it advisable to design extension alignments with double tracking or with future double tracking in mind.

4. Yards and Shops

Portland is providing for more shop, office and train storage space than San Diego. This includes room for additional programs such as a railroad museum. Access to the San Diego yard is poor and even a little dangerous, due to underdesign.

5. Number of Stations

Portland is providing for 40 percent more stations than San Diego with 25 versus 18. Curiously, even with more stops, Portland's planned average speed is almost equal to San Diego's.

6. Patronage

San Diego has been experiencing 11,000 passenger trips/day with 15 minute headways and mostly two-car trains. Three-car consists are used at times. Twenty minute headways were required until double tracking was completed and ten cars were added by Phase II. Portland forecasts 44,000 passenger trips/day. This is apparently to be achieved by five minute headways (1/3 that of San Diego), using two-car trains.

7. Parking

Portland is providing for less parking with major parking lots at only three stations versus six in San Diego. However, San Diego's experience to date has reflected underutilization of available parking facilities.

8. Accessibility

The two systems adopted a different design approach to providing accessibility for the handicapped. San Diego provided lifts on board the trolley vehicles. The lifts experienced reliability problems and have been taken out of service. Portland is providing wayside lifts at each station. Although seemingly more maintainable, the reliability of this system remains to be proven.

FIGURE 9

COMPARISON OF SYSTEM SPECIFICATIONS
(Fixed Facilities, Rolling Stock and Operations)

Item	San Diego	Portland
Line Length	15.9 mi. (1)	15 mi.(2)
Stations		
Total No.	18	25
City Street Stops	7	7
Suburban	11	18 (3)
Shelters	18	25
Security	Slow Scan TV	No Surveillance
Boarding	Street Level	Street Level
Parking	At 6 Stations 2000 + Spaces	Major Parking Lots at 3 Stations 1500 + Spaces
Traction Power	600V DC OH	750V DC OH
Rail	90# and 115#	115#, 119# Girder Rail
Ties	Timber	Timber
Track Gauge	Std.	Std.
Handicap Access	On Board Lifts	Wayside Lifts at Each Station
Yard and Shops		
Site	1.96 Acres	12.3 Acres
Shops	15,450 sq. ft.	98,000 sq. ft.
Yard Tracks	2,400 track feet	3 Miles
Crossing Protection	Automatic Gates	Automatic Gates

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1 Originally included 14.2 miles of single track with passing tracks then converted to all double track in Phase II.
2 Includes 2 miles of single track with one passing track.
3 Includes three bi-level stations.

(Figure 9 continued)

Item	San Diego	Portland
Signal Preemption	Selected Signals Only	Suburban Street Operation
Vehicle	Siemens/DuWag U2 Double Ended	Bombardier
Dimensions	L = 79.7', W = 8.7', H = 10.8'	L = 88', W = 8.7' H = 12.4'
Doors	8/Car	8/Car
Capacity	64 Seats, 188 Total 210 Crush	76 Seats, 166 Total
# Vehicles	14 Orig. + 10 Added = 24	26
Vehicle Cost	$650,030[4] $878,800[5]	$775,000
Max. Speed	50 mph	55 mph
Avg. Speed	23 mph (9 city, 37 RR R/W)	22 mph
Headways	15 min.	5 min. (peak)
Consist	3 Cars max.[6]	2 Cars max.[7]
Fare Box Recovery	82 percent	NA
Fare Collection	Self Service - Barrier Free	Self Service - Barrier Fee
Signal System	Simple Absolute Block Except Street Operation	Simple Absolute Block Except Street Operation

4 First 14 cars, ordered January 1979
5 Second 10 cars, ordered February 1981
6 Present Operating Plan - Vehicles capable of operating in up to five car trains.
7 Restricted by 200 foot city blocks.

RIDERSHIP AND OPERATIONAL INFORMATION

The ridership/operational data contained in Figure 10 was obtained primarily from the California DEIR for the MTDB Guideway/Planning Project dated March of 1978 and from the final EIS for the Banfield Transitway Project dated August 1980. Other publications were used to fill in the blanks where appropriate.

The objective was to identify, if possible, the depth of the analysis conducted under the two different funding arrangements. The method was to assume that cost-effectiveness factors, to the extent used, were reported in the DEIS, FEIS and State of California DEIR.

Some additional data on bus ridership and actual transit ridership in San Diego was included to attempt to measure the impact of the San Diego LRT on bus patronage.

The following observations are noted:

- The cost-effectiveness data provided in the EIS for the Portland/Banfield Transitway Project are far more comprehensive than that contained in the DEIR for the San Diego project. This possibly reflects the more stringent requirements of the UMTA process.

- The passenger trip projection for the Banfield LRT for 1990 is 42,500. It was noted in reviewing documents that, in some cases, a smaller figure of approximately 26,000 passenger trips was used. The interviews confirmed that 26,000 is probably more likely.

- It was noted that Tri-Met plans on 16 departures from downtown during the peak hour.

- The actual 1982 ridership (both bus and LRT) in San Diego for the Southern Corridor reflects an increase in ridership of approximately 25 percent over the 1977 bus only ridership. However, two-thirds of the LRT ridership came from former bus passengers.

Comprehensive cost-effectiveness data matching that shown in the Banfield Transitway Project EIS may have been developed by the San Diego MTDB team. However, the data were not shown in the California EIR, which should have been one of the primary factors for review prior to decision making.

FIGURE 10
COMPARISON OF TRANSIT RIDERSHIP AND OTHER OPERATING DATA[1]
(Bus and Rail)

Category	Portland Banfield Project		San Diego Project		
	1975/76	1990	1977	1982	1995
1. Freeway Volume (Auto Vehicles) Peak Hour	5,320 vph	6,240			
2. Arterial Volume in Corridor Peak Hour (Auto Vehicles)	6,080 vph	5,980			
3. East Side (Portland) Downtown Public Transit (or South Corridor in case of San Diego)					
a. Peak Hour Passengers on Main Lines in Corridor	2,110	(See g.)			
b. Peak Hour All in Corridor	4,040	(See g.)			
c. Total Daily Passenger Trips in Corridor	24,270	42,500 (LRT) plus buses	17,400 [2]	10,657 (LRT)[3] 10,700 (bus)[2]	26,000 (LRT) 8,300 (bus)
d. Total Daily Trips All East Side	40,140	42,500 (LRT) 34,300 (bus)[4]			
e. Passenger Miles per Passenger	5.22	7.16 (w/LRT)			
f. Passengers per Vehicle Mile	1.73	2.19 (w/LRT)	2.4[5]	3.85[5]	
g. Outbound Transit Passenger Peak Hour in Corridor	4,040	5,120 (LRT) 1,370 (bus)			
h. Annual Originating Trips in Corridor	10,016,000	19,223,000			
i. Annual Transit Vehicle Miles Corridor	5,784,000	8,781,000 to 9,300,000			
j. Daily Transit Vehicle Miles in Corridor	4,502 (bus)	3,250 to 5,300 (LRT)		2,768 (LRT)[4]	

FIGURE 10
COMPARISON OF TRANSIT RIDERSHIP AND OTHER OPERATING DATA[1]
(Bus and Rail)

Category	Portland Banfield Project		San Diego Project		
	1975/76	1990	1977	1982	1995
k. Total Daily Transit Vehicle Miles (system-wide)	20,085	29,270	37,200	30,400 [4,5]	72,200
l. Daily Vehicle Hours - All Buses - LRT	1,266	1,604 153	3,100		4,200
m. Peak Hour Departures Downtown	107	78 (bus) 16 (LRT)		4 (LRT)	
n. Passengers/Vehicle Hour (bus and train)		38[4]		136 (LRT only)[3]	44.5
o. Number of Lines	34	30 (incl. LRT)	43[5]	29[5] --	
p. Route Miles Total	397	278 (incl. LRT)	695	541[5]	--
4. Total Population SMSA	1,190,600 (1979)	1,500,885 (2,000)	1,566,800 [6,7]		2,409,500[6,7]
			1,127,700 [6,8] (1975)		1,537,000[6,8]

[1]Sources for all data other than that footnoted are:
For Portland: Banfield Transitway Project, Final EIS, August 1980.
For San Diego: MTDB Guideway/Planning Project, Task No. 17, DEIS, March, 1978.
[2]Routes 29 and 32
[3]MTDB Report, March 1983
[4]Extrapolated
[5]SDTC Five-Year Plan Update, 79-83 and 84-88
[6]Task No. 19, Final Report Guideway Planning Project, Bechtel, Inc., June 1978.
[7]San Diego Region
[8]MTDB Service Area

IV. UMTA'S HIERARCHY OF LAWS, RULES, REGULATIONS, GUIDELINES AND DIRECTIVES

IV. UMTA'S HIERARCHY OF LAWS, RULES, REGULATIONS, GUIDELINES AND DIRECTIVES

INTRODUCTION

The purpose of this section is to summarize the "written word" pertaining to the authority, procedures and criteria for technical evaluations leading to approval or denial of grants for construction, equipment and facilities for fixed guideway transit. The written word is presented in order of its regulatory priority, i.e., beginning with the statute and ending with unofficial UMTA publications. These provide the basic frame of reference for all UMTA actions regarding capital grants for fixed guideway investments. The clarity and consistency of these written words are crucial to proper comprehension and interpretation of the process and activities that must be accomplished for UMTA approval and support.

Unfortunately, the analysis demonstrates that there is some duplication and inconsistency in implementation because of the (1) lack of "codification" of the process as it developed over the years, and (2) injection of "unofficial" guidance through other than the regulatory process.

In reality, while decisions as to grant funding are made on both technical and political merits, the written word should, as a minimum, provide for a consistent basis for the evaluation of the technical merits. Consequently, major improvements can be made in the organization and presentation of that material.

The decision-making process (based on both technical and political merits), is discussed elsewhere in the report. The following table concentrates merely on the process for evaluation of a project's technical merits.

HIERARCHY OF LAWS, RULES, REGULATIONS GUIDELINES AND DIRECTIVES

Authority Level and Reference	Authority, Procedures and Policies	Comments and Recommendations
A. Statute and Congressional Direction		
(1) Urban Mass Transportation Act of 1964 as Amended.	Paragraph 1607, Section 8: Planning and Technical Studies: • Technical studies are to be based on transportation needs; land use plans; development objectives; social, economic, environmental impacts, system performance, and energy impacts. • Provides for a continuing "urbanized area planning process "through the metropolitan planning organization. • A "program" of projects are to be submitted to the Secretary annually. • Grants for engineering and construction to be authorized ". . . in accordance with criteria established by the Secretary."	All alternatives analyses (AA) flow from results of local planning "process" and support thereof by local governments and their electorate. Secretary has broad authority to establish criteria for selection process.
	Paragraph 1603, Section 4: Federal Share: • "Net Project Cost" is defined as a portion of cost of project which cannot be reasonably financed from revenue. Federal grant is percent of "Net Project Cost."	Has this been a factor in the AA process? How is it implemented? What is definition of "reasonable"?

Paragraph 1602, Section 3: Discretionary Grant or Loan Program: • "Eligible costs" are defined. • No grant or loan unless part of an approved Section 8 "program of projects." • "Detailed alternative analyses" listed as activity but not defined. Grants (or loans) for financing these are subject to "such terms and conditions as the Secretary may prescribe." • "Letter of intent" defined. • "Full funding contract" defined. • "Letter of commitment" used in same context as letter of intent.	Requirement to be part of "approved Section 8 Program of Projects" provides opportunity for decision to review ridership models and public support of problem corridor and incremental segment(s) prior to approval of AA Phase I.
Paragraph 1604, Section 5, Urban Mass Transit Program: • Provides (on an annual basis) for funds. • Projects must be part of approved program of projects required by Section 8.	Note link to studies done under Section 8. These should be solid foundation for proceeding into UMTA funded projects.
Paragraph 12, Section 16: Elderly and Handicapped: • Policy of right of access. • Grants and loans authorized.	Additional federal requirement.

(2)	Additional Provisions, 1970 (PL 91-453, 84 Statute 962)	Section 1: Long Term Financing: • Federal commitment of $10 billion over 12 year period. • ". . . create a partnership which permits the local community through Federal assistance to exercise initiative necessary to satisfy urban mass transportation requirements."	Earlier statement (1970) of policy. As perceived in interviews, roles of "partners;" i.e. UMTA and grantees, not clearly understood.
(3)	Chapter 1. Federal-Aid Highways	Paragraph 103: Federal-aid systems (withdrawal) • After September 30, 1983 substitute projects (including mass transit) may not be approved in place of withdrawn highway projects unless "concept approval" previously received, or • Unless highway is under judicial injunction.	Limits future use of highway withdrawal funds.
(4)	FY 1984 Congressional Guidance	Senate Report page 73-4: "In evaluating potential new start projects, the Department will pay . . . attention to the following factors: the results of alternatives analysis; the degree of cost-effectiveness; and the degree of local financial commitment . . . Other factors that may be considered include degree of local government support, degree of private sector support, degree of community support, and participation of minority business."	Note emphasis on "degree of support" of government, private sector and community. Alternatives Analysis Phase I provides opportunity to test the level of support and consensus.

B. Code of Federal Regulations (CFR)		Note: Have effect of law and implemented by executive departments and agencies through publication in the Federal Register. The contents of the Federal Register are required to be judicially noticed. The CFR is prima facie evidence of the text of the original documents in the Register. The 40 CFR 601-670 series pertains to UMTA, but UMTA uses the regulations of 23 CFR (highways) by reference. Many of the procedures and criteria earlier published in the Federal Register (see Category C publications) are not incorporated in CFR's.	
(1)	23 CFR 450 Planning Assistance and Standards	Subpart C: Transportation Improvement Program (TIP) • Identifies corridors, priorities and costs. • Describes who can initiate projects under UMTA Sections 3 and 5. • States that projects to be funded under Sections 3 and 5 of UMTA Act shall be those contained in the TIP. • Otherwise describes content of TIP.	Provides opportunity for UMTA to participate so that there is full agreement on ridership projections, models and land use objectives. At this stage, degree of local consensus should also be evident. Has there been involvement in process? What public support is evident? Are there any issues which have not been taken into consideration? Is the program development adequate enough to proceed to AA(I) or is transitional study work needed?
(2)	23 CFR 771 Environmental Impact and Related Procedures	771.123: DEIS • For major urban investments, the DEIS documents the results of an analysis of transportation alternatives. • Identifies preferred alternative requirement.	The basic FHWA procedures are specified; however, there are specific requirements for major urban investments such as a fixed guideway system. For example, the alternatives analysis is presented in the DEIS. There is a requirement for a separate report identifying the locally "preferred alternative." The CFR states that preliminary

	771.125: FEIS • The applicant shall prepare a report which identifies the locally "preferred alternative." Approval may be given to begin PE on the "principal alternatives" currently under consideration. During the course of this PE, project costs will be refined with particular attention to alternative designs, detailed alignments, etc. "These studies will be used to prepare the FEIS." • The approval of the FEIS does not commit UMTA to approval of any grant request for future funding of the preferred alternative.	engineering can begin on the "principal alternatives" (note that preliminary engineering can begin on more than one alternative). The preliminary engineering (Phase I) is used to prepare the FEIS. Note that the FEIS in no way commits UMTA to the approval of any grant request for future funding. This is still an evaluation on technical merits without regard to decision-making for funding. Note the ability to tier the EIS. UMTA could emphasize a first tier EIS to test "support and consensus" now suggested by congressional direction as a principle criterion.
	771.111 Early Coordination • EIS may be tiered. The first tier focuses on mode choice and general locations. A second tier EIS would be more site specific.	
(3) 40 CFR 1500 Council on Environmental Quality Regulations for Implementing the Provisions of NEPA	1502.14: Alternatives • Identifies major items to be considered when presenting the alternatives analysis in the EIS. General only - not transit specific.	Self-explanatory.

C.
Federal Register

Note: Four publications issued from 1976 - 1980 set forth policies, procedures and criteria. There are changes in later publications but all must be used to get the total picture. Taken together the publications could be confusing. For clarity the contents could be reorganized into a single "Urban Mass Transportation Investments Construction Grants Handbook" Regulatory aspects (if any) could be codified in a single section of 40 CFR Chapter VI.

(1) 41FR41512: "Urban Mass Transportation Investments" (9/22/76)

"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 Program and the increasing demands placed upon the available funds. . . the policy represents a process - oriented approach designed to allow each urban area to take into account its unique characteristics. . . . As a condition of eligibility for federal assistance, the policy requires that alternative investment strategies be considered . . ."

(2) 43FR9428: "Policy Towards Rail Transit" (3/7/78)

"This statement is issued to clarify the department's policy toward urban rail transit investments and to furnish applicants and the public with a more explicit statement of principles and procedures governing the evaluation and award of federal grants for the design and construction of rail transit facilities."

In summary, the procedures as defined by references C (1)-(4) taken together appear to be as follows:

1. Complete and continually update Long Range Plan (LRP) (published as TIP). (Also called Systems Planning.) Ref. (1) (3). Note criteria for LRP. Ref. (1) (2) (3)

2. Select problem corridor and identify incremental segment(s). Ref. (2) (3) Do transitional studies if needed.

3. Do Phase I alternatives analysis (AAI). Ref. (2) (3)

4. Obtain "explicit" UMTA approval before proceeding with AAII. Ref. (3) and identify criteria and parameters to be used for AAII. Ref. (1) (2) (3) (4)

5. Proceed with AAII and DEIS. Ref. (2) (3)

(3) 43FR57478: "Major Urban Transportation Investments - Policy and Procedures" (12/7/78)	"The wide array of options for federally-aided major urban transportation investments had led to the need for establishing a single investment policy to cover both the federal highway administration and the urban mass transportation administration projects to assure that federal funds are used effectively. The policy in this regulation seeks to insure that all federally funded major transportation investments for urbanized areas meet local and national goals and objectives in a cost-effective manner. . . The FHWA/UMTA joint urban transportation planning requirements, 23 CFR 450 provide consistency in the definition and administration of urban transportation planning, but as proposed investments move from systems planning through corridor studies, coordinative efforts are needed to provide a consistent policy on major urban transportation investments. . . . (the new policy) address the entire project development process from systems planning through identification of a selected alternative."	6. Do conceptual design studies as needed to get sufficient detail to identify preferred alternative. Ref. (4) 7. Prepare separate document with "locally preferred alternative." Ref. (3) 8. Fund PE Phase I for the preferred alternative as well as others in the AAII report to get better cost and benefit data. Ref. (4) 9. FEIS developed during PE Phase I. Ref. (4) 10. After signing off on FEIS, proceed with PE II (if approved). Ref. (3)(4) 11. Satisfy steps required for "letter of intent." Ref. (3) (4) 12. Negotiate "Full Funding Agreement." Ref. (4) 13. After receiving appropriations proceed with final engineering and construction.
(4) 45FR71986: "Policy on Major Urban Mass Transportation Investment and Policy Towards Rail Transit" (10/30/80)	"This notice is being published to announce two revisions to the UMTA policy on Major Urban Mass Transportation Investments and Policy Toward Rail Transit. Changes that have been made to the FHWA/UMTA environmental impact procedures published elsewhere in the federal register have necessitated these policy statement revisions."	The process has been refined over the years from 1976 to the present; however, all four documents contain pertinent information on objectives, criteria and parameters pertaining to technical evaluation and definition of cost effectiveness.

D. Directives

Note: UMTA Directives are of three categories: orders, notices and circulars. Some are for internal use and others are for external use, i.e., the grant applicant and its elected and/or appointed board.

Periodically a DIRECTIVES CHECKLIST is published transmitting a checklist of current UMTA publications. Directives are published "with a purpose of providing a single source reference for all published guidelines.

(1) External Operating Manual

Chapter II, Section B, GRANTS, describes application procedures and "prescribes UMTA's basis for selecting projects from among those eligible and for determining the amount of the grant to be made."

Note: The procedures as described appear in some instances to conflict with the procedures defined in the Federal Register Publications listed above.

As stated in the "purpose," the intent of this analysis is to present a review of the "written word" as it pertains to the process for evaluating the technical merit of major transit investments. During the review of this category of publication it was noted that the EXTERNAL OPERATING MANUAL contains information which may conflict with publications previously reviewed. In the preface, UMTA stated that the manual "is designed both to provide general information about UMTA and its programs and to prescribe guidance for administering approved UMTA projects.

(2) Notices, Orders and Circulars

UMTA N0000.18
Directives Checklist

A serious review of the "Directives" category of UMTA publications, including the EXTERNAL OPERATING MANUAL, is suggested with emphasis on streamlining and qualifying the material and assuring the guidelines are in agreement with those previously published in the Federal Register and CFRs. That information pertaining to policies, procedures and technical evaluation of proposed major transit investments could be combined into a handbook manual with information pertaining to legal, financial, management and administration retained as part of the "operating manual." (Note the emphasis on "operating".)

(3)	UMTA C5010.1 Project Management Guidelines	"This circular provides project management guidance for grant recipients pursuant to Sections 3, 5, 8 and 10 of the Urban Mass Transportation Act of 1964 as amended . . ." The circular provides guidance for project administration and management (Chapter I); financial management (Chapter II); and payment procedures (Chapter III).	Emphasis in this circular is on the fact that the recipient is responsible for administration and management of the project. The question remains whether or not there were any cost impacts because of requirements imposed by this circular and the circular described under Item 4 below. It is evident from a review of the two circulars that the vast majority of the requirements are imposed upon UMTA by laws and regulations generating from outside the Department of Transportation. Many agencies have similar if not more rigorous requirements (i.e. EPA). However the guidelines and third party requirements appear to be far more rigorous and demanding than those which might be required of a commercial lending institution on a multi-million dollar construction loan. Nevertheless, the record of bad loans on the part of the commercial banking institution is poor. UMTA's requirements appear reasonable in light of the investment involved and the goals and objectives of other federal legislation. It is difficult if not impossible to identify any specific cost impacts. As stated previously, many agencies have similar requirements with resulting cost impacts. It is unfortunate that the emphasis in these two circulars is on administrative procedures and reporting matters rather than on program management techniques that might control and/or reduce costs and help keep projects on schedule. The federal government is making a substantial investment and should expect that prudent measures be taken by the owner through proper project management control, documentation, constructibility review, risk assessment, and contract administration. Only recently have owners come to realize that the risk of cost

overruns is theirs. The Business Roundtable recently completed Construction Industry Cost Effectiveness Task Force identified 200 major recommendations which, if acted upon by owners, could save many millions of dollars. Rather than emphasize cost impacts of regulatory requirements, Kellogg Corporation believes that UMTA is in a position to help owners reduce and control costs. Recommendations to that effect have been made in the main body of this report, and a proposed risk management program is included in the Appendix.

(4)	UMTACC 4220.1A Third Party Contracting Guidelines	"This attachment establishes standards and guidelines for the procurement of supplies, equipment, construction and services for all UMTA assistance programs. These standards are furnished to insure that such materials and services are obtained efficiently and economically and in compliance with the provisions of applicable federal law and executive orders."	Please refer to comments above. This circular emphasizes that the grantee shall use their own procurement procedures provided that procurement conforms to UMTA standards set forth in this circular and applicable federal law. The main point is not that these requirements cause cost impacts, but that UMTA is missing a major opportunity. The circular provides that "UMTA will provide grantees with technical assistance, training, publications, and other aid to assist them in improving their procurement capabilities." Rather than emphasizing cost and time control, the two references discussed here seem to emphasize paperwork, reporting and other regulatory requirements. As described above, there have been a number of recent studies, notably the Business Roundtable Report, on construction industry cost effectiveness which could have provided a basis for a training program and procurement assistance that would emphasize cost reduction. Such a program, if implemented by experienced and trained personnel, might easily offset the regulatory requirements imposed upon grantees by the process. Projects such as the December 1978 UMTA sponsored conference on "Construction of Urban Rail Transit Systems - the

Challenge of More Cost-Effective Construction," and the UMTA financed series of reports entitled, "Development of Research in the Construction of Transportation Facilities: A Study of Needs, Objectives, Resources and Mechanisms for Implementation" are a good start. More funded work along these lines coupled with a training and on-site monitorship program is recommended.

E. Unofficial UMTA Publications

(1) Procedures for Alternatives Analysis July 26, 1983

(2) Technical Guidelines for Alternative Analysis August 1, 1983

These are unofficial documents and contain detailed procedures and guidelines for the alternatives analysis phase and have been published in outline draft form. The contents were presented during a series of seminars conducted for present and potential grant applicants. It provides the public with yet another set of publications which hopefully will compliment and not conflict with the more official publications described earlier.

These guidelines concentrate on the alternatives analysis. The detail is almost overwhelming. In reviewing the state-of-the-art of the "written word," it was noted that the same level of detail was lacking for other elements of the total system.

The long-range plan and systems planning are terms that are frequently used and appear to have the same objective. The criteria and technical guidelines are not presented in the same detail in other publications. Mention is made in the Federal Regulations and in these unofficial documents of "transitional" studies, "feasibility" studies, and "concept design" studies to bridge the gap between the long-range or systems plan and the alternatives analysis. Why are such transitional studies needed? Can't the long-range plan be developed in sufficient detail to proceed directly to the selection of problem corridors and into the alternatives analysis?

The Federal Register of October 30, 1980 stated that UMTA may fund preliminary engineering of a Phase I type alternative other than the preferred alternative to insure that all alternatives in the final EIS are presented at a comparable level of detail and to develop more accurate system cost and benefit data, particularly pertaining to alternative designs, detail location decisions, and appropriate litigation measures. Under what circumstances would such additional detail be required? If local consensus has been achieved on a locally preferred alternative, why would UMTA need additional data for other alternatives? How important is local consensus? Is the locally preferred alternative developed through consensus building, technical merits, land use decisions or a combination?

The criteria used to make decisions at appropriate points in the process are not clearly spelled out. Perhaps this is because decisions are made both on technical merit and on politics. Is identification of the problem corridor (i.e., impacting the achievement of land use and/or movement objectives) a sufficient enough reason for UMTA to authorize an alternatives analysis? What other criteria are involved in that decision? Once the problem corridors and modes are identified in the long range plan as those needed to meet land use, economic and other local objectives, does UMTA then concentrate primarily on costs and benefits of alternative transit alignments and modes?

The technical cost - benefit analysis of alternative modes and alignments will be most sensitive to ridership projections. This is evident in both the San Diego and Portland case. The criteria and standards for development of ridership projections and the models associated therewith should be addressed to the same level of detail as the alternatives analysis. The large flow chart entitled "Analysis and Documentation of Results" is confusing and needs clarification. A flow chart illustrating the total process from the long range plan through to the completion of preliminary engineering would be valuable to illustrate the relationships. A table identifying the outputs and level of detail needed for each phase in the total system would also be of benefit.

While it is realized that the Long-Range Plan or Systems Plan conducted by the MPO involves highways and buses and is, therefore, not strictly a "major urban mass transportation investment" function, it is apparent that there is a gap in the level of detail needed to move smoothly into the alternatives analysis phase. Could the agencies involved agree on a technical approach to the long-range plan that would provide that level of detail? Decisions to move to the alternatives analysis phase may be easier to make with such information.

Other unofficial UMTA publications have been noted while reviewing data for this project. Every agency needs a vehicle for desiminating program guidance. It is suggested that UMTA develop some system so that the unofficial guidance is not lost and can be referenced with authority.

V. IMPLICATIONS OF UMTA ASSISTANCE

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Substantial evidence was obtained through the interviews and analyses, which indicates that UMTA's participation or lack of participation does indeed have an impact on the planning and development of a rail transit project. It is less clear to what extent that impact is favorable or unfavorable. The implications of UMTA's involvement are evident in various parts of the process: decision-making, systems planning, alternatives analysis, engineering, construction, operations, financing, organization and UMTA's overall role. One interviewee was quoted as saying that the negative impact of delays which may be caused by the UMTA technical justification process is exaggerated, because for any major project that will benefit the area for a long time, a rigorous analysis is obviously needed. If it takes ten years to build a major transportation project that will benefit people for one hundred years, then a ten-year development period is not too bad. This statesmanlike comment probably best sums up the overall analysis and results of the interviews. If a rail transit system is 1) sorely needed, 2) important to the community's future growth and development, and 3) effective in having a lasting and efficient impact, then one could say that the delays attributed to UMTA's involvement are justified and, in fact, worthwhile.

On the other hand, the analysis showed and the interviews confirmed, that complaints regarding the manner in which UMTA participated, and the delays caused by their participation, have some foundation. Some quotes typify the complaints made by local representatives: "The alternatives analysis process is often used to delay funding, since there are not enough discretionary funds to go around," or "The UMTA alternatives analysis is a method for delaying and metering funds for a project," or, further still, "The alternatives analysis process appears to be an end in in itself rather than linked to land use decision-making and to really viable alternatives." Whether true or not, this perception seems almost universal. It stems from the fact that the planning and review process, including the alternatives analysis and the draft and final EIS, are not tied to specific UMTA decisions, nor to ultimate commitments for funding.

There were not too many complaints over the process itself. An analysis of the key milestone events of both the San Diego and Portland projects shows a great

similarity. What is different is the depth of the content and detail in the various studies required by the UMTA process in Portland versus that required by local and state laws in San Diego. Furthermore, while it would appear that San Diego's less detailed process moved more quickly from planning, through decision-making and into implementation, it is somewhat misleading. The fact is that, since the late 60s, the San Diego Association of Governments and its predecessor, the Comprehensive Plan Organization, were developing a region-wide transportation plan as part of the overall comprehensive planning effort. Origin and destination studies, land use transportation interaction studies, corridor analysis studies, joint development opportunities studies, etc., were all underway prior to the formation of the MTDB, which was then able to capitalize and build upon these studies and apply the pertinent information they produced.

What seems to surface as a major point of contention is that once a community has been able to focus on a decision, the project should move more expeditiously into detail alignment studies and preliminary engineering. From this point on, UMTA's participation does have an impact on the speed of the process. On the plus side, it assures a greater detail analysis of the various modes, corridors and corridor alignments, and assures the local and federal government of a feasible project without serious technical deficiencies.

When considering the implications of UMTA's possible involvement in San Diego, a number of points come to mind which would have been directly affected. (Again, it is difficult to evaluate whether these would be necessarily good or bad, for example, San Diego's decision to create a new agency in order to avoid any of the Section 13(c) implications of labor agreements.) UMTA's involvement would have precluded this possibility and required 13(c) provisions in all contracts and, therefore, labor agreements. From labor's point of view, this would have been desirable; from the city's point of view, this may have been undesirable.

Another point is the implication of UMTA's involvement on the ability of MTDB to have acquired the existing railroad right-of-way from SD&AE when it became available. Unless UMTA would have made a special exception and waivered many of their preliminary studies and analyses, it is likely that San Diego would have been unable to acquire the right-of-way as quickly and as cheaply as they did, or

even at all. If an alternatives analysis would have been required, and if rigid cost-effective criteria were applied to that corridor, it is also quite possible that UMTA would not have been able to approve that corridor as a first segment project. In any case, it is impossible to know for sure. UMTA might have acted favorably, depending upon how much federal money was involved. This is pure speculation.

There were also complaints about the review process. Kellogg concluded that these review periods are reasonable if UMTA has sufficient manpower and properly schedules reviews according to an adopted critical path. Kellogg also believes that UMTA reviews are beneficial and raise important questions and issues, but UMTA reviewers must be familiar with and sympathetic to the particular local planning process and events to date. If the grantee is required to go back over old ground to undertake new alternatives analysis studies and recreate new information, it can become very time consuming and demoralizing to the local planning process and can even result in upsetting the local consensus. In Portland, city officials thought they had adequately studied alternative modes and corridors. However, UMTA required the city to perform an additional analysis of an alternative which had already been studied and which the consensus was against. This additional study did cause six months to a year delay.

UMTA's participation also has implications on the funding and financing of a project. Here again, there are pros and cons. Without UMTA funding, a project will not proceed without a very strong local commitment for the project, whether it be from the state or local level. UMTA financial participation lends some assurance to the local community and gives credibility to the project. It assures a professional and technically competent approach. On the other hand, with UMTA funding, there is a tendency on the part of local communities to seek a transit solution only because UMTA puts up the money and takes the financial risks.

Without a clear, definitive decision and a commitment for funding by UMTA, the local support for a project vacillates from one system technology to another, with special interests advocating their pet ideas in never ending varieties.

Over the years, UMTA has joined FHWA in sponsoring and supporting metropolitan areas transportation planning. This greatly increased the interest and capabilities of urban regions to pursue multi-modal solutions, including fixed rail systems. Furthermore, UMTA requires that a transit project be consistent with an overall regional plan and be system-wide in nature. The first segment must also be part of the area-wide system. Unfortunately, system planning by its very nature produces huge price tags, even though only one segment may be chosen for the project. The local community becomes awed by the prospects of the total financial commitment, and both the federal government and Congress worry about the implications of a long-range commitment to a region-wide and costly project.

San Diego was able to proceed on a specific stand-alone project, without reference to a larger and more costly project that would have made local city officials nervous. Portland also was able to focus on a definitive segment due to the interstate transfer fund. But until that was made clear, special interest advocates were constantly changing the scope and nature of the project from highway to busway, to transit, to transit/highway.

VI. FINDINGS AND RECOMMENDATIONS

VI. FINDINGS AND RECOMMENDATIONS

In order to assess the impact of UMTA assistance on the local transit planning and implementation process, Kellogg assembled, reviewed and analyzed pertinent plans and reports relative to San Diego and Portland, along with appropriate laws, rules, regulations, guidelines, directives and Congressional guidance which pertain to UMTA programs.

It became evident that there is a need to simplify and clarify the sources of information. The External Operating Manual is out-of-date and of little help as a guideline for grants. Applicants for UMTA funding are not clear about the ground rules, and as one interviewee stated: "It is a game with moving goal posts." While this is an oversimplification, analysis of pertinent information reveals that UMTA does need to provide better organized guidelines and directives, and in a clearer manner. Public policies affecting federal rail transit assistance may take different forms, such as regulations, guidelines, directives, etc., but in any case, they should be organized in one place, in clear and somewhat precise terms.

It also became evident that two distinct forces are at work in decisions relating to the planning, financing and implementation of a major rail transit project - one is technical and the other political. The technical process determines, or should determine, whether or not a project is technically viable and cost-effective and, therefore, whether it should "qualify" for UMTA funding. The political process (local decision-making) determines, or should determine, the "ranking" of a project in terms of national funding priorities and when and how much money should be made available.

The technical process is defined as those aspects of a proposed project that deal with its operational and financial viability compared to the Transportation Systems Management (TSM) approach and includes:

- Cost/benefit of alternative corridors
- Modal choice
- Impacts on congestion and travel times

- Potential ridership increases
- Passenger travel time savings
- Cost-effectiveness of preferred alternative
- Impact mitigations

The political process is defined as those aspects dealing with the degree of local support and includes:

- Commitment of non-federal capital funds
- Commitment of non-federal O&M funds
- Agreement on corridor
- Preferred alternative agreement
- Degree of private sector support
- Minority business participation
- Accommodations of elderly and handicapped

UMTA is the key player in the technical process. It sets the rules and guidelines, lends financial and technical assistance, reviews progress, and ultimately decides on the technical merits of the proposed project. This is a role for which UMTA is well-suited. In partnership with FHWA, UMTA has been giving technical and financial assistance to metropolitan areas to undertake long-range transportation systems planning, upon which any viable project is, or should be, based. This process of system planning serves as the basis for subsequent corridor analysis and modal choice. It is the framework for the technical studies, reviews and decisions.

But can the ultimate project approval and funding decisions be made on technical merit alone? One interviewee stated that Portland successfully got through the process because of (1) political consensus at home, (2) political muscle in Washington, (3) available interstate transfer funds earmarked for Portland and lastly, but importantly, (4) technical feasibility.

In this sense, "political" is not to be construed as partisan, but as a process of organizing and fusing local action. UMTA has always sought evidence of local support and commitment. The newly proposed "Major Urban Mass Transportation Capital Investment Policy" says federal assistance will favor projects which:

- Have strong local support.
- Have a firm commitment of non-federal capital funds in excess of the share required by federal statute.
- Have a commitment of stable and reliable non-federal funds to operate and maintain the system.
- Are cost-effective regarding capital and operating costs.
- Attract new riders.
- Reduce travel time for existing riders.

Previous policy goals, which are still in place, include:

- Private sector involvement.
- Minority business participation.
- Consideration for elderly and handicapped.
- Fair labor practices.

Seven out of ten are more related to local consensus and commitment (the political process) than to ridership, cost-effectiveness and cost/benefit (the technical process) considerations. This is not to say the technical process is any less important. In fact, the political process is "moot" if the project has no technical justification. However, this study showed that the choice of the preferred alternative (within the range of overall feasibility, namely those that meet minimum technical requirements) is ultimately decided by the local political process. Figure 11 is a graphic illustration of how technical and political processes can be factored into the decision-making process.

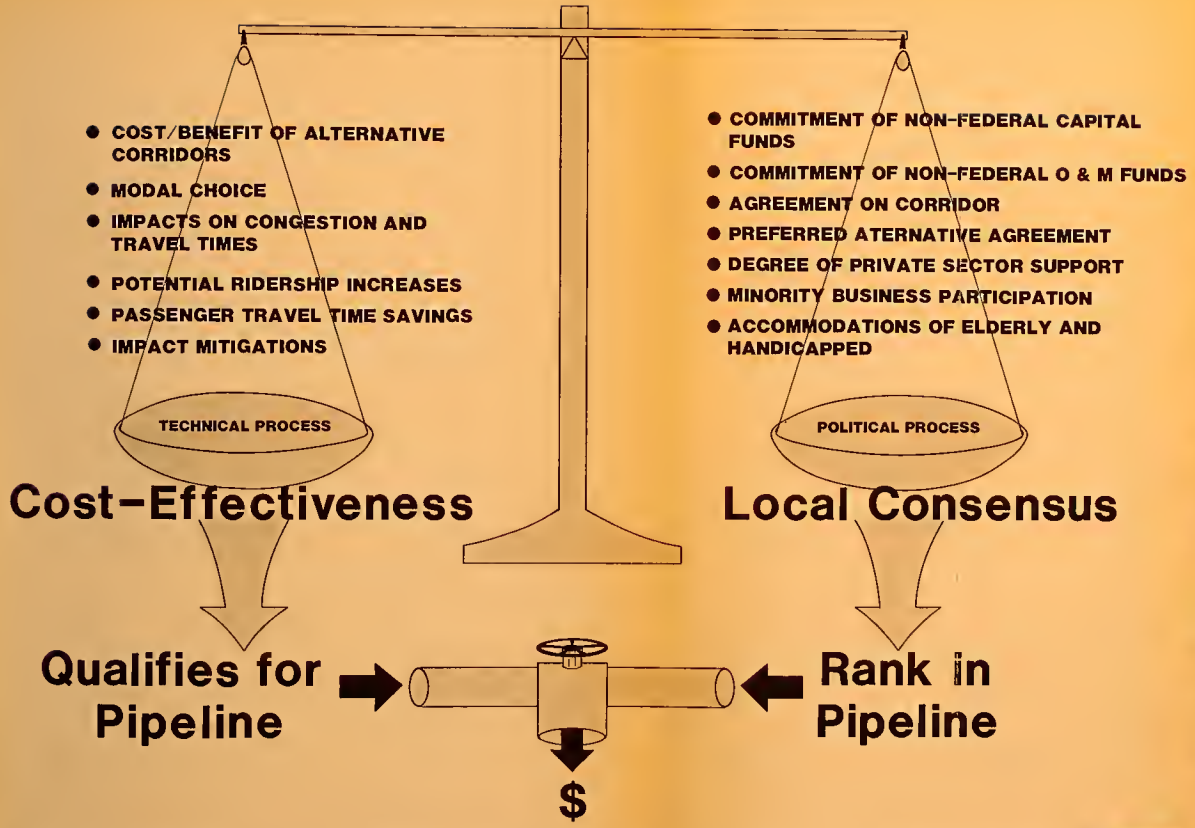

FIGURE 11

UMTA - LIGHT RAIL ANALYSIS | BALANCING THE DECISION PROCESS | KK KELLOGG 26 West Dry Creek Circle Littleton, Colorado 80120

Since the technical process is not the sole determinant, it is necessary to integrate the political process with the UMTA technical process, with key milestones identified as local and federal political decision points, as prerequisite to proceeding. It appears that the newly proposed UMTA policy moves in this direction by identifying five local activities funded by UMTA and four UMTA decision points.

With this in mind, Kellogg has concentrated its findings and recommendations on specific areas of the planning and development process, with emphasis on the need for improved communication and understanding of the process by all parties and for broader agreement on the decision-making elements. Ten findings and recommendations follow.

1. Finding: **There is duplication, inconsistency and lack of clarity in UMTA's regulations, guidelines, directives and publications.**

During the 20 years since its formation, UMTA has grown and its role has evolved. This has meant continually changing procedures and, with them, new regulations, guidelines and directives to describe them. UMTA has attempted to improve the process for reviewing and approving new and expanded rail transit projects. Favorable changes have been made even since the San Diego and Portland projects and this study began. But the changes have been piecemeal, resulting in a multiplicity of rules and documents, not always consistent.

Furthermore, the investigation reveals that there is no single document which clearly states the procedure which a local community must follow to obtain federal assistance and a commitment for funds to develop or improve local rail transit. There are numerous regulations, guidelines, publications and public statements, including Congressional guidance, but they are not consolidated and reconciled into one document for use by grantees. There needs to be a single reference source, beginning with the laws governing urban mass transportation assistance and running consistently through the regulations and other public documents.

For example, four statements issued from 1976 through 1980 in the Federal Register set forth policies, procedures and criteria for the planning, analysis and approval of rail transit projects, and there are further changes in later publications, so that all must be used to get the total picture. This is described and discussed in Section IV of this report. Taken together, the publications are confusing. Another example is the recently issued "Procedures and Guidelines for Alternatives Analysis (Draft)." This is a good first step, but it is not presented in context of the total system. It conflicts with some federal regulations and is confusing in terms of checkpoints and work products. Furthermore, it appears that significant improvements can be made in the presentation of material. (See Figure 6)

Consolidating, documenting and presenting UMTA regulations and procedures in a communicative way could be one of the most important steps in clarifying the role of UMTA vis-a-vis state and local governments, and go a long way toward eliminating criticism that UMTA financial assistance brings with it extensive obstacles and delays.

Recommendation

UMTA should form a task force to pull together all existing regulations, guidelines and directives to be consolidated into a single document. For clarity, the contents could be reorganized into a single "Urban Mass Transportation Investment Construction Grants Manual" (a handbook for elected officials, board members and grant applicants). Regulatory aspects (if any) could be codified in a single section of 40 CFR Chapter VI (see Section IV on Hierarchy of Rules, Regulations, etc.).

2. Finding: **There is a lack of agreement on the definition, meaning, purpose and interrelationship of key technical terms.**

Such terms as system planning, corridor planning, feasibility testing, alternative alignments, alternatives analysis phase one and phase two, draft EIS, final EIS, preliminary engineering phase one and phase two, preferred alternative, cost effective, incremental development, minimal operable segment, letter of no prejudice, letter of intent and full funding agreement do not have universal agreement about their meaning or use. Consequently, many of the problems and contentions between local, state and UMTA officials lie in the interpretation of terms and activities in the planning and implementation process. While some are defined in the UMTA Act, as amended, the clarification of these definitions could be part of the new consolidated document of regulations and policies. It is raised here as a separate issue because it can be treated so, but it also can be incorporated into the new handbook or manual. For example: Where does system planning begin and end? Who does it? What role does corridor planning have within system planning? Are alternative alignments part of the system planning/corridor planning or of the alternatives analysis? Where do Phase One and Phase Two begin and end? Can these be consolidated into the draft and final EIS?

Even if the UMTA staff believes they know the definition of these terms (and complete agreement is not evident, it is clear that grant recipients do not know, nor do they necessarily agree.

Recommendation

An UMTA task force should define as precisely as possible the meaning and purpose of the various key terms used by UMTA. Once this is done, agreement should be sought from the various congressional committees and from APTA. They should then be incorporated into the "Handbook," with an overall flow chart identifying checkpoints, purpose at each stage, interim work products, and other key information.

3. Finding: **The relationship of UMTA required activities to an UMTA Grant Decision should be clarified.**

The UMTA draft "Procedures and Guidelines for Alternatives Analysis" is a good start. However, this type of exercise should be done for the entire process. Federal regulations identify 13 steps as the procedure leading from long-range or systems planning to an UMTA commitment of funds for a rail project. With each step, such as system planning, alternatives analysis, draft and final Environmental Impact Statements and preliminary engineering, local and federal decisions are required. It is important to clarify the sequence, checkpoints and consensus needed and relate them to specific UMTA actions. Each step becomes essential if the project is to proceed. This has been greatly improved by the newly proposed "UMTA Project Development Process," which indicates five major steps and four decision points. However, clarity and documentation are still needed.

Recommendation

A clear step-by-step procedure from system planning through final design should be established and included in the handbook mentioned previously. It should be specific and concise and should include a flow chart reflecting required work products, decision modes and points, responsibilities and descriptions of work product contents. It should include established cross reference to Section 8 planning and allow for consensus building and definitive local commitments.

4. Finding: **The local and federal political processes have an equal or greater impact on federal grant decisions than the local and federal technical processes.**

The local political consensus process in both San Diego and Portland played the most significant role in decisions to proceed. In both cases, the technical planning and review process was more the result of local decisions to proceed rather than the cause of decisions to proceed. Yet UMTA's public position (and a reasonable one) assumes that a logical, technical approach to planning and studying alternatives will lead to a viable, cost-effective project upon which local political bodies and UMTA can act.

The results of this study seem to indicate otherwise - the best technical alternative does not necessarily get built, and maybe for good reasons, as with San Diego's opportunity to acquire the SD&AE right-of-way. In San Diego and Portland, it appears that a consensus was reached not through the technical process, but through a political process built around other factors such as state actions authorizing funds for a rail system, available right-of-way, the city's mayor being appointed the Secretary of Transportation, etc., but in any case sufficient to fuse local consensus.

This is not necessarily bad and, in fact, is consistent with Congressional guidance which seeks a strong local consensus and financial commitment. It seems important to make a distinction between local planning, which leads to a decision to (1) build a system, (2) where, and (3) what kind, versus a technical planning process supported by UMTA, and used by UMTA, as the principal criteria for its discretionary grant decisions. UMTA should consider whether or not it should intervene in the technical aspects of a local decision if a broad consensus already exists as a result of local transportation planning, which usually UMTA has financed. Once a decision has been reached, it does appear unreasonable and unnecessary for UMTA to intervene and impose retroactive requirements to consider, for example, a different corridor of mode, unless the locally preferred project is not consistent at all with the local system plan.

Consequently, the purpose of the technical activity might be viewed as a qualifying process and the political activity as a ranking process. The technical

process should be so structured to allow and encourage political consensus at various key stages to avoid retracing the AA, PE and EIS steps, as has been the case when political consensus waivers or changes. The broad five-step development process proposed seems to accomplish this, but needs to be fleshed out to avoid any subsequent surprises.

Recommendation

UMTA should separate the qualifying process from the ranking process, and establish different criteria for each; i.e., (1) traditional technical criteria would be used to move a local community through systems, corridor and project planning in order to qualify and get in the pipeline, and (2) political criteria (as defined previously) would be used for ranking a project in the pipeline, once qualified, and would depend on local political consensus, a local funding commitment and a local organization capable of implementing the project.

5. Finding: **UMTA's review and approval process has both positive and negative impacts. The negative can be minimized and clarified.**

There are two schools of thought regarding the best use of the time required for the UMTA review process. If it takes too long, some believe the local political consensus will fall apart. However, others feel this may prove to be a reasonable test of need and commitment, that if the consensus is not strong enough to survive a delay, then it is not good enough for the project. This study concludes that the length of time for delay is not a critical problem. However, indefinite delay in the review and decision making is a problem, especially after a local consensus has been reached. Furthermore, the current UMTA grant approval process for planning and construction tends to hold up decisions until the close of the Federal fiscal year, and this causes unnecessary delays and scheduling problems for the local authority.

Recommendation

Since UMTA, in its role as banker, has an equal stake in seeing the project proceed expeditiously in order to save escalating costs, UMTA should determine what is a reasonable review period, build it into the schedule, and make a commitment to achieve it. This includes setting the grant approval practices to fit the grantees schedule. UMTA should also be prepared to reject a project on technical grounds, rather than drag it on because of local politics (but only if the criteria for rejecting are part of a published document). The project might still survive through the political process, as in San Diego and Portland, but at least UMTA has done its job.

6. Finding: **UMTA is inadequately staffed to efficiently provide reviews and oversight services. This causes delays and criticisms.**

An apparent lack of UMTA personnel, resources, and capability hinders effective review of the projects. This was demonstrated in Portland when UMTA was not able, initially, to have a close daily involvement in the project. In the interviews, it was generally agreed that UMTA staffs are too thin and, in some cases, too inexperienced in major project engineering and construction. It was also suggested that UMTA needs a full-time, on-site representative for major investment projects.

Recommendation

UMTA should reassess staff needs and provide personnel, specifically qualified and trained, for proper oversight of the project engineering and construction. If this is not possible, consultants should be considered to assume this role on behalf of UMTA, and funds included in the grant to accomplish this purpose.

7. Finding: **Sizable cost savings can be achieved through better monitoring of the construction process.**

Cost savings directly related to regulations and UMTA's oversight role are important, but significant savings can also be achieved through better construction planning, techniques and monitoring. Kellogg has learned that most construction problems are traceable to decisions made prior to construction and to untimely decisions during construction. UMTA regulations authorize assistance to help grantees to improve procurement and supervision capabilities in accordance with UMTA circular 4220.1A. Better "construction planning" is needed. The recently completed Business Roundtable Report entitled "More Construction for the Money," published in January 1983, lists approximately 700 recommendations to owners which can be implemented to save construction costs.

Recommendation

UMTA should put more emphasis on the construction process and construction oversight by qualified professional engineers and experienced constructors.

8. Finding: **After the fact, unallowable costs under an UMTA grant can become contentious and damaging to the project and local/federal relations.**

There needs to be a defined and/or agreed upon list of activities and facilities which are eligible for UMTA funding. Frequently some costs are rejected during the planning, engineering and implementation process. The grantee feels surprised and let down. In Portland, justifiable additional landscaping needed to be done along Burnside, but was not eligible. On the other hand, the utility company tried to get new facilities included in project costs which would not be justifiable. Since eligibility for cost is important to the ability to proceed smoothly and avoid belated disputes regarding gold plating, particularly of non-transportation items, this issue needs some precise definitions and parameters.

Recommendation

UMTA should establish a policy to fund a percentage of only basic transit infrastructure and system costs. These should be reasonably defined in the manual and in the full funding contract agreement for specific projects.

9. Finding: **There is a perception that locally adopted urban development objectives and transportation policies do not get sufficient consideration in UMTA grant assistance decisions.**

UMTA's proposed "Major Urban Mass Transportation Capital Investment Policy," treats certain local goals (such as: urban development objectives, reduction in congestion, pollutant emission and energy consumption) as secondary benefits. This is due to the difficulty in measuring and assigning values to such benefits individually. While this is understandable, there is a definite synergism between these objectives and cost-effective transit plans.

This may be difficult to quantify mathematically, but Portland, in contrast to San Diego, did have clear and broadly supported urban development policies, backed by a record of achievement. Just as New York's ridership level is assured by the circumstance of the city's configuration, so too is Portland's by its determination to maintain its center city development and urban transit preferential policies. This is a demonstration of local support and commitment which meets some of the essential evaluation criteria.

Since UMTA has long supported continuous, comprehensive and cooperative transportation system planning through financial assistance to the Metropolitan Planning Organization (MPO), the land use and urban development goals upon which this is based are important. In some cases, this has been only an ongoing perfunctory process, not leading to any specific projects. However, where it has led to projects which are consistent with or designed to implement the plan, this process should be recognized and credited in the evaluation. This is essentially the relationship envisioned in the newly proposed UMTA policy.

Therefore, it becomes particularly important that UMTA has a better understanding of the basic goals and objectives of the MPO and agree early in the process on the elements of the land use transportation model which ultimately predicts ridership levels and cost/benefit factors for existing and new riders.

This is not a perfunctory process, but one which forms the foundation of subsequent project decisions. Both San Diego and Portland transit development organizations leaned heavily on previous transportation planning work done by the MPO or state agencies.

Recommendation

UMTA should require a strong correlation between the area-wide transportation planning, usually carried on by the MPO and the transit operating and development agencies. UMTA should determine and certify that the basic principles of the models used for predicting ridership and patronage demands are consistent with good planning practice. A specific transit project must be consistent with and part of a total system plan. This will assist the bridging between the technical process and local consensus building.

10. Finding: **The nature of the sponsor agency and the availability and source of funds have a significant influence on the local decision.**

The existence of special state funds for a particular transit solution, as in San Diego, or earmarked interstate withdrawal funds, as in Portland, tends to influence the political decision-making process to act decisively. This worked effectively in both San Diego and Portland. Not only were funds made available exclusively for a fixed guideway, but a definitive amount was identified. In this regard, the local communities rationalized the system to fit the kind and amount of money available.

The idea of a fixed amount of money, but with no particular restrictions on how it can be used, has some merit in achieving two UMTA goals: 1) an absolute limit on the size of the grant, and 2) maximum flexibility at the local level.

This raises the issue of the pros and cons of a surface transportation fund with no strings attached. The availability of interstate transfer funds in some fixed amount enabled Portland to plan a comprehensive project within ultimate financial limitations. This meant they were able to combine both a highway improvement with a light rail improvement, because funds were made available which had the flexibility of surface transportation money. This, in turn, enabled them to achieve a strong consensus on the project.

Recommendation

There are two possible approaches:

1. One solution, of course, would be a Surface Transportation Fund which has an urban account for major metropolitan areas. This account would be managed by the state and might be similar to SB101 in California. The political negotiating process would all take place at the state level. The money could be used only for capital investment in new systems or facilities and could include integrated highway and transit improvements.

2. Another approach would use Section 3 discretionary money, but with a new planning and decision making process. For example:

Step 1. A local community, using the current MPO planning process, supported by UMTA and FHWA, undertakes land use/transportation planning and develops a transportation system for its region. The plan includes a comprehensive integrated transit system with a fixed guideway corridor.

Step 2. A transit project is chosen and local consensus sought and gained. It is then submitted to UMTA for technical and financial assistance. It would include a roughly estimated price tag, probably based on cost per mile, be consistent with the regional plan, have preliminary technical and financial feasibility, and political support demonstrated by some political action (i.e., resolution, etc.).

Step 3. UMTA would evaluate the project and agree on a total fixed sum of money for the project. This agreement would be subject to final review and a contract grant commitment at the completion of all planning and PE. UMTA would agree to share only a percentage of the cost of basic infrastructure, such as right-of-way, roadbed, track, stations, rolling stock, etc., and agree in advance on the percentage. This will be the basis for UMTA to make final determination on how much to fund. For example: the local community submits a price tag of $300 million, UMTA agrees to a project of $200 million and agrees to fund 50 percent or $100 million. Any funds required over and above the $100 million would have to come from state and local sources, such as revenues, property tax, sales tax, bonds, etc.

Step 4. The local community would then obtain a single grant (or loan) from UMTA for 100 percent of the cost to undertake the final planning, PE, AA and FEIS, all at the same time. As is now permitted in construction, the grantee would self-certify that they are meeting all essential UMTA requirements.

Step 5. Following FEIS, the locals would file with UMTA for their approval and full funding agreement to begin implementation. They would submit a financial plan to complete the project or some operable segment. UMTA's involvement would be limited to the $100 million grant. UMTA would make a post audit of the project planning and act on the grant request accordingly.

Step 6. If UMTA approved, its role would be that of a banker, not of a technical reviewer or critic. Its oversight would be to assure that its money was being spent properly. All DBE, WBE, E&H, safety and other federal requirements would be self-certified by the local agency.

EXHIBITS

EXHIBIT A
GLOSSARY OF ABBREVIATIONS

GLOSSARY OF ABBREVIATIONS

AA I	-	Alternatives Analysis, Phase I
AA II	-	Alternatives Analysis, Phase II
BART	-	Bay Area Rapid Transit
CALTRANS	-	California Transportation Department
CPO	-	Comprehensive Planning Organization, San Diego
CRAG	-	Columbia Region Association of Governments
CTC	-	California Transportation Commission
DEIS	-	Draft Environmental Impact Statement
DOT	-	Department of Transportation
EVL	-	East Urban Line, San Diego
FEIS	-	Final Environmental Impact Statement
FHWA	-	Federal Highway Administration
GTF	-	Governor's Task Force (Oregon)
LRP	-	Long Range Plan (also known as Systems Planning)
LRT	-	Light Rail Transit External Operating Manual - UMTA Directives for Grantees
MTDB	-	Metropolitan Transit Development Board, San Diego
NEPA	-	National Environmental Protection Act
ODOT	-	Oregon Department of Transportation
OMB	-	Office of Management and Budget
PUC	-	Public Utilities Commission
PVMATS	-	Portland-Vancouver Metropolitan Area Transportation Study
SANDAG	-	San Diego Association of Governments
TIP	-	Transportation Improvement Program
TRI-MET	-	Tri-County Metropolitan Transportation District (Portland Oregon Transit Agency)
UMTA	-	Urban Mass Transportation Administration

EXHIBIT B
OBSERVATIONS FROM INTERVIEWS

EXHIBIT B
OBSERVATIONS FROM INTERVIEWS

INTRODUCTION

The following is a compilation of observations, comments and ideas taken directly from the record of interviews conducted by Kellogg Corporation during research for this UMTA funded project. Sources are not identified to preserve the confidentiality agreed to in the interview. The observations have been paraphrased and are grouped according to these generic categories:

- Decision making
- Systems planning
- Alternatives analysis
- Engineering
- Construction and operations
- Financial
- Organizational
- UMTA's role

A master list of interviewees is included.

The comments do not always reflect an accurate portrayal of the UMTA regulations and process. Rather the comments reflect a perception of the process from the grantee's point of view. Persons interviewed at the "local" level seem to have a good appreciation of the difference between a technical evaluation (the UMTA alternatives analysis process) and decision making. There is also a perception that the UMTA process is not a set process but rather involves "moving goal posts." The perceptions and observations taken together indicate a lack of understanding of the UMTA process and perhaps a failure in communications. It was interesting to the interviewers to note that one characteristic of a successful project (with or without federal funds) was the degree of team involvement and consensus building on the part of all parties.

Please note that the observations and comments which follow are neither findings nor conclusions. Rather, they reflect perceptions and opinions of those who have been on the scene and directly involved with the project which are the subject of this report.

MASTER LIST - PERSONS INTERVIEWED

Name	Current Title	Role on Project
Roger Clark	Consultant	Director of Engineering, Metropolitan Transit Development Board, San Diego, CA
Leonard Bergstein	Partner Northwest Strategies, Inc. Portland, OR	Assistant to Governor Straub State of Oregon
Rick Gustafson	Executive Manager Metropolitan Services District (METRO) Portland, OR	Assistant to Mayor Goldschmidt and State Legislator During Project
Andy Cotugno	Director of Transportation for METRO, Portland, OR	Planner
Aubrey Davis	Regional Director, UMTA, Region X, Seattle, WA	Regional Director, UMTA, Region X, Seattle, WA
Patricia Levine	Principal UMTA Representative for the Portland/ Banfield Project	Principal UMTA Representative for the Portland/ Banfield Project
G. B. Arrington	Director of Planning for Tri-Met, Portland, OR	Land Use and Transportation Planner for City of Portland and Tri-Met
Sheldon Edner	Co-Director of the Center for Transit Research and Development, Portland State University	Not Involved
Doug Wright	Consultant, Public Utilities Commission, City of San Francisco	Transportation Planner and Project Developer in the Bureau of Planning of the City of Portland under Mayor Goldschmidt
Bob Post	Director of Planning, Tri-Met, Portland, OR	Transportation Planner and Project Manager for Development of the Draft EIS for the Mt. Hood Project
Tony Venturato	Project Manager for Light Rail Engineering and Construction on the Banfield Project	Not Involved

Don McDonald	Consultant to Tri-Met, Portland, OR	Formally Project Manager for the Light Rail Portion of the Portland/Banfield Project
Bob Sandman	Project Manager for ODOT Highway Portion of Banfield Project	Project Engineer with ODOT
Ted Spence	Planning and Program Manager for Metro Region of ODOT	Planner
L. C. Powell	Managing Director of the San Diego Trolley, Inc. (SDTI)	Not Involved
Roger Snoble	General Manager for the San Diego Transit Corporation (SDTC)	Transit Planner with SDTC Working with MTDB on San Diego Project
James Mills	Former State Senator	State Senator from San Diego Region and Leader Pro Tem of the State Senate
Tom Larwin	General Manager of San Diego Metropolitan Transportation Development Board (MTDB)	One of the Original Planners on the Staff of MTDB
Eva Lerner-Lam	Director of Planning and Operations, MTDB, San Diego	Not Involved
George Franck	Director of Transportation San Diego Association of Governments (SANDAG)	Land Use Planner Assigned to Comprehensive Planning Organization (CPO) and Transportation Planner from 1973 to Present

PARAPHRASED EXCERPTS TAKEN FROM INTERVIEWS LISTED ACCORDING TO ISSUE

Regarding Decision Making

"UMTA is requiring a process for evaluating projects on their technical merits. 'Decision-making' is a political/administrator function of state, local and federal bodies. These are not necessarily rational or consistent with the technical process."

"'Congressional direction' may lead to too much 'pork barreling'." Therefore, a consistent, logical and rational decision-making process with agreed upon criteria is very important."

"The federal administration shot themselves in the foot with their 'no new rail starts' policy. That policy led to more congressional involvement, which has created the 'congressional' direction papers; currently the principal decision-making vehicle."

"UMTA is managing a technical justification process, while others make the decisions."

"The de facto criteria for selection may be in this order: (1) the law, (2) congressional direction, (3) the strength of local commitment and support, (4) the strength of congressional advocacy for a specific system, and (5) technical justification."

"Should Congress be able to pick and choose among a list of 'technically prequalified' projects or should Congress be given projects in order of technical ranking? The process should provide clear criteria for decisions at specified points."

"The challenge is to match local planning with UMTA's goals and objectives. Locals should start with land use objectives and use transportation to facilitate achieving those objectives. System-wide planning should be more effective and more respected by UMTA."

"The eastern corridor in Portland became first choice because it was a natural trade-off for the Mt. Hood Freeway project and was necessary to achieve political consensus. The western corridor might have been more cost effective for a fixed guideway system. This illustrates the importance of local consensus over an UMTA technical process."

"The San Diego Tijuana Corridor also was chosen because of nontechnical reasons when the northern or eastern corridors were more cost-effective."

"Consensus as to what was needed in the Portland area was sustained over a relatively long planning period. This consensus among changing political players was a major factor in obtaining federal approval for the project."

"A big issue in Portland was construction jobs. Withdrawal would delay use of funds for construction contracts. The UMTA process provided a local reason for taking the time to do a thorough planning process. UMTA process was not, per se, the cause for delay."

"If you can't hold political consensus together for seven years, (the project) may not be worth it."

"The pool of dollars made available through the Mt. Hood withdrawal provided 'incredible leverage' in that there was a big pot of money to spread around to various constituencies. There was no rush to spend the money, as the dollars would be reserved and grow during inflation."

"There was time to do proper planning."

"Portland demonstrated that it may take five to seven years to achieve consensus and rigorous analysis required for a major transportation investment. What is the impact of changing technology during that period?"

"The Portland Project was successful because of (1) political consensus at home, (2) political muscle in Washington, (3) available funds, and (4) technical feasibility, in this order."

"Throughout the Portland Project, there was a continuous clash of objectives as they related to the interstate funding process, local planning and FHWA and UMTA objectives."

"Key to the selection of a light rail program mode in San Diego was the work of the first full-time executive director and members of the planning staff who thoroughly researched the opportunity and proceeded to 'educate the board.' "

"The first chairman of the newly organized MTDB apparently did not favor light rail and was not willing to generate strong political support. Senator Mills was able to pass an amendment to Senate Bill 101 to limit the chair position to two years and require a permanent staff."

"The 'this year' syndrome is a real problem for obtaining a long-term financial commitment. Politicians cannot think in terms longer than their period of elected office."

"UMTA should grade and/or rank proposed population centers eligible for fixed guideway systems based upon a 'to be established' set of criteria."

"California Senate Bill (SB) 101 initiated by Senator James Mills provided the institutional and financial basis for a fixed guideway system in San Diego. It was initiated because of apparent lack of movement towards a guideway system by political bodies in the San Diego region. In fact, San Diego Association of Governments and the city of San Diego came up with a different system than proposed by the first regional transportation plan produced by the Comprehensive Planning Organization."

"Early problems with the BART project contributed to a misunderstanding of the San Diego region's $2 billion rail oriented transportation plan. This led to lack of local support and subsequent action by Senator Mills to initiate SB 101."

"The San Diego Trolley was planned, engineered and constructed within a strict time schedule. State funds otherwise would be lost. Senator Mills initiated amendments to Senate Bill 101 to overcome major obstacles to meeting this deadline."

"The southern corridor (San Diego) was a natural because of proven patronage, available right-of-way, and political support."

"MTDB was able to develop a consensus by utilizing a team approach to the process with planners from all affected agencies in the region on that team."

"Without Senate Bill 101 and the subsequent availability of the railroad right-of-way, the San Diego light rail line might never have been built."

Regarding Systems Planning

"Definition of and participation in development of the regional transportation plan needs clarification. UMTA participation in development of patronage and models at this stage would facilitate movement to the alternatives analysis phase."

"Oregon Senate Bill 100 mandating local planning to achieve 19 state goals was an important factor leading to the development of a fixed guideway system in Portland. The state law is the 'link' between transportation planning and land use."

"Portland officials developed land use policies which led to assuring a growing and vibrant city center. The majority of all bus transit lines end in the downtown area. A fixed guideway system to complement this land use policy would reinforce the conditions."

"The Goldschmidt administration tried to look ahead '30 years' rather than just to the survival of their administration. Values and cultures established by that administration were encouraged by the strong state land use legislation and a state mandated Metropolitan Services District. Goldschmidt's personal relationship with the Governor helped, as did his selection as U.S. DOT secretary."

"UMTA distrusted (and still questions) Portland projections. However, the fact that there were good data on ridership in the corridor and apparent local acceptance of a bus system gave credibility to the projections and support for a transit project."

"The San Diego southern corridor was served by a very productive bus line, line #32. Over 8,000 passengers a day were carried with a productivity rate higher than any other line. The San Diego Trolley, in effect, stole passengers from this bus line that was itself operating 80% out of the fare box. Previous attempts to improve bus service and increase patronage were frustrated by private corporations and the mayors of the towns between San Diego and the border."

"MTDB in their process rejected the specific alignments of the CPO regional transportation plan and followed the general corridors. Apparently, MTDB did a systems level study in three months using freeway rights-of-way and/or railroad rights-of-way."

Regarding Alternatives Analysis

"The alternatives analysis process is often used to delay funding, as there are not enough discretionary funds to go around."

"The definition of a 'minimum operable segment' is critical and is a fine balance between potential revenue and cost."

"Redefine 'incremental' and perhaps call it 'minimum operable segment'; this becomes a question of either maximum length at minimum standards or full standards up front on a shorter length."

"Is there a clear policy within UMTA as to when and how decisions are made regarding major transit investments? Is there uniformity as to what factors or issues will be dealt with during the alternatives analysis and DEIS process?"

"The UMTA alternatives analysis is a method for delaying and metering funds for a project."

"The alternatives analysis process appears to be an end in itself rather than linked to land use decision making and really viable alternatives."

"The level of effort required for the alternatives analysis should be flexible and depend upon the amount of evaluation and analysis done by the MPO or transit agency prior to embarking on the DEIS."

"The alternatives analysis process is just that, a process. It is not really a tool for decision making."

"The Mt. Hood withdrawal process created a pool of money which could be spread around to help obtain consensus from a variety of parties. The ability to shift between highway and transit projects to achieve local land use and political objectives was a great plus in achieving local consensus."

"The methodologies for doing the DEIS are different for a highway project than those required by UMTA for a fixed guideway transit project. In effect, the decision to focus on highway or fixed guideway transit is made too early because of the necessity to start one process or the other."

"The impacts of delay which may be required by the UMTA technical justification process are exaggerated. A rigorous analysis is needed for a project that will benefit the area for a long time. Ten years to plan and build a major transportation project that will benefit people for 100 years is not too bad."

"The problem with the UMTA alternatives analysis process is primarily with the focus. Should transit projects be used to solved highway congestion problems or are they part of an overall 'movement' opportunity which can facilitate long term land use objectives?"

"The bus guideway was first pushed as the solution for the Portland Banfield corridor because Tri-Met did not have the credibility to manage a rail project while ODOT had demonstrated capability to manage large projects. This is not a fault in the structure of the alternatives analysis process, but rather local perception of capabilities."

"The preferred alternative becomes a fixed decision too early in the process. Some preliminary engineering should be done on a few alignments in order to develop cost data for the DEIS."

"Any 'unnecessary' delays caused by the federal planning process in Portland was probably a result of the mix of highway and rapid transit processes, and FHWA and UMTA conflicts, rather than characteristics of the process themselves."

"There was some delay when UMTA took strong but belated interest in patronage models. UMTA questioned the ridership figures and required Tri-Met to prepare a preferred alternative report again, addressing questions which Portland thought had already been answered."

"UMTA people reviewing the alternatives analysis did not really understand what was behind the local planning effort and often requested Portland to re-examine alternatives on which there already had been local consensus not to proceed."

"Of the 140 separate projects involved in the Portland Banfield project, only one-third were mass transit related. The Portland process was entirely out of the norm of the typical mass transit planning, design and construction process and therefore difficult to compare with San Diego or any other light rail project."

"The Mt. Hood Freeway was a 'designated alternative' and the corridor was the 'preferred alternative' in the DEIS. How to hold the funds while the area went through a new alternatives analysis process was a major challenge. The region would be violating the provisions of NEPA."

"The California EIS process apparently exempts transportation projects involving existing passenger service and existing right-of-way. Therefore, the technical alternatives analysis done for the CEIR was not rigorous."

"California SB 101 set criteria for fixed guideway design and in effect limited the parameters for the alternatives analysis."

"The Metropolitan Transit Development Board (MTDB) attempted to duplicate the UMTA alternatives analysis process. A January 9, 1978 MTDB staff report explained 'the purpose of adhering to alternatives analysis guidelines is not so much to satisfy UMTA as it is to appeal to the rational planning approach contained in the policy.' "

"The California state environmental impact process is more of a mechanism for holding public hearings with minimum data being presented for a decision test. The federal EIS process is more organized and structured in terms of its value as a decision tool."

Regarding Engineering

"Preliminary engineering funds for highway projects can be obtained during the DEIS preparation while UMTA will not provide PE funds until after the DEIS is approved."

"It is essential to have the benefit of 'operator' experience as input into planning and design."

"Highway engineers often do not have full understanding of rail engineering requirements."

"The engineering should be done sooner to support the AA and DEIS."

"The system and corridor AA should be done in the Systems Planning, then some preliminary engineering can be alone for more than one corridor in the DEIS."

Regarding Construction and Operations

"Allow specifications for design and procurement to be tailored to the local environment and needs."

"Consultants should be used to augment an owner's project management staff but not run the project."

"Why use consultants to draw up specifications for cars when they have never built one? Use the two-step procurement process and let the vendors draw detailed specifications based upon performance requirements with consultants reviewing."

"UMTA required pre-revenue testing of new cars is not always cost effective. UMTA should allow previous operating experience to substitute for pre-revenue testing."

Regarding Financing

"A baseline standard was suggested for the national transportation investment grant. Properties wanting more elaborate facilities would fund those facilities themselves."

"If a local area wants to pursue a major transportation investment, that government should be willing to commit their own money to do some initial systems planning or conceptual engineering."

"Set some minimum national standards for major transportation investment to be considered eligible for grant participation, higher standards to be funded by the locals."

"Could the grant agreement contain incentives to build the project within budget or under budget?"

"The question of 'eligible cost' often is confusing and delays awards of contracts. An UMTA representative onsite would speed up that process."

"When the San Diego Trolley went into operation, San Diego Transit Corporation (SDTC) experienced a net loss of $700,000 a year from the loss of business to the Trolley."

"California referendums and state legislation during the period 1971 to 1974 showed popular support for diversion of fuel tax funds to fixed guideway systems. A broad funding base was established for major transit investments including rail."

Regarding Organization

"Movement of people and resources is but one element of the land use planning process. Integration into one organization of the federal process for all types of transportation would facilitate land use implementation."

"Any unnecessary delays in the Portland Project were caused by early conflicts between FHWA and UMTA. When these were resolved, the process proceeded smoothly."

"High labor cost caused by 13 (c) requirements and labor oriented strike settlements were one of the major issues behind the decision to form a separate operating corporation (SDTI) and to avoid use of federal operating funds."

"The San Diego Transit Corporation (SDTC) incorporates private sector ideas such as: (1) a capital depreciation account, (2) financial incentive programs for employees, (3) work rules and operating procedures modeled after small business, and (4) use of private contractors for maintenance and other activities, while the San Diego Trolley does not."

Regarding UMTA's Role

"The formal written process is fragmented among statutes, regulations, circulars, guidelines."

"UMTA's staff is relatively inexperienced and people are unclear as to what they are trying to do. Staff lacks practical experience. FHWA, on the other hand, with older more experienced people is supportive and practical."

"UMTA involvement is important because some local governments do make bad decisions."

"There is not sufficient skilled manpower at the UMTA regional or federal level to continually monitor projects at all phases (planning, engineering and construction)."

"UMTA should play the role of a banker instead of the technical expert or owner. Consultants could be hired to monitor large construction 'loans' as banks do."

"UMTA needs to be consistent over time in implementing regulations."

"UMTA should have a resident representative on major projects."

"UMTA involvement is a 'cost of doing business' and provides a methodical planning process to compare projects across the United States."

"Is the real UMTA process one of 'survival of the fittest' or one which 'lets the best project through'?"

"UMTA should delegate more authority to the regional offices and beef up the staff and capabilities. This will improve response time and inject people into the process who have a better understanding of local needs."

"The process could have been accelerated if staff from UMTA were available to attend all technical meetings."

"UMTA could not have reacted fast enough when the SD&AE railroad right-of-way became available."

"UMTA, or any federal agency for that matter, finds it difficult to anticipate future problems. Decisions are based on currently perceived needs. Some sort of long term approach or consistent policy base is needed."

"Carefully define 'incremental construction.' Be more liberal in the definition so that more 'new starts' could be funded."

EXHIBIT C
CHRONOLOGY OF KEY EVENTS FOR
SAN DIEGO TROLLEY PROJECT

EXHIBIT C
CHRONOLOGY OF KEY EVENTS FOR SAN DIEGO TROLLEY PROJECT

1969 An Executive Director was appointed to head the Comprehensive Planning Organization (CPO).

1970 The CPO initiated an extensive transit research program for the San Diego region. This long-range transit and highway planning program culminated in the adoption of the San Diego Regional Transportation Plan (RTP) in March 1975. During this five-year period, from 1970 to 1975, the CPO studied three land use concepts mixed with five basic transportation concepts. These were:

Land Use Concepts	Transportation Concepts
Existing Trends	Local Bus Express Bus
Radial Corridors	Heavy Rail
Controlled Trends	Light Rail Advanced Technology Express Bus

1974 The CPO adopted regional land use and transportation policies.

June. Proposition 5 passed in San Diego County and in the State of California (diverted 25 percent of gas tax revenues to guideway development).

1974 December. The City of San Diego released an evaluation of light rail transit on four alignments in the South Bay Corridor.

1975 March. The CPO adopted a Regional Transportation Plan (RTP).

1975 The Local Agency Technical Task Force (LATTF) served as an advisory group for the alternatives analysis process and refinement of the adopted system.

1975 The State Legislative Analyst and a Citizens Transit Committee reviewed the transit proposals of the city, county and CPO. Their evaluation concluded that none of the studies conclusively showed the need for a transit guideway system in San Diego.

1975 Senator James Mills introduced Senate Bill 101, which created a Metropolitan Transit Development Board (MTDB) for the San Diego metropolitan area. The newly formed board was given the responsibility to plan, construct and operate exclusive public mass transit guideways in the San Diego County.

1976 January 1. SB 101 became law, creating MTDB.

December. MTDB adopted low cost principles and initiated a guideway planning effort.

1977 August. MTDB adopted a guideway corridor for intensive study from Sports Arena to San Ysidro.

September. MTDB adopted light rail transit technology.

October. MTDB adopted fare policies requiring increasing percentage of operating costs from farebox.

November. The adopted corridor was shortened to extend from Santa Fe Depot to San Ysidro to coincide with SD&AE Railway.

1978 June. With the planning effort completed; MTDB adopted the feasibility of the plan (Proposition 13 passed).

June-October. A variety of agencies acted to support the plan (area cities, county, Coast Commission, CPO, Port District).

October. The San Diego City Council approved the light rail plan and financial plan entailing fare levels keeping pace with inflation; MTDB executed a memorandum of intent to acquire SD&AE Railway.

December. MTDB approved contract with Kyle Railways to operate the SD&AE Railway.

1979 January. Final design engineering was initiated.

March. MTDB received final project and financial plan approval from CALTRANS and the California Transportation Commission.

April. MTDB approved the purchase of light rail vehicles from Siemens-DuWag.

November. MTDB purchased 108-mile SD&AE Railway for $18.1 million.

December. MTDB awarded the first construction contracts.

MTDB adopted the first major area transit improvement plan called the Service Concept Element; this plan outlined the strategy for high quality transit service.

1980 January-February. The East Urban Line (EUL) rail extension feasibility study was initiated; MTDB reviewed several alternative locations and reaffirmed the SD&AE alignment.

August. The California Transportation Commission approved double tracking on the south line and the purchase of additional vehicles. San Diego Trolley, Inc. was formed to operate the light rail line.

October. The East Urban Line (EUL) received endorsement by the San Diego County Board.

November. The EUL received endorsement by the City of Lemon Grove and the City of El Cajon.

1981 January. MTDB executed a purchase order for ten additional vehicles.

February. The EUL received endorsement by the City of Santee.

March. MTDB approved the EUL plan for engineering and limited right-of-way acquisition.

All feasibility, planning, environmental, and preliminary engineering was completed for the EUL.

MTD's Board of Directors approved the EUL as a project.

May. The California Transportation Commission (CTC) approved funding for the purchase of an additional ten light rail vehicles.

July. Light rail service was started.

November. Corridor voters endorsed the EUL by a two to one margin.

MTDB authorized the filing of a public guideway application under SB 620 with CALTRANS and the California Transportation Commission.

December. The EUL Advisory Committee was approved by the MTDB.

The sale/leaseback of 14 trolleys to Signal Companies provided $2.3 million for the EUL property acquisition.

1982 February. MTDB purchased the Spring Street Station (La Mesa) site for the EUL.

March. MTDB purchased the Massachusetts Station (Lemon Grove) site for the EUL.

MTDB authorized condemnation of the Euclid Station site property.

May. The County Board of Supervisors approved $415,000 for the purchase of the Imperial Station property.

June. The MTDB approved a contract with CALTRANS for engineering on the EUL.

The MTDB approved a contract for specialized traction power, signal engineering and design services for the EUL.

July. The Commercial Street traffic engineering study was completed. Governor Brown committed $3.2 million to the EUL.

August. The EUL design criteria was approved.

September. MTDB made an offer on one of three parcels necessary for the 62nd Street Station.

CALTRANS began the acquisition process on property for the 47th Street and Grossmont Stations and three pieces of property necessary for passing tracks.

An application was submitted for funding the purchase of right-of-way and construction of the Grossmont Center Station.

October. An offer was submitted to purchase the 12th Street and Imperial Avenue site as the EUL transfer point.

CALTRANS engineers moved into the MTDB offices.

Right-of-way mapping was undertaken for the EUL.

November. A consultant was selected to design EUL bridges.

A consultant was selected to study a possible EUL realignment along Market Street.

An application for the FY 84 funding and an alternate increment plan for the EUL was submitted to CALTRANS.

December. Final plans were due for construction of the Main Street multi-purpose transfer center project in the City of El Cajon. This station became the east terminal of the Trolley.

Ten new light rail vehicles were accepted and placed into service.

The sale/leaseback of ten trolleys to Signal Companies provided $1.7 million for the EUL property acquisition.

1983 February. The San Diego Trolley ran 15-minute headways throughout most of the day; the double-tracking project was completed except for the Coronado grade separation project.

EXHIBIT D
A CHRONOLOGY OF KEY EVENTS FOR
PORTLAND BANFIELD PROJECT

EXHIBIT D
A CHRONOLOGY OF KEY EVENTS FOR PORTLAND BANFIELD PROJECT

1969 The Columbia Region Association of Governments (CRAG) was formed. CRAG assumed responsibility from the Oregon State Highway Department (OSHD) for the preparation of the Portland/Vancouver Metropolitan Area Transportation Study (PVMATS).

The Tri-County Metropolitan Transit District (Tri-Met) was formed.

1971 CRAG adopted the PVMATS as its Interim Plan.

1973 Senate Bill 100 was enacted into legislation and established a statewide land use planning process. The primary purpose of Senate Bill 100 was to encourage metropolitan areas to develop transit alternatives which limited neighborhood impacts and preserved the vitality of the metropolitan areas.

Governor McCall established the Governor's Task Force to evaluate transit being used as an alternative to the Mt. Hood Freeway. The Task Force evaluated 68 different system configurations and identified viable corridors for transit systems in the Portland metropolitan area.

The Federal Aid Highway Act of 1973 was passed, allowing states to trade interstate highway funds for general revenue funds under UMTA on a dollar-for-dollar basis.

The Oregon Public Utilities Commission performed an LRT/Rail right-of-way study to evaluate the feasibility of using existing rail right-of-way for LRT. The study concluded it was feasible to use existing rail right-of-way for LRT.

The 1990 Public Transportation Master Plan, prepared by CRAG, was completed.

1975 Governor Straub submitted a formal withdrawal request to the U.S. DOT for the Mt. Hood Project. Governor Straub also designated three corridors for major transportation improvements.

The Interim Transportation Plan, prepared by CRAG (a four-day effort), showed that a busway in the Banfield corridor would be the preferred transit alternative for the corridor.

Under the lead of the Oregon Department of Transportation (ODOT), the Draft Environmental Impact Statement (DEIS), funded by interstate transfer funds through FHWA, was started. (During the initial work on the DEIS in 1975, LRT was included as an alternative for the Banfield corridor. Thirty alternatives were evaluated for the Banfield corridor including five rubber-tired alternatives.)

1976 LRT was dropped from consideration in the Banfield corridor by ODOT.

CRAG designated Banfield as the priority transit corridor.

The 1976 Federal Aid Highway Act extended the provision of the 1973 Federal Aid Highway Act. The Act allowed the entitlement created by the withdrawal of a freeway to be escalated on the basis of the FHWA's latest cost-to-complete interstate project.

The U.S. DOT approved withdrawal of the Mt. Hood Freeway.

Tri-Met, with assistance from Wilbur Smith & Associates, began work on the 1990 report. The work performed for this report was the first real effort to study alternative high technology modes of transportation for the Portland region, focusing on operating costs. (The report, completed in mid-1977, was one factor which led to the reinstating of LRT in the Banfield corridor.)

1977 CRAG reinstated LRT as a viable alternative for the Banfield corridor after protests and threats of lawsuits by Multnomah County.

With LRT reinstated, UMTA became involved with the review and approval process for the Banfield Project.

Tri-Met officials met with FHWA and UMTA officials to agree on a joint approval process.

During the period February 1977 through November 1977, Tri-Met prepared LRT technical reports on engineering, station zones, land use and operations.

March. UMTA issued a letter on the joint process with the FHWA and designated the range of LRT alternatives that would have to be studied.

February 1977 through June 1978. Tri-Met became the lead agency for the alternatives analysis.

May. Tri-Met adopted the 1990 report.

October. The DEIS for the Banfield corridor was completed by ODOT and Tri-Met and submitted to FHWA/UMTA for approval.

UMTA questioned the Banfield ridership projections.

1978 February. FHWA/UMTA approved and signed the DEIS for the Banfield corridor.

June. UMTA issued its nine questions letter on alternatives for the Banfield Project.

July. Phase I preliminary engineering for the Banfield Project was started. PBQ&D was hired as the preliminary engineering consultant.

The Transit Corridor Development Corporation performed a feasibility study funded by UMTA. The study focused on land use issues. It was completed in the fall of 1979.

September. UMTA required a "Preferred Alternatives Report."

October. Portland City Council voted to withdraw the I-505 project.

December. METRO was created.

1979 May. U.S. Representative Duncan insisted that Tri-Met pay some matching funds for the Banfield Project. Tri-Met eventually agreed to put up $10.6 million.

June. Phase I preliminary engineering work was completed.

September. The Final Environmental Impact Statement (FEIS) report work was started.

The Banfield LRT Project Team was formed.

The local funding package was completed. Tri-Met agreed to put up $4.0 million (this amount was eventually increased to $10.6 million), and a state fund was created in the amount of $10 million.

October. FHWA/UMTA gave its approval to proceed with Phase II preliminary engineering work.

1980 June. The FEIS report was completed by ODOT/Tri-Met.

July. FHWA/UMTA approved and signed off on the FEIS report.

September. The U.S. DOT approved the Banfield corridor project.

December. Congress directed UMTA to issue a letter of intent to provide $85.7 million Section 3 funds for the Banfield Project.

1981 January. UMTA refused to honor its letter of intent based on President Reagan's new federal policy on "no new rail starts."

Phase II preliminary engineering work for Banfield was completed.

April. Final engineering on the Banfield Project was started.

June. "Switchy/Switchy" becomes a regional funding strategy. Under this plan, Interstate Transfer funds for the Portland Westside Highway Project would be traded and used for the Banfield Transit Project; the monies required for the Westside Project would be provided for by UMTA Section 3 funds.

A congressional house committee directed UMTA to provide full funding for the Banfield Project.

September. Congress directed UMTA to accept the Switchy/Switchy funding strategy.

1982 April. UMTA approved a full funding agreement.

The ground breaking for the LRT vehicle maintenance facility took place.

May. Reconstruction on the Banfield Freeway began.

June. Construction on the Gresham to Burnside LRT section was started.

EXHIBIT E
CHRONOLOGY OF LAWS, RULES, REGULATIONS, GUIDELINES AND DIRECTIONS

EXHIBIT E
CHRONOLOGICAL SUMMARY OF BASIC REGULATIONS,
GUIDELINES AND OTHER EXTERNAL PUBLICATIONS GOVERNING MAJOR URBAN MASS TRANSIT INVESTMENTS

Date	Year	Citation	Subject	Summary of Contents	Significance/Keyword
00/00 1	1964	49 U.S.C. et. Seq. of 1964 as amended	Urban Mass Transportation Act provide additional assistance for development of comprehensive and coordinated mass transportation systems.	To authorize the Secretary to 1983. Initially assigned functions to HUD	Basic law as amended through May
02/01 2	1966	Department of Housing and Urban Development	Urban Mass Transportation Planning Requirements Guide Development publication on this subject.	This was apparently the initial Department of Housing and Urban	Historical interest only
02/26 3	1968	82 Stat. 1369 of 1968	Reorganization Plan No.2 functions from HUD to DOT	Transfers Urban Mass Transportation	Self explanatory
00/00 4	1969	42USC 4321	National Environmental Protection Act	Initial Federal Law.	Environment
00/00 5	1970	Executive Order 11514	Guidelines for Preparation of ENVIRONMENTAL IMPACT STATEMENTS	These guidelines were revised in 1973 but remained in effect until 1978. Are now incorporated in 43CFR771 (1980)	Initial implementation of NEPA
08/00 6	1972	Department of Transportation, UMTA, External Operating Manual with changes 1 through 4.	Program Information for Capital Grants and Technical Studies Grants	Provides guidelines for preparation and administration of capital grants for UMTA projects.	Still shown as "current" but probably needs major revision in light of more recent publications
08/01 7	1975	40 FR 149	"Proposed" Statement of Policy for Urban Mass Transportation Investments	This proposed policy was published to obtain comments and first alerted grantees to the policy of "incremental" development, and transportation system management (TSM). The proposed policy contained an eight-step procedure UMTA will use in reviewing the alternatives analysis and implementing the EIS requirements.	Policy, Alternatives Analysis, DEIS, Decision-making process described
09/17 8	1975	49 CFR 613	Planning Assistance and Standards	Incorporates by reference 23 CFR 450 which requires comprehensive areawide planning of transportation improvements and contains guidelines for development, and describes content and processing of the developed Transportation Improvement Program in urbanized areas.	See 23 CFR 450

EXHIBIT E

CHRONOLOGICAL SUMMARY OF BASIC REGULATIONS,

GUIDELINES AND OTHER EXTERNAL PUBLICATIONS GOVERNING MAJOR URBAN MASS TRANSIT INVESTMENTS

Date	Year	Citation	Subject	Summary of Contents	Significance/Keyword
09/17 9	1975	23 CFR 450 As amended	Planning Assistance and Standards for Urban Transportation Planning	Latest revision noted is August 6, 1981. This CFR establishes the MPO's and describes the urban transportation planning process to include the TIP and TSM, as well as the certification for the planning process. This is the systems or area wide planning; the first step before the A.A.	Current regs on regional planning/ systems procedures
04/30 10	1976	49 CFR 609	Transportation for Elderly and Handicapped Persons	Contains in 609.17 and 609.19 minimum specifications for rapid rail vehicles and light rail vehicles.	Handicapped
08/09 11	1976	23 CFR 420 Subpart C	Coordination of Federal and Federally Assisted Programs and Projects	Describes procedure for coordinating UMTA and FHWA projects as required by OMB, Circular A-95.	Coordination
09/22 12	1976	41 FR 41512	Statement of Federal Policy with Respect to Decisions on Major Urban Mass Transportation Investments	This is the final version of the proposed policy statement issued in August 1975. Note the 13 month gap between the proposed and final statement. See separate discussion of 8 step decision procedure.	This is "final" regulation regards policy
09/12 13	1977	42FR45828	OMB Circular A-102 - Uniform Administrative Requirements for Grants-in-Aid to State and Local Governments	Provides standards and procedures to be used by all federal agencies in administration of grants.	Minimum OMB requirements
03/07 14	1978	43 FR 9428	Policy Toward Rail Transit	This policy applies to rail, light rail and regional rail, but not to busways. The 3 step decision procedure is modified for rail.	Policy for rail
09/28 15	1978	None	Unofficial UMTA publication in draft form entitled, "Major Urban Mass Transportation System Cost"	This was obtained from Russ McFarland and is probably a good example of the many unofficial guidelines and procedural statements issued from time to time by UMTA.	Sample of unofficial guidelines

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Date	Year	Citation	Subject	Summary of Contents	Significance/Keyword
11/29 16	1978	43 FR 55978	Final Regulations for Procedural Provisions for Implementation of NEPA	This regulation is binding on all federal agencies, replaces some 70 different sets of agency regulations, and provides uniform standards applicable throughout the federal government for conducting environmental reviews.	Probably implemented by UMTA with Circular 5620.1 dated 10/16/79, "Guidelines for Preparing Environmental Assessments"
12/06 17	1978	49 CFR 660	Buy American requirements	This particular CFR was also amended at 46 FR 5814 dated January 19, 1981. Section 660.32 provides for four types of waivers. Latest info on file on waivers is January 19, 1981.	Buy America with waiver information
12/07 18	1978	43 FR 57478	Department of Transportation Joint FHWA/UMTA Policy and Procedures on "Major Urban Transportation Investments"	Was incorporated in 49 CFR 620. The policy statements toward "rail" and "major transportation investments" are the same as those published earlier (9/22/76 and 3/07/78). Provides for jointly administered analysis of alternatives (FHWA/UMTA) if appropriate See separate discussion.	A repeat of previous policy statements under DOT label
05/31 19	1979	44 FR 31442;	Department of Transportation: Non-discrimination on the Basis of Handicap in Federally Assisted Programs and Activities Receiving or Benefiting from Federal Financial Assistance	Also refers to 49 CFR 609 and 49 CFR 27.	Handicapped policy
10/16 20	1979	UMTA C 5620.1	Guidelines for Preparing Environmental Assessments	Provides guidance on form and content of environmental assessments for urban mass transportation projects.	Should be used in conjunction with 23 CFR 771
11/23 21	1979	UMTA C 9000.6	Letters of Intent	Contains policy and procedures regarding letters of intent.	Letter of Intent

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Date	Year	Citation	Subject	Summary of Contents	Significance/Keyword
10/23 22	1980	45 FR 70412	UMTA Urban Initiatives Program; Proposed Requirements and Guidelines	These are proposed with deadline of comments of December 8, 1980. Was final ever promulgated? There are three categories of eligible projects: intermodal terminals, transit malls and joint development. Criteria for meeting policy objectives and application procedures are provided.	Urban initiatives
10/30 23	1980	45 FR 71968	FHWA and UMTA Environmental Impact and Related Procedures (also incorporated as 49 CFR 622 and 23 CFR 771	Provides for coordination of any transportation funded project.	Environmental process and coordination
10/30 24	1980	45 FR 71986	Policy on Major Urban Mass Transportation Investments and Policy Toward Rail Transit. Provisions	FHWA/UMTA Environmental Impact Procedures published this same date necessitated two policy statement revisions: (1) UMTA may fund conceptual design studies leading to a greater level of detail on the alternatives presented in the alternatives analysis/draft EIS, (2) UMTA may fund the preliminary engineering on the locally preferred alternatives as well as other promising alternatives evaluated in the draft EIS to provide more accurate information on cost and environmental impact. The eight step procedure outlined in the policy statement of December 7, 1978, is revised.	Latest regulation describing policy and process leading to investment decisions
10/30 25	1980	23 CFR 771	Environmental Impact and Related Procedures (Note: UMTA by cross reference is required to use this procedure.)	Refers to 19 different authority and related statutes and orders| One is UMTA Circular 5620.1, "Guidelines for Preparing Environmental Assessments,"	Environmental process
10/30 26	1980	49 CFR 622	Environmental Impact and Related Procedures	Incorporates by reference 23 CFR 771, which sets forth the procecures for complying with NEPA. To be used by UMTA.	

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CHRONOLOGICAL SUMMARY OF BASIC REGULATIONS,

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Date	Year	Citation	Subject	Summary of Contents	Significance/Keyword
01/26 27	1981	49 CFR 623	Air Quality Conformity and Priority Procedures for Use in . . . Federally Funded Transit Programs	Incorporates by reference 23 CFR 770, which contains procedures for complying with the Clean Air Act.	Air quality procedures
01/26 28	1981	23 CFR 770	Air Quality Conformity and Priority Procedures for Use in . . . Federally Funded Transit Programs. (By cross-reference, UMTA is required to use this in planning and construction.)	Self-explanatory. See separate discussion for comments.	Air quality procedures
07/20 29	1981	46 FR 37488; also 49 CFR Part 27	Interim Final Rule and Request for Comments on a Change to the Policy Concerning Non-discrimination on the Basis of Handicap	This interim final rule amends the regulation concerning non-discrimination. The amendment deletes deletes Subpart E which required mass transit systems to become accessible to handicapped persons. Comments are solicited. The interim amendment as a new section requiring operators to certify they are making special efforts to provide transportation that handicapped persons can use.	Handicapped policy
06/08 30	1982	UMTA C4220.1A	Third Party Contracting Guidelines	Supersedes all previous UMTA regulations, orders, etc. relative to third party contracts under UMTA grants. Lists 14 requirements that contract clauses must contain. Provides for grantee certification of grantee system for processing contracts.	Third party certification
00/00 31	1983	UMTA pamphlet	Urban Mass Transportation Act of 1964 As Amended through May 1983 and related laws	This booklet contains basic law as amended; Federal-Aid Highway laws relating to mass transportation; other materials relevant to UMTA in general, and footnotes.	Should be reviewed by any grantee, particularly footnotes
01/18 32	1983	UMTA N0000.18	UMTA Directives Checklist	Contains a checklist of "current" UMTA directives organized under 13 classifications; some are for internal use.	Are these directives or guidelines? Looks like there might be some overlap. How do they fit with regulations?

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Date	Year	Citation	Subject	Summary of Contents	Significance/Keyword
03/17 33	1983	UMTA C5010.1	UMTA Project Management Guidelines for Grantees	Replaces Chapter III of EOM and incorporates by reference UMTA Third Party Contracting Guidelines of 06/08/82. Contains 2D references to other authorities.	Guidelines and procedures for grantees in administering UMTA grants
07/26 34	1983	Draft UMTA	Procedures for alternatives analysis	Subject of nationwide seminars. Includes Systems Planning, DEIS, AA and selection.	Latest information. What is impact on previous publications and regulations above?
08/01 35	1983	Draft UMTA	Technical Guidelines for Alternative Analysis	Concentrates on A.A. process.	Latest information. What is impact on previous publications and regulations above?

EXHIBIT F
BIBLIOGRAPHY

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BIBLIOGRAPHY

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APPENDIX

RISK MANAGEMENT AND VALUE ENGINEERING AS A TOOL FOR PROJECT CONTROL

RISK MANAGEMENT AND VALUE ENGINEERING AS A TOOL FOR PROJECT CONTROL

The success of major construction projects is jeopardized by the improper management of their costs and complexities. The largest contributing factors to time and cost overruns on construction projects are the result of decisions made prior to construction and untimely management response to problems occurring during construction. Therefore, there is a need for better project planning, project scheduling and construction, and management control of construction. Without such control, the consequences are construction delays, large cost overruns, construction claims, and lack of public confidence and support of the agency or company.

Control can be achieved when the owner's top management gives support to the judicious use of risk identification, risk management and a formalized process of value engineering. These are specific and definitive processes, not just part of the traditional design process.

I. INTRODUCTION

The growing cost and complexities of capital investment projects, when improperly managed, jeopardize the success of the project. It is no coincidence that the principal contributing factors to time and cost overruns on major construction projects are the result of organization and planning decisions made prior to construction and the untimely management response to problems occurring during construction. Consequently, better management control of the project planning, project scheduling and organization for construction are essential. Without such control, the consequences are construction delays, large cost overruns, construction claims (which in turn cause delay and cost increases), adverse publicity and lack of public confidence and support for the agency or company.

II. COMPLEX PROJECTS

In complex projects, risks and potential delays need to be identified in order to mitigate the shocking impacts of inflation. The larger and more complex the project, the more vulnerable it is to inflation. This must be anticipated and be a part of the early planning and estimation of costs.

Some case histories of various projects make the point that risks should be anticipated and managed:

- The Honolulu Rapid Transit Project (HART) - a $350 million estimate in 1973 became a $750 million estimate in 1980. The project was cancelled. There were continual design questions and delays and no broad base support or political commitment.

- Washington Metropolitan Area Transit Project (WMATA) was estimated at $2.5 billion. The current cost estimate is approximately $10 billion to complete. The multiple causes were: changing political and social environment, extraordinary retroactive conditions (MBE, E&H, EEO, etc.), fractured political decision making, vague construction organization, conflict of priorities (bus vs. rail) and inadequate contract and construction management.

- Contra Costa Wastewater Treatment Plant, where the $47 million cost estimate rose to $67 million final cost with a $20 million construction claim. Even more disastrous, the completed plant is not usable. There were deficient and unworkable design and working drawings, badly drawn contracts, and inadequate construction management, all of which contributed to the dilemma.

- BART's $1 billion cost estimate jumped to $1.6 billion final cost due to two factors: (1) the project was oversold, which led to over expectation and a taxpayer suit; (2) a major change in scope (subway through Berkeley instead of elevated) added approximately $350 million. However, this additional cost was assumed by the city of Berkeley, whose voters approved it.

- The Denver Mall, which had poor design control, changing scope and deferred and delayed utility agreements, resulted in an $18.7 million construction estimate, eventually costing $24 million. When adding design and CM fees, which greatly overran, there is even a greater discrepancy.

- The classic example of construction project complexity and cost overruns is the Washington Public Power Supply System (WPPSS) nuclear power plant projects. The $5 billion cost estimate ballooned to $25 billion estimated cost at completion and is now pending default. Some of the factors were poor project control, poor construction management, incomplete design, fast-track construction without replication possibilities, changing regulations and untimely decision making.

Some critical potential problem areas and risks include the following:

- Vague policy regarding purpose, goals and objectives

- Unclear lines of authority, responsibility, and decision making

- Poor project planning
- Changing environment (social, political, physical, financial)
- Poor contract management
- Changing scope
- Unproven technology
- Changing regulations (MBE, safety, labor)
- Inflation
- Poor on-site productivity
- Deficient design and engineering
- Questionable availability of labor, supplies and equipment
- Delays due to natural events: floods, rains, earthquakes, blizzards
- Unrealistic estimates and schedules
- Lack of alternatives analysis
- Insurmountable environmental problems
- Delayed utility relocation agreements
- Delayed agency or railroad agreements
- Delayed land acquisition
- Midstream changes generated by political pressure
- Differing site conditions
- Defective and deficient contract documents
- Cardinal change (breach of contract)
- Strikes
- Superior knowledge

Dealing directly with these issues is crucial to managing a successful project and is sometimes called risk management.

III. RISK MANAGEMENT - WHAT IS IT?

Great risks and liabilities are inherent in major construction projects - whether single facilities or system wide in nature. These risks take many forms, as noted in the foregoing summary of potential problem areas. The management of these risks is essentially the responsibility of the owner, either through staff or a consultant serving as project or construction manager. Unfortunately, there is a tendency to avoid risks (look the other way) rather than manage, eliminate or mitigate them. Risk management involves consideration of trade-offs between the competing values and resulting consequences in project implementation. With the proper skills, the agency or company staff can evaluate these trade-offs to arrive at solutions which optimize the owner's or public interests.

The decision-making ability with respect to risk management must remain with the project team. Boyd Paulsen and John Fondahl of Stanford University, writing in an UMTA report, observed that, "In general, where liability for decisions is great and where clear cut lines of authority do not exist, there will naturally be an inclination to shift decisions to others. There will also be concern, in unclear situations, that to render a decision will involve assuming responsibilities. These inclinations and concerns will result in delays which will in turn result in extra costs." Thus, it becomes incumbent upon the owner or agency to ensure that clear cut lines of authority and responsibility for decision making at all levels, including on-site construction, are carefully thought out, properly delegated through appropriate contract language, and common to all interested parties.

In the broadest sense, risks are associated with decisions covering the entire spectrum of activities ranging from the formation of the initial organization by the owner through the on-site conditions. No project of any size can be consummated without risks. This is especially true of urban rail projects because of the social, environmental and regulatory factors, the magnitude of capital investment, the dynamic stage of engineering and construction technology, and the congested environment in which they are constructed. Many of the risk elements, however, can be managed in a way to eliminate, limit or reduce potential financial loss exposure. Although the procedure used is qualitative rather than quantitative, it is particularly effective during the preliminary design phase of a project. During subsequent phases of the project, risk elements can be more accurately identified, and in most cases, quantitatively modeled and analyzed.

Risk elements can be identified and sorted under the following headings:

- Project management
- Government interface
- Politics
- Environmental concerns/interests
- Social concerns
- Utilities and resources
- Technologies
- Site specifics
- Underground conditions
- Acts of God
- Labor
- Contracting
- Design
- Construction

A sample of some ideas showing the range and variety in a large project is listed in the three page table entitled "Risk Identification and Management."

After risk elements are identified and thoroughly analyzed, they can be allocated as follows:

- Insurable. Some risk elements can be effectively allocated to coverage by insurance.
- Uninsurable but manageable. Most risk elements will be allocated to this category which includes those not effectively insurable but manageable with a certain degree of predictability. Risks within this category should be allocated to the party best able to control them: the owner, the designer or the contractor.

- Uninsurable. While insurance coverage can be purchased for an actuary-determined price if there is a logical relationship of "insurable interest," some risk elements are most effectively assumed by the project owner. In most cases, risks in this category can be allocated to another party.

After risks are analyzed and their impacts discussed, options are presented for mitigation. The issue and options should be studied in depth and appropriate actions taken during the preliminary design phase of the project. In addition, as designs, details and specifications are developed, more thorough and current versions of the risk program should be performed.

Risk identification and risk management programs should be implemented during the design review process and continued throughout the construction phase. The procedure to be followed is the same for both. Step One: Form a general risk committee. This could be an ad hoc committee, but it must consist of a wide variety of interests including project management, designers, construction professionals, funding and financial specialists, safety and insurance representatives and experienced outside consultants. The membership should number about twelve. Step Two: Convene meetings of the general risk committee on a somewhat regular basis. The purpose of the meeting will be to review project events which occurred since the last meeting and to update the risk identification and management tables. These meetings should be scheduled to coincide with project milestone events and held not fewer than three or four times per year. Step Three: Appoint on a special basis staff members or selected consultants to evaluate specific risk elements and alternative mitigative actions as they become more susceptible to quantitative analysis.

A well-organized risk management program will not only help avoid problems and construction claims, but can save money as well. This should be reinforced by an effective value engineering program.

IV. VALUE ENGINEERING - WHAT IS IT?

There are general industry misconception that value engineering is a cost reduction exercise which is similar to processes already being performed as a matter of course during project design review, or that value engineering is just part of good design. This perception is not accurate. Value engineering differs from those

other cost reduction activities in that it is a function-oriented process which focuses on analyzing the function of a product, its methods and processes (as opposed merely to seeking lower costs) in order to produce the same item at less cost.

Value engineering is defined by the Society of American Value Engineers as:

> The systematic application of recognized techniques that identify the functions of the product or service, establish the value (worth) of the functions, and provide the necessary function to meet the required performance at the lowest overall cost.

The overall objective for conducting a value engineering analysis or program is to maximize the dollar value of a project, while providing essential functions at minimum cost. Value engineering analysis can significantly reduce life cycle costs on a project by concentrating not only on construction costs, but also on reducing operations, maintenance and replacement costs. Value engineering studies focus on the high cost elements during the design phase to identify viable alternatives which perform the same functions at less overall cost.

In order for a value engineering program to be successful, certain essential elements must exist: There must be complete support by the owner's top management. There must be an incentive to save money. There must be a cooperative relationship between the value engineering team and the design team. There must exist a willingness by both the owner's upper management personnel and representatives of the design team to change.

Value engineering is not a typical design review, a cheapening process, a quality control review or a witch hunt. It is a deliberate, organized and conscious effort to achieve the best design solution at the lowest cost - and it can be applied to any phase of a major project, whether pertaining to maximizing the use of human resources and materials, or designing and implementing the approach and technique for construction.

With respect to establishing a cooperative relationship between the value engineering team and the design team, it must be emphasized that the value

engineering team has no responsibility with respect to approving or finalizing of design. The design team, however, is involved with reviewing proposals for design changes recommended by the value engineering team in conjunction with the owner's representatives. Because the decision to either reject or accept proposals by the value engineering team is based on maximizing the dollar value of the project, while providing the necessary functions at minimum cost and including input from the design team, the design team should not feel threatened or feel that its design is being criticized.

V. VALUE ENGINEERING

Performance of value engineering analysis is done under a formalized process. Involved in this process are three primary participants: 1) a value engineering team, 2) a design team, and 3) representatives of the owner's top management. These three participants interface through a formal value engineering review board consisting of owner personnel, key design team staff (including the design project manager) and the value engineering team. The value engineering team consists of: 1) a team leader who is well-trained and experienced in conducting value engineering studies, and 2) team members who are specialized professionals from the pertinent technical fields. Individual professionals for a value engineering team are carefully selected for their expertise relative to the project being value engineered and should have no direct connection with the design.

Value engineering involves a systematic application of recognized value engineering techniques. These techniques are a step-by-step procedure followed by carrying out a value study. These steps include:

1) Project Selection Phase. Systematically select elements of a project to which the value engineering effort will be applied.

2) Information Phase. Gather, organize and analyze data concerning the project, identify the functions, and establish the functional worth of the project areas.

3) Creative or Speculative Phase. Generate alternative methods for providing the necessary functions.

4) Evaluation Phase. Develop, refine and evaluate alternative methods generated during the creative phase, and select one or more feasible methods offering the best value.

5) Development Phase. Undertake a cursory analysis of the best alternatives, requiring additional supporting data and more accurate detail.

6) Presentation Plan. Prepare and present a report containing recommendations for implementation to the Value Engineering Review Board.

7) Implementation Phase. Implement the actions recommended and approved by the Value Engineering Review Board. All decisions made by the review board with respect to accepting or rejecting the value engineering team's proposal are final. If a value engineering proposal is accepted, the design team is directed to incorporate it into the project design. If the value engineering proposal is rejected, the design team is responsible for preparing and submitting a written statement to the owner and the value engineering team regarding why it was rejected.

The schematic flow chart (at end of this section) provides a graphic illustration of how the value engineering process works.

VI. CONCLUSION

Good project and construction management is not a one-shot effort. It starts at the beginning and is ongoing. It includes:

- Setting goals and objectives.
- Clarifying delegated decision making.
- Instituting effective communications and public participation processes.
- Establishing realistic policies and procedures.
- Securing funding in a timely manner.
- Instituting project control and management information systems.
- Carrying out construction planning or "risk management".
- Developing cost estimating and scheduling systems.
- Insuring effective designs and working plans for constructibility (involving construction people early).
- Anticipating land and right-of-way needs by early acquisitions and utility relocation agreements.
- Designing and implementing "wrap up" insurance.
- Instituting a "value engineering" and risk mitigation program.

If these steps are followed, the prospect for a successful, on-time, within-budget program is very likely. In any case, there will be no surprises. Without this organized approach - like tossing dice - it may come out all right, but the odds are against it.

IDENTIFICATION OF RISK ELEMENT	PROBABLE EFFECT(S) OF OCCURRENCE	GENERAL DISCUSSION	OPTIONS AVAILABLE FOR MITIGATION
PROJECT MANAGEMENT			
Failure to Adequately Staff the Project	• Failure of the decision-making process. • Inability to coordinate the project. • Inability to retain key personnel.	Staffing of the project begins with preparation of a well-conceived, workable organization chart followed by placement of qualified individuals to fill the key posts. In addition to the qualities of technical and/or managerial competence, all key project individuals must be effective and active communicators, possess interpersonal skills, and possess an ability and willingness to act as mentors to their subordinates such that a depth of management will be developed.	• Design an organization chart considering current internal resources and identifying external needs to fill all posts. • Develop qualifications considerations: - Technical and/or managerial competence. - Communications skills. - Interpersonal skills. - Mentoring skills.
Over Staffing of the Project	• Additional costs. • Dilution of management control. • Dilution of responsibility. • Ineffective decision-making process.	Overstaffing of a project team often breeds inactivity and boredom which translates to cancerous ineffectiveness of management control and the decision-making process. Operating slightly on the lean side can promote a healthy challenge to personnel.	• Apply value engineering principles to organizational functions. • Tend toward operating on a "lean" basis. • Develop policies providing for organizational structure adjustments as required.
Management Change and/or Change of Key Personnel	• Change in focus of project. • Internal power struggle and confusion. --Both of which could result in project delays and cost overruns.	The necessity to make management or key personnel changes on a large project is not an uncommon occurrence. Proper planning can minimize the adverse effects of such changes.	• When necessary to make changes in management and key personnel, carefully identify and evaluate both long and short-term effects of the change. • Develop organizational depth and flexibility by training subordinates to accommodate personnel changes.
Unexpected Sudden Loss of Key Personnel	• Change in focus of project. • Internal power struggle and confusion. --Both of which could result in project delays and cost overruns.	The sudden unexpected loss of a key person can occur at any time. No one is immune from being run over by a truck. While difficult to discuss openly, a contingency plan should be developed and receive appropriate attention.	• Develop organizational depth and flexibility by training subordinates to accommodate any personnel losses. • Make versatility a target trait when hiring for key positions.

IDENTIFICATION OF RISK ELEMENT	PROBABLE EFFECT(S) OF OCCURRENCE	GENERAL DISCUSSION	OPTIONS AVAILABLE FOR MITIGATION
GOVERNMENT			
Regulatory Compliance	• Design changes. • Project delays. • Cost overruns.	There will always be government restrictions and interferences that affect a large project, especially one with federal funding. An effective plan must be established and implemented to deal with the restrictions and interferences. Regulatory compliance is necessary to avoid delays and accompanying cost increases.	• Develop a thorough understanding of regulations through pre-project research and continued regulation surveillance at federal, site and local levels. • Keep abreast of policy changes. • Monitor regulatory compliance at the project.
Tax Hikes/Revisions - Sales Tax - Use Tax - Gross Receipts Tax - Corporate Income Tax - Social Security	• Increased project costs.	State and local governments could take actions to increase taxes above those originally anticipated.	• Establish effective governmental and community relations programs. • Establish an effective lobbying program. • Effect legislation exempting permanent materials, etc. from sales tax requirements. • Clarify tax requirements in bidding documents.
Funding Uncertainities - Continuation of High Budget Deficits - Competition for Federal Funding - Unpredictability of Washington, D.C. and Local Government - Competition Between this project and others	• Failure to obtain construction funding. • Delay of construction funding. • Project suspended. • Project terminated. • Burdonsome regulations and requirements. • Increased local funding percentage.	Seeking to accomplish a project with a federal partner has its perils as well as its benefits. If the project is dependent on this financial support, then considerable emphasis must be given to the mitigation of the possible effects. Thorough analysis must be made of what is required to keep the approval once obtained.	• Perform careful analysis of government requirements. • Develop accurate project cost estimates and budgets. • Maintain close liaison with the government. • Negotiate acceptable conditions in the agreement.
Permits - Delays in Receiving Permits - Conflicts with Fire Marshal - Refusal to Issue Blasting Permits	• Design changes. • Project delays. • Additional costs. • Restrictions on construction methods.	The permitting process must be executed on schedule to avoid project delays and disruption. Permit requirements must be closely scrutinized during design phase to mitigate problems downstream.	• Provide adequate time for permitting process. • Closely monitor securing of permits to ensure it is done in a timely manner. • Coordinate closely with permitting entities. • Clearly assign permitting responsibility to a single individual on the owner's or CM's staff. Identify this person in the specifications.

IDENTIFICATION OF RISK ELEMENT	PROBABLE EFFECT(S) OF OCCURRENCE	GENERAL DISCUSSION	OPTIONS AVAILABLE FOR MITIGATION
DESIGN			
Incorrect Design Assumptions	• Increased project costs. • Delay to project completion. • Diversion of project management time.	Examples range from incorrect subsurface testing to major delays during startup caused by faulty engineering data. Most problems can be traced to misguided attempts to reduce total project cost by reducing design costs.	• Provide an adequate design budget and treat state-of-the-art concepts and high-risk areas with great care. • Perform a risk analysis on suspected risky areas.
Inadequate Design Coordination Between Design Disciplines and Section Designers	• Increased project costs. • Delays to project completion. • Interface problems.	Common examples include physical interferences between doorways and piping runs. The potential for problems increases if the design effort is split between several firms or several offices within one firm.	• Select a design team with adequate in-house capability, with a leader who has proven ability to coordinate complex design efforts. • Consider CADD applications.
Lack of or Incomplete Design	• Increased project costs. • Delays to project completion. • Numerous change orders.	The design process is one area where attempts to reduce time and cost can easily produce substantial delays and cost increases during construction.	• Budget sufficient time and money for the design effort. • Monitor design progress and don't allow work to bunch-up at the end. • Allow time for design constructability reviews.
Untimely/Late Design	• Increased project costs. • Delays to project completion.	The cost of constructing from drawings fresh off the drafting table is exorbitant.	• Provide adequate lead time for the design process. • See above.
Too Much Design (Including Overemphasis on Esthetics)	• Additional costs of construction due to esthetics or redundancy.	The gold-plated or over-designed project is not a common problem, but it can produce substantial additional costs.	• Employ experienced design firms and pay particular attention to the competence of their cost-benefit studies and value engineering.
Overly Conservative Design (Defensive Engineering)	• Additional costs of construction due to over-conservative factors of safety.	While it is important for a designer to consider defective workmanship, overly conservative design is not an uncommon practice.	• Employ experienced design firms which tend to balance design detail with workable clearly-written, and enforceable specifications. • Establish reasonable and accepted factors of safety and stick to them. • Allow for design/construction to clarify and amplify requirements if necessary. • Establish an equitable change order procedure.

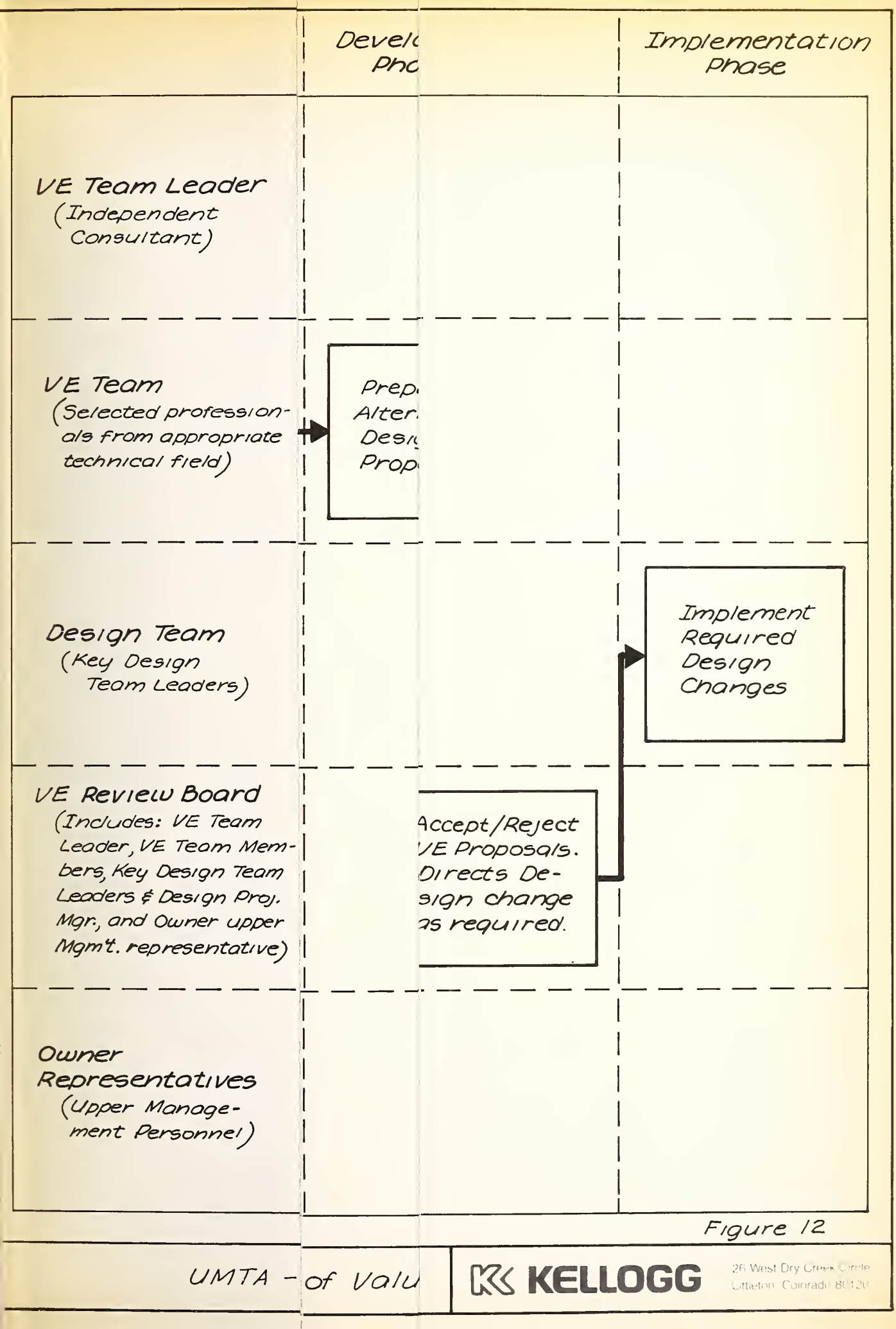

Figure 12

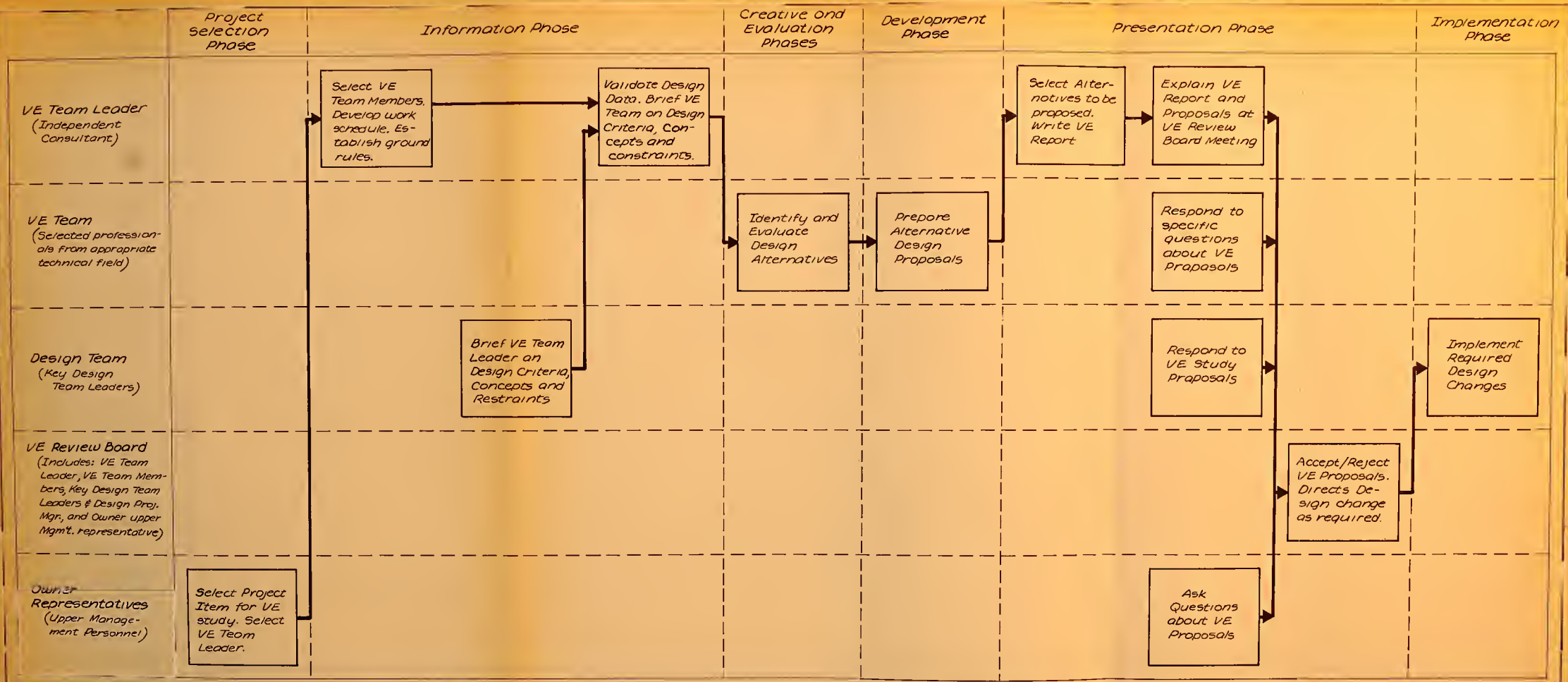

Figure 12

UMTA - Light Rail Analysis

Schematic Flow Chart of Value Engineering Process

KELLOGG