

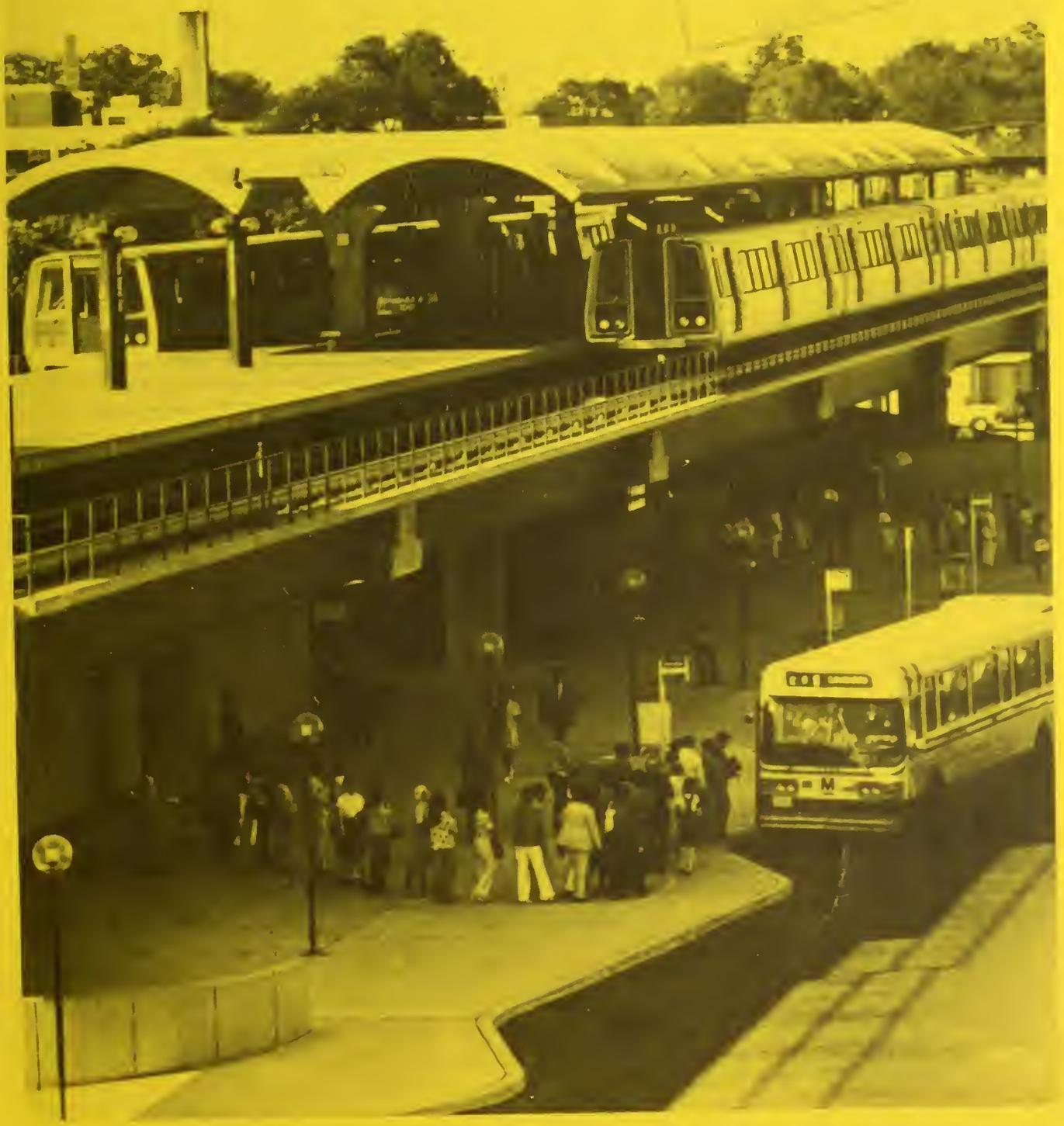
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Department of
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Innovative Financing for Transportation:

Practical Solutions and Experiences

April 1986



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*National Symposium on Innovative Financing
for Transportation (1985 : Fredericksburg,
Va.)*

Innovative Financing for Transportation; Practical Solutions and Experiences

Final Report
April 1986

Conference Proceedings
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16. Abstract This report describes the proceedings of a National Symposium on <u>Innovative Financing for Transportation</u> , held in Frederickburg, Virginia, on December 11-13, 1985. The Conference Proceedings Report includes papers or presentations delivered at four plenary sessions and three invited overview papers. Session papers cover a variety of subjects dealing with transportation financing including: New Approaches to User Charges; Recent Experiences with Benefit Assessment Financing; Development Financing and other innovative approaches and integrating financing techniques; and raising private capital. Overview papers focus on the variety of innovative financing options currently available and discussed financing issues from the perspective of urban and statewide transportation.			
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PREFACE

A number of innovative financing schemes have been developed and used by state and local transportation agencies. These techniques focus on capturing some of the economic benefits resulting from transportation improvements. These techniques involve user charges, indirect beneficiary assessments, or attempts to increase private sector involvement in public projects through joint development efforts or by raising private capital. As traditional subsidies for transportation decrease, these techniques become increasingly important to meet local transportation needs.

The conference upon which these proceedings are based was titled, "Innovative Financing for Transportation: Practical Solutions and Experiences," and was held in Fredricksburg, on December 11 - 13, 1985. It was organized in recognition that agencies at all levels of government are investigating and implementing a variety of mechanisms for financing their highway and transit programs. With changes that have occurred in support levels particularly from federal sources, the need to be innovative in securing funds for capital and operating expenses has never been greater.

The purpose of the conference was to provide a forum where experiences with many different transportation financing techniques can be discussed. It was intended to furnish a better understanding about many of the techniques that are being used or proposed and the extent to which these may be applicable in particular jurisdictions or at the state level. These proceedings include the papers delivered at the conference or submitted to the committee for publication. Other presentors, who did not submit formal papers are listed in the conference program, in the appendix.

The conference emphasis was on practical solutions and experiences, and the papers that are published in these proceedings are related to specific situations, problems or applications. In a sense, the intent of the conference was to validate, by actual field experience, the utility of many innovative financing options that are described in the literature. The approach is a pragmatic one--to establish which of the many techniques are really workable and under what conditions. The conference included a list of distinguished speakers with considerable experience in particular financing mechanisms. The papers published herein should be an excellent source of recent developments in transportation financing and related issues.

This conference was conducted under contract DTRS-5681-C00031 from the Research and Special Programs Administration, Office of University Research to the University Virginia, Charlottesville. The conference organizers wish to thank Dr. William F. Brown, Office of University Research for support and encouragement of this project.

I am particularly grateful to the U.S. Department of Transportation's Office of Technology and Planning Assistance, for its many contributions to the success of the conference. Mr. Norman G. Paulhus, Jr. of that office served as Contract Monitor for this project.

Many people and organizations were involved in the planning for the Conference. The program was developed by a Steering Committee, representing a wide array of organizations and interests. The Steering Committee members are: Richard H. Bradley and A. J. Zeisler, International Downtown Executives Association; Charles Byrley, American Public Works Association; Kenneth Cook, Transportation Research Board; Robert T. Dunphy, Urban Land Institute; Francis B. Francois and David Hensing, American Association of State Highway and Transportation Officials; Dennis C. Judycki, Federal Highway Administration; Mark Norman, Institute of Transportation Engineers; Leonard S. Simon, United States Conference of Mayors; Robert Stanley, American Public Transit Association; Richard Steinman and Milton Brooks, Urban Mass Transportation Administration; and Erskine Walther, North Carolina A and T University.

Special thanks are extended to the members of the Steering Committee, their representatives who attended planning sessions and the organizations that provided guidance on conference format and speakers as well as furnishing mailing lists and providing publicity for the Conference.

Special thanks go to the moderators for excellent organization and direction of the sessions. The moderators were:

Session 1 - Norman G. Paulhus

Session 2 - Robert T. Dunphy

Session 3 - Erskine S. Walther

Session 4 - Gary L. Brosch

Richard P. Braun, Commissioner, Minnesota Department of Transportation, and C. Kenneth Orski, President, Urban Mobility Corporation delivered keynote addresses at the Conference. These speakers have extensive

experience with transportation financing at both state and local levels and added a further dimension to the understanding of these issues. Both of these speakers presented enlightening and provocative speeches and I appreciate their interest and willingness to participate in the conference.

Assistance with conference planning and management was furnished by the University of Virginia's Department of Conferences and Institutes. I wish to acknowledge the considerable contributions of Thomas L. McKeon, V. Randolph Jordan, Bobbie Napier, Janice Morris and Phyllis Deane.

Dr. Gary T. Johnson was involved in the planning of the Conference until he left the University of Virginia in July 1985 to assume his present position at Virginia Commonwealth University. His many contributions to the success of the Conference are gratefully acknowledged.

Finally, I would like to recognize the excellent typing and editorial review prepared by Victoria Hunnicutt and Lori Lawson of the Publications Group, School of Engineering and Applied Science, University of Virginia.

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**PART I:
OVERVIEW**

INNOVATIVE FINANCING FOR TRANSPORTATION: What are the Options?

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INTRODUCTION

The years ahead are likely to be challenging ones for many transportation professionals. In some parts of the country, particularly in the south and west, there are accelerating demands for the extension of transportation services to meet the needs of rapidly growing populations. Meanwhile, in many of the nation's older cities, transportation infrastructures and rolling stocks are rapidly aging and will likely need replacement or substantial rehabilitation in the not too distant future, and there are increasingly vocal calls for the expansion of services to meet the needs of special populations (i.e., the elderly, the handicapped, lower income households, etc.). In this time of increasing demands, resistance to local tax increases remains strong, and the federal assistance on which state and local governments have relied so heavily upon in the past is rapidly diminishing. How can transportation agencies cope?

States, towns, and cities throughout the nation have developed a host of innovative techniques in an attempt to grapple with this dilemma. These techniques fall into four broad but interrelated categories. They are:

- Charges on Benefiting Properties;
- Joint Venture Approaches;
- User Charges; and
- Marketing and Merchandising Approaches.

The remainder of this paper will review some of the key techniques within these broad categories and show how they can be employed by the transportation professional to meet local needs.

CHARGES ON BENEFITING PROPERTIES

Charges on benefiting properties recognize that there are specific beneficiaries for most any transportation improvement. Techniques within this

category attempt to identify these beneficiaries, capture some of the value generated by the improvements, and channel captured revenue into support of the transportation system. Five techniques within this category appear particularly promising. They are:

1. Connector Fees,
2. Negotiated Investments,
3. Special Benefit Assessment,
4. Tax Increment Financing, and
5. Impact Requirements.

Let's briefly look at these techniques to see how they work.

Connector Fees

A technique which has recently received a lot of attention in regards to fixed rail transit is that of connector fees. Connector fees are nothing more than charges to owners or developers of buildings adjacent to a transportation facility for being physically connected to it. They are typically of three types:

- Lump sum payments to compensate for capital cost of knockout panels, plaza areas, etc.;
- An annual contribution to the operating costs of the facility, such as station maintenance; or
- 'In lieu' dedication of property for station areas or easements.¹

There are a number of excellent examples of communities that have used, or are developing plans for the use of, connector fees. In Washington, D.C., a department store (Woodward and Lothrop) paid \$500,000 for a knockout panel to connect the store's basement level to the region's Metro system. "The store experienced an initial 53 percent increase in retail sales volume and to date, has realized subsequent increases each time the Washington, D.C. Metro system has expanded."²

A second example, to give some indication of the potential inherent in the extensive use of this technique, is that of Dade County, Florida. Dade County projects that approximately \$5 million in revenues can be collected from the downtown component of their Metrorail system, currently under construction.

Communities interested in instituting connector fee programs need to be aware that many agencies do not currently possess the legal power to negotiate connector fees. Enabling legislation is often necessary as a prerequisite to instituting such a program. A second obstacle is the fact that developers often hesitate to pay for access to a transportation facility or transit line. To be successful with this approach, it is necessary to document the types and levels of benefits likely to result from the connection.

Negotiated Investments

A negotiated investment is an agreement between a developer and a public body, through which the former agrees to either make a needed public improvement or to contribute a fixed sum towards an improvement which will benefit his development. This contribution is usually made in exchange for some concession needed by the developer. "Local governments can often utilize their zoning and building permit authorities to bargain with developers to pay for transit related improvements required to provide access to the new development area."³

The fact that negotiated investments are tied to land use regulations can sometimes present problems for transportation agencies. This is due to two factors: (1) legal issues frequently arise questioning the extent to which a governmental body can attach conditions to zoning and other police powers; and, (2) transportation agencies have no control over zoning and land use regulations. As a result, transportation agencies must frequently work with other governmental agencies, as well as with developers, to obtain the desired results. This can be a cumbersome and time consuming process.

One of the best examples of a negotiated investment is in New York City. A group of developers are providing \$31.5 million to that City's MTA to renovate an overcrowded subway station. "The 31.5 million is part of a \$100 million 'amenity package' of public improvements for the developers' proposed housing and commercial project along the Hudson River. The contribution is the result of negotiations between the developer and the New York City Planning Commission to change the zoning of the project site from manufacturing to residential use."⁴

A second example of a community that has used negotiated investments successfully is Fairfax County, Virginia. In that county, a developer recently contributed almost \$20 million in road improvements, only a portion of which were required for his development, in exchange for being allowed to construct approximately 4 million square feet of office and hotel space in an area which had previously been zoned for residential purposes.⁵

Special Benefit Assessment

Special benefit assessment utilizes a somewhat different approach. Through this technique, some or all of the costs associated with a public improvement are borne by properties within a well defined area benefiting from the project (e.g., the benefit assessment district). The assessment can be either a one-time fee or a reoccurring charge over a period of years.

Generally, an attempt is made through this technique to apportion the assessment on a particular piece of property in relation to the amount of benefit received. This is done by utilizing in the assessment formula, such factors as site size, floor areas, and distance from the improvement.

There are several excellent examples of communities which have utilized special benefit assessment as a means of meeting local transportation needs. "Maintenance of the 16th Street transit mall in downtown Denver is being funded through a special assessment charged to property owners immediately adjacent to the mall corridor. A 1978 revision to the city charter permitted creation of the special district."⁶ The first year assessment was expected to be approximately 1.5 million dollars.

Commercial property located in a special benefit assessment district in Los Angeles is being assessed to support a fixed rail transit system. According to a recent article by Richard Braun in the AASHTO Quarterly, "At 27.5 cents per square foot, property owners will contribute \$250 million toward the project."⁷

Experience has shown both major advantages and disadvantages associated with this technique. On the plus side, this technique is politically more acceptable than many other innovative financing techniques. This is due to the fact that only properties directly benefiting from an improvement are assessed to pay for it. On the minus side, however, we find that there are often legal problems associated with this technique, with property owners

frequently challenging both the establishment of the assessment district, and the formula used to determine the assessment, in court.

Tax Increment Financing

Tax increment financing (TIF) is based upon the premise that public improvements spur development in areas surrounding them and, thereby, increase property tax revenues. Projected increases in property tax revenues are used to back bonds with which the public improvement is financed. Alternatively, annual increments of tax revenue are deposited into a fund dedicated to improvement in the TIF district.

Tax increment financing typically works in three basic steps. First, a tax increment financing district is established covering the area likely to benefit from the project or improvement. Second, a base year of assessed property values is established. Finally, as property values in the district rise, resulting increases in property taxes are dedicated to the improvement, while the taxes on base line property values are distributed to pre-existing taxing jurisdictions.

There are a number of issues which communities should be aware of prior to utilizing this approach. First, enabling legislation is necessary before this technique can be employed. To date, such legislation has only been passed by about half of our state legislatures. Second, it is hard to justify utilizing increases in property tax revenues within the tax increment financing district solely for transit or transportation purposes. This is due to the fact that it is difficult to separate transit induced values from the myriad of other economic forces at work in a TIF district. Finally, there is often a great deal of political resistance to the creation of TIF districts. Such resistance comes from related taxing jurisdictions, such as hospital districts, school districts, etc., which rely heavily on property tax revenues and which will be deprived of additional income in the tax increment financing district.

There has not been much experience in this country at utilizing tax increment financing for transit or other transportation purposes. In fact, although this technique has been used extensively in redevelopment projects (some of which have had transportation components), until recently the only transit use of it was in regards to the financing of Embarcadero Station in

San Francisco.⁸ Recently, Prince George's County, Maryland, began using TIF as a means of financing transportation improvements within its newly developing areas. Since the necessary enabling legislation was adopted by the Maryland legislature some six years ago, Prince George's has established ten TIF districts. Thus far, these districts have generated some \$8.5 million in revenue.⁹

Impact Requirements

A final technique by which some of the benefits generated by transportation improvements can be recouped is through impact requirements. Impact requirements are charges or other conditions imposed upon developers to mitigate or compensate for the impact of their projects. Such requirements are established by local ordinances and are administered through local police powers, usually the building permit process. The requirements may take several forms, from "a fee based on the square footage of new development, to the sponsorship of a ridesharing program."¹⁰

Impact requirements generally meet two types of political resistance. Developers often argue that such requirements impede growth and economic development. Citizen groups, on the other hand, frequently argue that such requirements are not stringent enough.

Some of the best examples of the utilization of impact requirements are from the state of California. Through the enactment of a "Transit Development Fee Ordinance" in San Francisco, for example, developers can be required to pay up to \$5 per square foot of new office space to compensate for the likely impact of their developments on transit services.¹¹ In Placer County, California, developers are required to design ridesharing programs in order to reduce potential traffic congestion.¹²

JOINT VENTURES WITH THE PRIVATE SECTOR

A second category of techniques is that of "Joint Venture Approaches." These techniques recognize that it is frequently mutually advantageous for the public and private sectors to cooperate on transportation projects. There are three major techniques within this category:

1. Land/Air Rights Leasing,
2. Donations for Capital Improvements and/or Operating Expenses,
and

3. Cost Sharing.

Land/Air Rights Leasing

Where a transportation agency owns land it does not need in the foreseeable future for transportation purposes, or where a parcel is not being utilized to its full potential, the full value of such property can sometimes be realized by leasing the air, surface, or subsurface rights. Such leases generally provide a steady and dependable stream of income during the life of the lease, usually 99 years. This income can be utilized to offset operating expenses or the costs of capital improvements.

Evidence from several communities that have engaged in such leases suggests two major issues related to them. The first is a legal issue. It relates to the fact that eminent domain powers are frequently used to assemble land for transportation projects. Several court cases have questioned the eminent domain powers of public entities to obtain air and subsurface rights in excess of those needed to achieve the objectives for which the land was condemned. The second issue is one of equity. Citizen groups almost invariably question the equitability of lease arrangements, arguing that the public does not benefit sufficiently under such contracts.

There are many excellent examples of communities that have used such lease arrangements. Air rights over Denver's Civic Center Transit District were leased to J.W. Galbreath and Company in 1981. This lease is expected to provide some \$55 million in income to the RTD during its first 15 years.¹³

In Miami, the air rights over land adjacent to the Dadeland South Station of their rapid transit system, currently under construction, was leased in exchange for the acquisition of the one-acre site for the station. As pointed out in a 1984 article by Gary Brosch, "The air rights will enable the developer to build 600,000 square feet of office space, 50,000 square feet of retail space and a 300 room hotel. The lease requires the developer to pay 4 percent of unadjusted gross income for each year of the lease."¹⁴ Beginning in 1986, the Office of Transportation Administration for Metropolitan Dade County expects to receive payments of 2-3 million dollars per year from the lease (in 1982 dollars).

Donations

Several communities have been successful in obtaining donations from the private sector to improve services or expand their transit systems. Donations are generally of two types: (1) monetary donations for capital improvements or the extension of services; or (2) donations of real property as sites for transit facilities.

In a mere two year period, nine million dollars was raised by San Francisco's Committee to Save the Cable Cars, for example.¹⁵ In Grand Rapids, Michigan, the Area Transit Authority received a \$100,000 donation as the local match for lengthening one of the system's routes to service the local zoo.¹⁶ In Newport Beach, California, the developer of a mall donated land for a transit center and contributed \$300,000 toward the operation of a shuttle service.¹⁷

The examples cited above are typical of the types of donations received. They are generally made in connection with some highly visible project through which companies or individuals will be recognized for their contributions, or they are made for reasons of pure self-interest (i.e., to increase access to a development).

It is also important to consider two other issues when contemplating the use of this technique. First, it is important to realize that the transportation agency must be legally empowered to accept donations. Many transportation agencies currently do not have this power. Second, one must consider both donors and investment opportunities when establishing a system for donations. If a non-profit tax exempt committee is established to accept the donations, such contributions can be invested without tax liability, and corporations making contributions are eligible to receive tax write-offs.¹⁸

Cost Sharing

The final, and in the opinion of many, the most effective joint venture technique is cost sharing. This technique has been used successfully by communities throughout the nation. It is based upon the fact that, in order to gain a long-term competitive advantage for their projects, developers are often willing to share operating expenses or contribute to the capital construction costs of transportation facilities that are interconnected to, or integrated with, their developments.¹⁹

Los Angeles was the first city in the U.S. to "negotiate an individual station maintenance and capital cost sharing agreement for a then proposed downtown people mover."²⁰ In Washington, D.C., owners of International Square Development provide heating and air conditioning for the Farragut West Metro Station.²¹ Similarly, in Des Moines, Iowa, a real estate firm is sharing in the start-up cost of a bus service to an outlying area.²²

There are several important matters to consider when implementing a cost sharing program. Paramount among these is the fact that cost sharers need to be included in the design stage of a transportation facility. This generally "assures an improved overall design of the subject station area, and affords the participating development interest an improved short and long-term competitive market advantage."²³

As with other joint venture techniques, transportation agencies must possess the legal authority to enter into cost sharing agreements.

USER CHARGES

A third group of techniques is known as user charges. In their original form, user charges were direct payments made for services rendered, highway tolls and bus fares being good examples. More recently, the concept has been broadened to include a wide range of other "revenue collection techniques that do not have such a direct link between payer and purpose."²⁴ As was pointed out in a recent ITE publication, "To the extent that the payer is identified as a user of a particular transportation facility or service and the fee, tax, or excise is uniquely applied to the general public, the mechanism can be classified as 'User-Pay'."²⁵

"User Charges," or "User-Pay" approaches, other than fares with which we are all familiar, can be classified into four broad groups. They are:

1. Motor Vehicle Taxes and Fees,
2. Tolls,
3. Commercial Parking Taxes, and
4. Taxes on Motor Fuels.

Motor Vehicle Taxes and Fees

There are a number of fees on motor vehicles which have or could be used for transportation purposes. They include: driver's license fees, motor

vehicle excise taxes, registration fees, heavy vehicle taxes, tire taxes, personal property taxes on motor vehicles, safety sticker fees, etc. Revenues collected from such fees are used for both transportation and non-transportation purposes. Where they are being used for transportation purposes, it is generally for highway related expenses. Nonetheless, a strong case can be made for utilizing such fees to finance transit, on the grounds that transit systems reduce congestion on highways and thereby provide benefit to all travelers.

Disadvantages of utilizing motor vehicle taxes and fees for subsidizing transportation are of four types:

1. Many techniques within this category, particularly license, titling, and registration fees, vehicle excise taxes, personal property taxes on vehicles, and safety sticker fees, are insensitive to the amount of vehicle use.²⁶ Other techniques within this category, including heavy vehicle, weight-distance taxes, tire, parts, and repair excise taxes, do not suffer this limitation.
2. The administrative costs to collect most motor vehicle taxes are relatively high, although administrative mechanisms are in place for many of them.
3. Some of the taxes and fees within this category are difficult to collect. For example, since many personal property and registration taxes are levied only in a localized area, anyone claiming to reside outside of the area is exempt.²⁷
4. Finally, the utilization of taxes and fees within this category to subsidize other than highway travel often lacks political feasibility. This is due to the fact that many vehicle owners object to subsidizing transit through such approaches.

A major advantage of approaches within this category relates to the fact that, once established, these techniques can produce a steady and dependable income stream for transportation purposes.

There are examples throughout the country where such taxes are being used for both transportation and non-transportation purposes. Virginia, for example, allows municipalities to impose personal property taxes on vehicles.²⁸ A surcharge on vehicle licenses has a partial precedent in Washington State's

two percent tax on the value of motor vehicles. The proceeds of that state tax are shared with local transit districts."²⁹ Motor vehicle excise taxes in Minnesota are being used to support transportation. Under provision of legislation passed in 1981, "75 percent of motor vehicle excise tax revenue will be transferred by 1992 to the state highway program and 25 percent of revenues will be used to support state transit assistance programs."³⁰ The federal government and many states impose "heavy vehicle" taxes.

Tolls

Fees for access to highways, bridges and tunnels can be a significant source of revenue for both highway funding and transit. Such fees are often collected by regional or turnpike authorities that operate outside state or local authority. Traditionally such fees have only been used for highway finance, although, again, a strong case can be made for using tolls in congested areas to finance transit on the grounds that such areas would be more congested in the absence of such services.

Several factors need to be taken into account before implementing tolls. First, as has been pointed out throughout this paper, enabling legislation is required before this, or most other financing techniques, can be employed. Further, "if a state imposes tolls on an interstate facility, it must pay back the federal government its original contribution."³¹

States with toll bridges and facilities include California, Connecticut, Delaware, Florida, Georgia, Illinois, Michigan, Missouri, Nebraska, New Hampshire, New Jersey, New York, Ohio, Oklahoma, Pennsylvania, Texas, Virginia, and West Virginia.³² "New York, Philadelphia and San Francisco have used tolls to help finance transit. For example, the Triborough Bridge and Tunnel Authority annually contributes over \$100 million to meet New York City's transit deficit."³³

Commercial Parking Taxes

Several communities have recently begun taxing commercial parking lots. Such taxes are borne either by the parker or by the lot operator. Taxing commercial parking shows great promise in that it has the potential of both serving as a permanent local funding source for transit and transportation improvements and for increasing farebox revenue.

New York City and San Francisco have both used this technique very successfully. A six percent tax on commercial parking in New York City yields approximately \$12 million per year. A 25 percent tax on commercial parking in San Francisco generates approximately \$5.5 million annually.

Several important issues have been raised in regards to taxing commercial parking lots. As was implied earlier, some studies, including one recently by Miller and Evert, suggest that parking price strategies may alter travel behavior. If this is indeed the case, then commercial parking taxes may be a means of increasing transit ridership. At the same time, however, others argue that commercial parking taxes can discourage downtown shopping and job seeking and, thus, in an overall sense be counterproductive.³⁴ Further, questions of equitability have been raised, arguing that all long-term downtown parkers should be included in any taxing scheme, not just parkers within commercial lots.

Taxes on Motor Fuels

Taxes on motor fuels, including gasoline, diesel and gasohol, have traditionally been used only for road and highway construction and maintenance, although in recent years such funds have been used to finance transit as well. Such taxes can provide an ongoing revenue source for transportation, and since they vary with fuel usage, they are to some extent sensitive to levels of benefit received.³⁵

Motor fuel taxes are employed by literally every state in the country, with rates ranging from 5 to 14 cents per gallon. "Virginia recently adopted a 2-cents-per-gallon increase and an additional 4 percent tax in Northern Virginia only, to help finance the Washington, D.C. metropolitan area transit system."³⁶ Illinois, Florida, Tennessee, and Virginia allow local jurisdictions to tax motor fuels and earmark revenue for transit.³⁷

Two major advantages of motor fuel taxes are that they are easily administered, and since they are often tied to fuel prices, they tend to rise with inflation. At the same time, being tied to fuel prices can be a disadvantage in times of declining petroleum prices.

MARKETING AND MERCHANDISING APPROACHES

Two final techniques need to be mentioned, although they are well known to many transportation professionals, and are already being used by transportation agencies throughout the country to supplement traditional revenue sources. They are:

- Advertising/Marketing Approaches, and
- Merchandising Approaches.

Advertising/Marketing Approaches

Transit stations, buses, and trains make excellent locations to market goods and services due to the large volume of people coming into contact with them daily. Transit agencies frequently take advantage of this fact by renting or leasing advertising space in high traffic areas. Mechanisms employed in this regard include: kiosks in terminals and on boarding paths; rental display cases; audio-visual displays; and panel boards on and in trains and buses.

Cities throughout the United States are using advertising as a means of raising revenue for transit. MTA in New York City raises almost \$17,000,000 annually in this manner, while metro in Washington, D.C., raises 1.6 million, and the CTA in Chicago almost 2.2 million.³⁸

Cities which have employed this approach report two major problems associated with it: (1) kiosks advertising can hinder security by shielding areas from the views of security cameras and guards; and (2) kiosks are often vandalized.

Pennsylvania has extended the concept of transportation related advertising, by selling special organization license plates to members of such groups as the Elks, the Masons, the Veterans of Foreign Wars, the American Legion, etc. These plates publicise the organizations and at the same time provide significant sums of revenue for the states transportation system. In 1984 the state sold over 82,000 plates at \$20 each and realized over \$1.6 million in additional revenue as a result.³⁹

Concessions

Concessions can be grouped into two major categories:

1. Manned retail outlets (including such establishments as newspaper stands, retail stalls, food and drink stands, etc.), and

2. Mechanical devices (including telephones, automatic teller machines, vending machines, etc.).

They generate revenue for transit agencies through what are generally termed as "revenue percentage" or "sales override" leases, or through annual concession fees under a master lease agreement.

While concessions can generate significant sums of revenue for the transit agency, a number of factors need to be taken into consideration before utilizing them. First, since concessions tend to slow pedestrian traffic, it is important to allow for this factor when designing access paths within the transit terminal. Second, one should be aware of the fact that although the maintenance of concessions is generally the responsibility of the concessionaire, food and beverage retail outlets and vending machines increase refuse maintenance costs associated with the transit station and associated rolling stock. Finally, one should also be aware of the fact that increased security is frequently necessary in areas serviced by concessions.

Concessions are being used in virtually every area of the nation to generate revenue for the support of transportation facilities. In Toledo, for example, "several banks ... are paying the maintenance costs of new downtown bus shelters, in which they are installing automatic teller machines."⁴⁰ On a much larger scale, a report by the Southern California Rapid Transit District estimates that non-food and beverage built in vending machines could "generate approximately \$1 million in annual revenue for the Metro Rail System measured in 1982 dollars."⁴¹ It estimates further, that a "full complement of kiosk and retail stall facilities located in Metro Stations would generate between \$750,000 and \$1.5 million in annual revenue to the SCRTD."⁴²

SUMMARY AND CONCLUSION

As pointed out in the introduction of this paper, the years ahead will be difficult ones for many transportation agencies. Demands for services continue to increase, while infrastructures and rolling stocks age, and traditional sources of transportation funding disappear. If adequate levels of transportation services are to be maintained, state and local transportation agencies will have to be increasingly creative in their funding approaches.

Within this paper we have looked at innovative financing techniques falling within four broad categories: user charges, charges on benefiting properties, joint venture approaches, and marketing and merchandising

approaches. Then, we examined some of the individual techniques within each of these categories, describing them, discussing some of the key issues associated with them, and looking at examples of where they have been employed.

While each of the techniques we've examined has been employed successfully by state or local governmental agencies, none, by itself, is a panacea for the fiscal ills besetting us. Nonetheless, these and other similar techniques are deserving of further study, and where appropriate conditions exist, techniques which can be utilized by you, the transportation professional, to meet local needs.

NOTES

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32. Ibid, p. 21.
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34. Op cit, (1982) Inflation Responsive Transit Financing, p. 13.
35. See: Op cit, Southern California Rapid Transit District (1983), p. VII-7.
36. Op cit, (1982), Inflation Responsive Financing for Streets and Highways, p. 17.
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THE OUTLOOK FOR URBAN TRANSPORTATION

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My credentials are hardly those of a Herman Kahn. I have spent much of my life in the government and the future in the bureaucracy means anything that happens beyond the current budget cycle - or, more accurately these days, beyond the next Continuing Resolution.

Moreover, my confidence in the human ability to anticipate the future has been shaken after reading a recent volume entitled "The Experts Speak: The Definitive Compendium of Authoritative Misinformation." In it, I learned that:

- In 1926, Lee de Forest, the man who invented the cathode ray tube, said, "While theoretically television may be feasible, commercially and financially, I consider it an impossibility..."
- Thomas J. Watson, Chairman of the Board of IBM Corporation said in 1943: "I think there is a world market for about five computers."
- Wrote Business Week in 1968: "With over fifteen types of foreign cars already on sale here, the Japanese auto industry isn't likely to carve out a big share of the market for itself."
- Said a recording company executive, turning down the Beatles in 1962: "We don't think they will do anything in this market. Guitar groups are on the way out."
- In 1945, Admiral Leahy, said this about the atom bomb: "This is the biggest fool thing we've ever done...the bomb will never go off -- and I speak as an expert on explosives."

And finally this, from a political figure whose name I shall allow you to guess:

- "A drastic reduction in the national deficit will take place in the fiscal year 1982." (Ronald Reagan in a news conference, March 18, 1981)

With these anecdotes as a humble reminder of the limitations of human prescience, let me engage in some crystal ball gazing of my own. In assessing what the future may hold for transportation I will lean heavily on a technique pioneered by John Naisbitt, author of Megatrends. Naisbitt

believes that the most reliable way to anticipate the future is to try to understand the present. To this end, he methodically scans 6,000 daily local newspapers from around the country. He maintains that the contents of local newspapers -- the news stories, editorials, op-ed columns and letters-to-the-editor that daily fill up the pages of our newspapers -- mirror our collective consciousness, and provide a reliable indicator of social concerns and preoccupations. Since newspaper space is limited, new concerns tend to displace old ones, and the newspaper becomes a faithful representation of society sorting out its priorities.

My own approach to understanding the future is less systematic than Naisbitt's "content analysis" but follows the same principles. By observing what is going on around the country, by staying alert to signs of change, and by looking for patterns that may indicate emerging trends, I think one can obtain a pretty good idea of where we are going and where we are likely to end up ten or fifteen years from now. Like Naisbitt, I find that there are several trend-setter states that can be relied upon as harbingers of transportation change. They are California, Florida, Texas, Colorado, Minnesota and Connecticut. (Four of these states, incidentally, also appear on Naisbitt's list of bellwether states of social change). By monitoring local developments in those states, one stands a good chance of getting an early glimpse of what the problems and concerns of the rest of the ratio will be in the years ahead. Thus, content analysis can be an early warning system, alerting us to problems that may otherwise be only dimly perceived.

What does a trend analysis indicate for the future of transportation?

SUBURBAN MOBILITY: A LOOMING TRANSPORTATION CRISIS?

First, and foremost, it indicates that we may be approaching a serious mobility crisis in our high-growth metropolitan areas. We are living today through a new suburban migration. The first one occurred after World War II, when millions of urban dwellers left the cities in pursuit of better housing, more living space and healthier environments. By the time this residential exodus tapered off in the early 1970s, it wrought vast changes on the urban landscape and permanently altered metropolitan travel patterns.

Today, we are witnessing a second suburban migration, with equally profound implications. This time, it is a migration of employment -- more

specifically of office and high technology jobs. Just how massive suburban office relocation has become can be gleaned from a few statistics.

In the San Francisco Bay Area, some 100 companies have moved 18,000 office jobs from downtown San Francisco to suburban office parks in the past two years. In the Washington D.C. metropolitan area, jobs in the suburbs are increasing at three times the rate of downtown employment. In the New York area, suburban employment is growing so fast that Northern New Jersey is expected to have more office space by the turn of the century than all of Manhattan combined. In other large cities, such as Atlanta, Boston, Denver, Houston, and Phoenix, between 68 and 91 percent of all office space additions during 1982 occurred outside the downtown core. Nationwide, suburban construction continues to outpace construction in central business districts in virtually every metropolitan area, with almost two-thirds of today's office development occurring in the suburbs (Urban Land Institute, Development Review and Outlook, 1984; National Office Market Report, Fall/Winter 1985).

This surge in corporate relocation has been triggered by a set of factors that include rising cost of downtown office space, inadequate room for expansion, and a desire to be closer to a trained pool of workers upon which service and high tech industries depend. Financial incentives to locate in the suburbs, especially for companies with large back office staffs are overwhelming. In the San Francisco Bay Area, for example, office space in Alameda and Contra Costa counties is available for less than \$20 per square foot, compared to \$35-50 in choice downtown San Francisco locations. A large bank or insurance company, employing a clerical staff numbering thousands, can save up to \$10 million annually in office rent by moving out to an East Bay location.

Suburban relocation has been aided by advances in communications. Modern suburban office buildings and office parks are wired for an array of sophisticated communications systems which have enormously facilitated operations in remote locations. Thanks to interlinked computers, teleconferencing, digital PBX, facsimile transmission, and private fiber optics communication networks suburban office workers can stay in touch with the world with equal facility as their downtown-based counterparts.

The new suburban exodus is characterized not just by massive shifts of jobs but also by a significant increase in the density of employment.

Suburban offices are clustering in giant new enclaves, many of which exceed in size and density the central business districts of medium size cities. A few examples tell the story:

- City Post Oak near Houston, with 16 million square feet of office space, 3.3 million square feet of retail space and a daytime population of 60,000, is called "the tenth largest downtown in America."
- Tysons Corner in Northern Virginia, with 11 million square feet of office space, 25,000 employees and 400 retail and service establishments is already half the size of downtown Baltimore, and has more office space than the central business districts of Richmond and Norfolk combined. When the current expansion program is completed, Tysons Corner will become a suburban city, competing for preeminence as an office and retail center with downtown Washington D.C.
- The Dallas North Parkway area has 13 million square feet of space in place or under construction. Another 24 million square feet has been announced. Office employment in the area is expected to reach 60,000. The North Parkway area also contains 3 major shopping centers, 11 hotels and 6 industrial parks. By 1990 it will rival downtown Dallas as an office and commercial center.
- Central Contra Costa County and the Livermore-Amador Valley in San Francisco's East Bay, is emerging as a vast regional city, "Contra Costapolis," projected to have an office population of 310,000, and 58 million square feet of office space by the year 2000. This will be nearly as much office space as is presently contained in downtown San Francisco.
- The Coastal Corridor in West Los Angeles, a 16-square mile area lying immediately north and south of the international airport complex (LAX), has a daytime population of 186,000 employees and contains over 40 million square feet of space. The area will experience a massive increase in size and density over the next ten years with the addition of the Howard Hughes Center, a planned 5 million square-foot office development, and Playa Vista, a 6.5 million square-foot development near Marina del

Rey. Eventually, development in the Coastal Corridor will coalesce into a gigantic new regional city that will rival central Los Angeles in size and density.

- Irvine Spectrum in central Orange County, California, will eventually contain 8 million square feet of office and light industrial space. Together with South Coast Metro Center a few miles to the north, and its shopping mall, office towers and hotels, it will form a giant new employment concentration, drawing some 80,000 workers a day.

The new suburban centers have every appearance of a traditional central business district. In fact, they are increasingly being called the "suburban downtowns." But what sets them apart from traditional downtowns is the speed at which they grow. The North Parkway area in Dallas, for example, has more than quadrupled in size in a short span of six years. By the end of 1988 the North Parkway area is expected to double in size again, to 16 million square feet. Central Contra Costa County has more than tripled its office space, from 6.5 million square feet to 17.5 million in just four years; in less than ten years, office space in the county has reached one-third the size of San Francisco's Financial District.

By contrast, traditional city downtowns have grown gradually, taking many generations to reach their present size and density. By expanding incrementally they were able to accommodate rising traffic loads. The rapid growth of the suburban centers allows no time for a gradual adaptation. Thus, the "instant downtowns" of today's suburbia give rise to equally instant congestion.

The new suburban megacenters are being superimposed on an essentially mature highway system. Since the late 1970s the pace of metropolitan highway construction has slowed down to a trickle, while traffic continues to grow exponentially. Fortunately, the system had built up considerable excess capacity during the highway building boom of the 1960s and 1970s, and this allowed automobile traffic to grow without running into serious capacity constraints. But now the slack is gone and most suburban road networks operate at or above their design capacity. In the absence of new roads, any further traffic growth in these circumstances has an immediate and direct effect on congestion levels.

But new roads are not in sight. There is certainly little prospect for a major new federal highway program, and states will have their hands full maintaining and rehabilitating their aging road networks. Even in Los Angeles, the freeway capital of the world, Century Freeway, now in construction, is viewed as the last major freeway to be built in the Los Angeles area for many years to come.

Even if state governments had sufficient funds to build new highways, the politically potent suburban constituencies are not likely to allow their neighborhoods to be disrupted by massive new highway construction projects. This is not to say that highway construction will come to a halt, only that any future capacity improvements will come at a much slower and deliberate pace. In most metropolitan areas new roads will represent only a modest, incremental addition to existing road capacity. For better or for worse, suburban America will have to rely largely on the highway system that exists today.

Another complicating factor is the decreasing relevance of mass transit. Back in the 1970s, it was widely believed that transit would offer a meaningful solution to metropolitan congestion problems. But with recent changes in employment patterns, it is becoming clear that transit can at best play a modest role.

As long as the bulk of the jobs remained in the central city, public transit could function relatively effectively by collecting commuters at staging areas, such as suburban commuter rail stations and park-and-ride lots, and taking them to their places of employment in the central business district. But today, with a vast proportion of commute trips beginning and ending in the suburbs, line haul transit cannot do the job. Ridership statistics tell the story. Surveys taken at suburban office developments, such as South Coast Metro Center in Orange County and the Denver Tech Center, show that fewer than 5 percent of employees and shoppers come by bus. Even developments directly located on rail transit stations are overwhelmingly dependent on the automobile. Travel surveys at the New Carrollton Metro station in suburban Washington D.C. and at the BART Pleasant Hill station indicate that fewer than 4 percent of area employees commute to work by rail.

All this has fundamentally altered the nature of the traffic problem. In the past traffic congestion was associated primarily with downtown movement. Today, some of the worst traffic snarls occur far from the central urban core: on circumferential highways, in suburban centers, and on approaches to suburban office parks. In Washington D.C., for example, the downtown district has experienced a net decrease in rush hour congestion since the mid-1970s, while the suburbs have been subject to steadily mounting levels of traffic.

Congestion has lost its directional bias: people commuting from one suburb to another or driving from their suburban homes to a shopping center are just as likely to run into heavy traffic as are commuters on their way downtown. The days of a leisurely "reverse commute" are fast drawing to an end. Along the Katy Freeway in Houston, on Route 101 in the San Francisco Bay Area or on I-25 in Denver, inbound and outbound traffic volumes are virtually identical during the morning and evening rush hours. In many metropolitan areas, traffic congestion no longer is confined to main radial corridors leading toward the central city; it pervades the entire highway network. In the San Francisco Bay Area, for example, traffic delays occur regularly at some 50 freeway locations throughout the region. Getting stuck in traffic jams, once the dubious privilege of the downtown commuter, now affects everyone.

What is more, suburban traffic congestion seems to be rapidly spreading in space and in time. Highway corridors in which traffic flowed smoothly only a few short years ago now seem hopelessly clogged. Stop-and-go traffic that used to occur only during the morning and evening rush hours now continues all day. In Houston, the rush hour is said to last 14 hours a day. In Dallas, the North Central Expressway remains congested with bumper-to-bumper traffic throughout the day. So do the San Diego Freeway in Orange County, the Dan Ryan Expressway in Chicago, the Central Artery in Boston, Ventura Freeway in Los Angeles, the Washington Beltway (I-495), and the Long Island Expressway, with average volumes of 200,000 vehicles a day and with vehicle counts exceeding 20,000 per hour. Nor is this condition confined only to the very largest metropolitan areas. Chronic congestion also afflicts the suburban highway networks of Denver, Northern New Jersey, Seattle, San Diego and Atlanta.

One can sense the mounting frustration with suburban traffic by scanning the letters-to-the-editor columns in the major metropolitan dailies. Here is a recent example from The Washington Post:

"I have just completed my annual survey of traffic conditions at Tysons Corner and feel it my public duty to report that Tysons is just four to six weeks short of total and eternal gridlock. Even allowing for some softness in my data-grid, it will certainly occur no later than four shopping days before Christmas.

Readers should be warned that if they must drive to Tysons in the near future, they should carry adequate food and water to last until rescue parties can reach them. Pregnant women, especially those in the last trimester of pregnancy, should avoid Tysons unless they have successfully completed a do-it-yourself delivery course....

The Fairfax Board of Supervisors is to be congratulated. It has outpaced city fathers in Mexico City, Lagos and Calcutta to create the first World Class Gridlock. Is there a Noble Prize or something equally prestigious for such an accomplishment?"

(The Washington Post, November 10, 1985)

Significantly, dissatisfaction with mounting congestion is not confined to commuters. Businesses are also becoming concerned, as corporate management observe the deleterious effects of congestion on workers' morale and productivity. A example of the growing business concern is a recent statement by an employers association in Montgomery County's I-270 Corridor. The association has warned that economic activity in the area will suffer if something is not done soon to improve traffic. Similar expressions of concern have been heard from other business groups around the country. Some have gone beyond issuing public warnings, and have passed on to action. Thus, in Santa Clara and Contra Costa Counties in the San Francisco Bay Area, in the El Segundo/LAX complex in the Los Angeles area, in Baltimore, in northern New Jersey, corporate employers and developers have formed private associations to cope with the growing employee access problem.

In short, traffic congestion, until recently considered primarily a downtown-related phenomenon, is becoming more pervasive. Traffic jams are rapidly invading suburban areas -- the very places to which people moved in the hopes of escaping them. As traffic spreads to the formerly tranquil suburbs, congestion becomes more of a political issue. Already today, public

opinion surveys in some metropolitan areas indicate that traffic congestion has superseded crime, housing, and pollution as the top ranking concern of suburbia. If the present trends continue, suburban mobility -- or rather the growing lack thereof -- may well become the central suburban issue of our time.

SUBURBAN WITHDRAWALS: Breakup of Regional Transit Monopolies?

The second major change we are likely to see is a major restructuring of transit institutions. An early indication of this can be seen in the growth of independent suburban transit districts or, what is commonly called, "suburban withdrawals."

What began as an isolated initiative by Montgomery County, MD, ten years ago when it launched a locally funded neighborhood circulation system (The Ride-On), has since become the subject of serious considerations in suburban jurisdictions across the country, including Los Angeles, the Twin Cities, Chicago, Detroit, Kansas City, Atlanta and Cleveland.

One strong motivation for setting up independent suburban transit districts has been a desire to save money. There is growing evidence that centrally-run region-wide systems not only do not benefit from economies of scale but suffer from important diseconomies. This is because large systems have heavy overheads, rigid, overstaffed organizations, formalized labor-management relations, huge employee pension commitments, and large fleets of expensive equipment. Small-scale systems, on the other hand, usually have lean organization and greater flexibility in hiring practices. Small service districts can also more easily enter into contracts with private suppliers of service, and thus benefit from lower costs brought about by competitive bidding.

Thus, Fairfax County, which earlier this year broke away from the regional Metrobus system and started its own local transit system, hopes to save \$735,000 in the first year of operation, and possibly a lot more in the long run. The neighboring jurisdiction of the City of Alexandria has saved \$200,000 by operating its own local transit system, after having reduced fares by 30 cents. Plymouth, MN, which last year "opted out" of the regional transit system and now contracts with a local private bus company for

service, saves over \$700,000 a year in contributions it would otherwise have to pay to the Metropolitan Transit Commission.

Another motivation for suburban withdrawals is equity. Most local jurisdictions acknowledge some responsibility for helping to support regional transit systems. But they rebel at the idea of having to bear a disproportionate share of the burden. The feeling is widespread among suburban officials that the suburbs are putting in more than they are getting out. Suburban withdrawals are their way of signaling that they want the level of their support to be more consistent with the minimal levels of service they get.

However, the case for locally sponsored service does not rest on economic and equity grounds alone. Community-based transit is also seen as a way of improving responsiveness, accountability and quality of service. Small-scale service districts are more flexible in adapting to changes in local demand, and offer local residents more voice in deciding how their money is spent, what kind of services they get, and from whom they obtain them. By running their own systems, local officials feel they can more easily tailor services to fit the needs of their citizens. Regional transit systems, they allege, have placed a disproportionate emphasis on regional movement and downtown-oriented trips, at the expense of local movement and intra-suburban trips which account for a vast proportion of overall metropolitan movement.

It is motivations of this kind -- and not simply concerns for costs -- that led the Minnesota legislature to give suburban governments in the Twin Cities the right to "opt out" of the regional transit system. A similar mix of considerations has motivated suburban withdrawals in Johnson County in the Kansas City area, Alexandria, VA, and Fairfax County. In Los Angeles, a proposal to set up an independent "transit zone" in San Gabriel Valley, with power to replace RTD services with those of private carriers, can be traced directly to the dissatisfaction of local communities with the level and quality of SCRTD service. Similar sentiments appear to be behind the separatist moves of suburban governments in the Detroit, Atlanta and Cleveland metropolitan areas.

Is the breakup of the regional transit monopolies an undesirable or a beneficial trend? Are suburban withdrawals to be resisted or encouraged? There is a division of opinion on this question. Some people feel that

allowing suburban communities to go their own separate ways conflicts with the principle that transit is an essential regional service that benefits everyone, even those who don't use it. They view the prospect of independent suburban service districts as a prelude to an eventual "balkanization" of regional transit, resulting in a patchwork of independent, uncoordinated local systems. They perceive the efforts of suburban jurisdictions to set up their own systems not as a welcome sign of local self-reliance and political maturity but as a move that may hurt the central city, subvert the cherished principle of regional cooperation, and deprive the regional transit systems of the most influential element of their political constituency.

However, the majority of public officials have come to accept decentralized transit service as a positive thing. Suburban withdrawals, they realize, do not necessarily challenge the need for regional service coordination; they merely question the need to entrust every service within a metropolitan area to a single operating authority.

From a metropolitan area perspective, suburban withdrawals present certain problems, but none of them are insurmountable. The most serious one is the possibility of sharp increases in the metropolitan transit systems' unit costs, as their scale of operations begins to shrink under the influence of suburban "opt-outs." But this should be only a temporary dislocation, as the metropolitan systems seek a new equilibrium and scale down their bus fleets and garage facilities to reflect a smaller scale of operations. In the longer run, suburban transit initiatives should prove to be of real benefit from a regional perspective. For by being able to shed suburban services, transit agencies will be in a position to eliminate the source of their largest operating deficits, and devote full attention to their traditional market, the lucrative high ridership bus routes of the central city.

Thus, instead of viewing suburban moves to establish independent transit districts as destructive competition and a threat, a more sensible response on the part of regional transit authorities would be to extend a welcoming hand to the fledgling local transit systems, and consider them as partners in a common effort to provide mobility at the lowest cost.

It is perhaps ironic that institutions that were created only 20 years ago to bring order and efficiency to metropolitan transit should already be viewed

with so much scepticism. But if you are a student of social Darwinism and believe that institutions, like living organisms, must adapt or perish, then, I think, you will agree that restructuring public transit organization is not only the best way to promote efficiency -- it may be the only way to save regional transit institutions from extinction.

GROWING PRIVATE SECTOR INVOLVEMENT

Finally, I come to the third major change in the transportation environment, which brings us more directly to the subject of this Conference. I have in mind the re-emergence of the private sector as an important actor on the transportation scene. I stress the word re-emergence, because we tend to forget that before the 1950s urban transit was largely in private hands, and most new roads were financed with private capital. Thus, philosophically, privatization is nothing new. But the re-emergence of private enterprise is taking place under different conditions.

Private Provision of Service

Before the 1960s, for example, private transit companies operated under exclusive franchises and were insulated from competition just as effectively as the public systems that replaced them. Today, private providers are competitively selected and are subject to the discipline of the market. They can no longer behave like a regulated private utility. Competition has had an impressive effect on costs. There is by now well documented evidence that competitive contracting can save local governments and transit authorities from 20 to 60 percent of operating costs. As a result, private contracting has experienced an impressive surge since last year. In some jurisdictions, such as Johnson County, KS, Fairfax County, VA, Los Angeles and Dallas, TX, entire suburban transit systems have been contracted out to private companies.

Private Involvement in Traffic Mitigation

Another difference is that private sector is getting involved in areas in which it did not get involved before. I have in mind here the growing participation of private business in traffic mitigation. Developers, landlords and employers are increasingly being asked to assume responsibility for the traffic impact that their activities generate. This is being done on the good theory that they are in a far better position than public agencies to influence

individual commuters' travel habits. Businesses have a set of incentives at their disposal: they can set aside preferential parking for carpools and van pools, they can provide subsidies to employees who use transit or who ride-share, they can institute variable work hours, sponsor shuttle buses to train stations. And they can charge employees and tenants for parking and thus discourage the use of single occupant automobiles. Increasingly, private participation is considered essential to the success of any demand management efforts.

A good example of how local jurisdictions enlist the help of the private sector in dealing with traffic is the proposed City of Los Angeles "Transportation Impact Mitigation Ordinance." This ordinance would authorize the designation of "Traffic Impact Zones" in areas where development threatens to outstrip street and highway capacity. After an area has been designated as a Traffic Impact Zone, a transportation management plan must be developed for the area. The plan must provide for an integrated program of traffic mitigation, including traffic signal improvements, ridesharing programs, street widenings, transit service improvements, as well as provision for the payment of impact assessment fees into a traffic mitigation fund by any developer who builds within a Traffic Impact Zone.

Transportation Management Associations

Thirdly, the private sector is creating its own transportation instrumentalities to support private involvement in transportation. At the forefront are the Transportation Management Associations (TMA) -- voluntary coalitions of developers and employers organized to deal with common transportation concerns. TMAs are particularly prevalent in suburban centers that are poorly served by public transit or are beyond the reach of metropolitan transit systems. The intent of these associations is to provide a single focus for private transportation initiative and to serve as a unified voice of the business community in local transportation decisionmaking.

TMAs engage in a wide range of activities, such as promoting and marketing ridesharing programs, purchasing fleets of vans for employee pooling, assisting members in meeting local traffic mitigation requirements, operating or underwriting internal circulators and shuttle services to train stations, managing common parking facilities, financing areawide street and traffic flow improvements, and planning for long range transportation

projects, such as future rail transit extensions. Some TMAs such as TYTRAN and the Santa Clara Manufacturing Group, have also been quite successful in lobbying for local and state transportation assistance.

TMAs respond to the institutional void that is often present in newly developing suburban areas, and offer a new framework for attacking suburban mobility problems in the absence of public initiative. Free-wheeling and entrepreneurial, unhampered by the usual bureaucratic constraints, TMAs often devise imaginative solutions that would be difficult to bring off in the more conservative environment of local government. They may be ideally suited to deal with the complex challenges of suburban mobility.

PRIVATE FINANCING

The fourth manifestation of increased private sector involvement is in the area of financing. This is the subject that brought us all together in this Conference, and it is fitting therefore that I conclude my remarks with some speculations about the future of private financing.

Cost Sharing

By now, the principle of requiring private contributions to fund the cost of highway improvements has become a conventional wisdom. Developers are almost routinely asked to participate in funding highway projects in California, Colorado, Texas, Florida, New Jersey, Pennsylvania, Maryland and Northern Virginia.

A battery of instruments and mechanisms have evolved, including special benefit assessment districts, special taxing districts, impact fee districts, "road clubs," proffers, and land donations. However, because courts have placed legal restrictions on exactions, many jurisdictions have also turned to ad hoc negotiations with individual developers. Local governments are becoming quite adept at bargaining with developers. Some communities make use of the leverage inherent in their power to grant discretionary development approvals; other jurisdictions use incentives such as density bonuses, reductions in minimum parking requirements, or accelerated permit procedures.

Whatever the approach, the intent is always the same: to shift more of the cost of transportation infrastructure from the general public to those whose actions have made the improvements necessary in the first place. While some observers have likened the process of bargaining with developers to

"enlightened extortion," no one denies that negotiations have become an accepted feature of the land development process.

They have also become a rich source of funds. In Fairfax County, I estimate, well over \$80 million in private funds have been committed to highway improvements during the last five years. In California, the figure is closer to \$180 million. In one area alone, the "Coastal Transportation Corridor," in the LAX/Marina del Ray area of West Los Angeles, negotiated transportation fees are expected to generate \$235 million over the next 25 years. In Orange County, CA, the so-called "corridor impact fees" are expected to yield only slightly less -- \$630 million, or 60 percent of the cost of three freeway stretches.

And this is only the beginning. In the next ten years, as federal dollars become even scarcer, developer contributions may become an important source of financing of local highway improvement -- almost certainly exceeding the revenue derived from general obligation bonds. (If that strikes you as improbable, consider the fact that developer contributions in Fairfax County in just the last five years have amounted to more than half of the \$134 million bond issue voted last December.)

Toll Financing

The second trend I would keep a close watch on is toll financing. After years of languishing in semi-obscurity, toll roads are re-emerging as a serious fiscal alternative.

They are staging a comeback despite their ostensibly unfavorable economics. Today, a mile of highway may cost \$9 million, and is financed typically with a 10 percent/25-year bond, whose annual carrying charge is \$110,000 per million. I am old enough to remember when that same mile of highway could be built for one and a half million dollars and financed with a 4 percent/40-year revenue bond. Debt service on that issue was \$50,500 per million. In other words, we pay more than twice as much for bond financing today than we did 30 years ago. When you factor in higher maintenance costs and effects of higher inflation over the life of a contemporary issue, you find that it takes 12 times as much annual revenue to pay for one mile of toll road today, as it did in the 1950s.

In other words, a modern toll road requires six times as much traffic as the old toll roads in order to justify itself as financially feasible. Back in the 1950s daily traffic volumes of 12,000 were sufficient to justify building a toll road. Today, daily volumes of 50,000 are required. (Daniel W. Greenbaum, "Use of Tolls in Highway Financing," presented at the Conference on Innovative Financing in Transportation, Fredericksburg, VA, December 11, 1985).

How come, then, that toll roads are being seriously considered in so many states? The answer is that ADT's of 50,000 vehicles no longer seem so unattainable -- especially on busy commuter highways. Witness the Dulles Toll Road, which already carries 60,000 vehicles per day, a bare six months after opening. This suggests to me that toll financing will find its biggest application in the financing of heavily traveled urban roads, rather than intercity highways. And indeed, when you look at the new toll roads now on the drawing board, you discover that most of them are being planned as commuter highways: the Hardy Toll Road in Houston, the Dallas North Tollway extension, the Jacksonville Expressway, and the North Atlanta Toll Road.

An intriguing variation on the tollroad is the British Government proposal for "privatized roads." Under this proposal private consortia would build highways with privately arranged financing, and then be paid annual "royalties," based on actual road usage (as measured by traffic counts) and amount of development generated by the highway. Payments would start when the road is open to traffic and continue for 25 years, after which the road would revert to the public. If the new road failed to attract the expected traffic or commercial development, the private investors would stand to gain a smaller rate of return on their investment (or even lose money). On the other hand, if the road generated more than the predicted traffic or development, the private investors would realize a higher rate of return. The scheme shifts the financial risk and rewards from the public to the private sector. It also protects the public from overruns and encourages efficient use of capital.

I wish I could report to you that the privatized road has been a high success. However, the last I heard, the proposal was dropped, reportedly

because the private sector demanded certain guarantees which, in the view of the Government, took the risk out of what was intended to be a risk venture.

TRANSIT FINANCING

In the field in transit, the future of private financing is less clear.

Access to Private Capital Markets

Before the 1970s, most transit systems got financing through general obligation bonds. But in recent years the financial condition of public transit has been such that today transit authorities cannot get the investment-grade credit rating needed to float their own bonds.

Transit systems find themselves much in the same situation as public hospitals. Public hospitals have been virtually excluded from the revenue bond market because the private investment community places almost no value on state and local subsidies when they assess the debt-carrying capacity of a hospital. The reason is, there is no guarantee that the funds will be appropriated every year, and the same argument applies to transit. Thus, public transit has been effectively cut off from access to private capital markets.

The exception has been the New York MTA which has successfully marketed a \$250 million private bond offering secured solely by farebox receipts. What allowed the New York MTA to execute the transaction is the unique place transit occupies in the political and economic consciousness of the city. The financial community concluded that the subway system is too essential to New York's economy to be allowed to go bankrupt or stop running. In addition, an elasticity study showed that any fare increase would result in minimal ridership losses since, as a practical matter, most New Yorkers have no alternative means of getting to work.

Whether farebox revenue bonds can be used for other transit systems, remains to be seen. So far, no other public transit authority has been successful in floating revenue bonds. I think this says something about how essential transit is viewed in other metropolitan areas.

New Systems Financing

As regards new systems, the prospect for private financing is even more clouded. All we can say with certainty is that the era of federally financed

rail systems is over. If this was not clear before today, the vote on Gramm-Rudman ought to put these doubts to rest.

Thus, in retrospect, the federally financed rail systems of Washington, Atlanta, Baltimore and Miami may appear to have been an aberration -- a product of a short-lived era when transit shared in the general prosperity of the nation and was a beneficiary of the massive outpouring of federal aid for social programs.

If you accept this view, we are now returning to the more traditional situation that existed before the 1970s, when transit investment was treated as a local responsibility, and financed with state and local revenues, and through private capital markets.

Linking Transportation and Development

Will the private sector play a significant role in such a scenario? My answer is a qualified Yes. A lot will depend on how well we learn to link land development with rail transit development.

In the early part of the twentieth century, linkages between real estate development and urban transit were common. The electric traction street railways that proliferated at the turn of the century in the old eastern and midwestern cities were built and financed by land developers as a means of providing access to new housing estates built on the urban periphery. Thus, in 1886, as described by Sam Bass Warner in his classic, Streetcar Suburbs, Henry M. Whitney and his associates in the West End Land Company bought farms some distance away from the city of Boston and simultaneously formed the West End Street Railway to bring customers to their property. In the ensuing decade, the land sold well, and eventually became the suburb of Brookline. Similar processes were at work in the formation of other suburban developments, such as Shaker Heights in Cleveland, Chestnut Hill in Philadelphia and Friendship Heights in Washington D.C.

In the newer cities of the West, electric "interurbans" were used in a similar vein to market new housing developments in outlying areas, and to open access to remote beach and mountain resorts. Between 1880 and 1910 electric trolley lines (which later were assembled by Henry Huntington into the giant Pacific Electric system) were built by holders of large tracts of vacant land with the specific intention of subdividing that land and profiting

from the sale of homesites made accessible by transit. The rail lines themselves rarely turned profit as transportation enterprises but it was easy to internalize their cost in the price of land since the profits on the land deals were enormous. (Martin Wachs, "Autos, Transit and the Sprawl of Los Angeles," Journal of the American Planning Association, Summer 1984).

A more contemporary example is Japan, where the cost of suburban rail construction is internalized in the cost of land development to this very day. The private land companies which are developing satellite communities around Tokyo, Osaka and other metropolitan areas also construct rail lines that tie these developments into the metropolitan transit networks. The cost of these suburban rail links is internalized in the overall developmental costs of the new towns, just like the cost of roads, sewer lines, flood control, and other essential community infrastructure.

Nor is private transit investment in Japan limited to commuter rail lines. In one new town, near the Narita International Airport, the developer has constructed a 7 km, automatic guideway system ("VONA") to serve as an internal circulator. Again, the system is viewed as an integral part of the private community's physical infrastructure, and its cost has been internalized in the cost of construction financing.

Would it be possible to recreate similar conditions in contemporary America? Would the competitive real estate environment in America allow private developers to internalize transportation infrastructure costs? Could rail access ever again become vital enough to the economic viability of suburban developments to justify a substantial private financial involvement? The jury is still out on these questions, but there are signs that the idea of private sector participation in infrastructure financing is finding growing acceptance.

Privately Built and Operated Rail Systems

At least two private consortia have taken a serious look at the possibility of financing, building and operating rail transit systems. I am referring to the Orlando and Dulles rail projects.

The Orlando project has been turned down last week, ostensible because the County was not prepared to commit to a long term service contract calling for a payment of \$10 million in annual service fees, so that we will never know how successful the proposed private financing scheme would have

turned out to be. However, the Dulles project is alive and, with the just announced plans for airport expansion, begins to make more and more sense.

One essential condition for attracting private capital is appropriate scale. Today, most public rail projects are conceived as vast regional networks with billion dollar price tags. The risk inherent in such projects is too great to attract private investors.

But there is some evidence that scaled-down rail transit projects might be more amenable to private financing. Privately financed fixed-guideway projects do exist, but they are invariably modest in scale: they are people movers at airports, monorails in amusement parks, and internal circulators in private residential developments as, for example, in Tampa, Florida and Las Colinas, Texas.

CONCLUSION

As I observe these developments, I cannot help but feel that the winds of change are blowing. Local governments, faced with a more austere budgetary climate, are beginning to question the logic of funding and institutional arrangements of the past thirty years. Instead, they feel compelled to return to a more traditional view, that local mobility is essentially a local responsibility in which both government and private beneficiaries of public investment must share. This may not only be the best way to adapt to the current fiscal realities, it may be the only way to ensure the long term survival of public transportation.

KEY ISSUES IN DEVELOPING TRANSPORTATION FINANCING

Richard P. Braun, Commissioner
Minnesota Department of Transportation

INTRODUCTION

Thank you for the invitation to speak here today. Innovative financing for transportation and public-private sector cooperation in that financing is of key importance if the nation is to continue to meet its transportation needs.

New methods of financing will become increasingly necessary as competition between the demands for infrastructure renewal and demands to serve new economic development increases. This is an excellent symposium, featuring a wide range of nationally recognized experts presenting a variety of innovative approaches to transportation financing.

As "insiders," we all "know" transportation financing needs are great. They are so great that a variety of innovative approaches are needed, including involvement of the private sector and a host of other new techniques for "revenue enhancement." Some of these alternative financing techniques which have been developed, include:

- benefit assessments
- development assessments
- service charges
- land or air rights leasing
- tolls
- indexed fuel taxes
- public-private cost sharing

Many of these approaches attempt to capture some of the economic benefits resulting from transportation improvements.

It is obvious from the attendance at and interest in this symposium that this subject generates a lot of interest throughout the country. I have personally participated in several other conferences on this subject and have used information from them as part of speeches throughout the last year as President of the American Association of State Highway and Transportation Officials. However, looking over the rest of the participants in this program, I am not going to masquerade as some sort of an expert. I feel that I could

portray somewhat of a different role that perhaps is equally as important as the technical details of the subject itself.

While most of us agree that additional methods of financing are needed, I would like to raise what I believe are some very real issues that all of us here today must face:

1. How many of the folks "out there" really believe we have a serious problem?
2. Have we done a first-rate job of communicating transportation's financial needs to the key "external decision makers" both public and private?
3. Perhaps even more importantly, have we convinced the public of the urgent need for increased transportation financing, and that they are part of the solution?

It is these kinds of issues that I would like to address here today -- hopefully with some benefit to all of us.

AMERICA'S TRANSPORTATION NEEDS - ARE THEY REAL?

I would like to discuss America's transportation needs in light of the key importance of communicating those needs to decision makers and to the public and of communicating them in a convincing manner. The role transportation plays in modern America is often taken for granted. In recent decades many Americans have come to accept good highways, air transport, railroads and public transportation as something "they" will provide and which will always be in place.

This was brought home to me vividly at a transportation forum I attended last spring at the Massachusetts Institute of Technology (MIT) Center for Transportation Studies. The forum theme was "Transportation: The Changing Boundaries and Relationships." The forum was one of the most thought-provoking I have ever attended. Only two public sector people were present out of a total of approximately 25 participants. The attendees did include a broad spectrum of leaders representing the private sector. One of the top issues was whether or not transportation really needs more investment! The general feeling seemed to be that highway funding could be considered adequate, and that when the "clamoring for additional funding" gets loud enough, more will be provided. Some speakers compared today's highway needs with the supposed needs to preserve railroad branch lines a

decade ago. The feeling seemed to be that if communities, in addition to road users, were asked to pay for highway improvements they might say "we don't need it that bad." A lively discussion ensued regarding "real needs" versus "desires." Questions and issues raised included:

1. Do transportation professionals recognize real needs in advance of the general public?
2. Will funds automatically appear when "really needed"?
3. Can significant mileage be deleted from present road systems?
4. Is the level of service provided higher than needed?

The MIT conference was an eye-opener for me. It emphasized the need for all of us to communicate transportation needs in a more convincing fashion.

THE IMPORTANCE OF COMMUNICATION AND PUBLIC PERCEPTIONS

The public's perception and that of the business community is an often overlooked key factor in influencing transportation funding. We need to do a better job of communicating. I am personally committed to increased emphasis on public affairs. After my recently completed term as AASHTO President, I volunteered to be Chairman of the Administrative Subcommittee on Public Affairs. In this capacity, I hope to stress the importance of the public relations function among AASHTO members. I really started on this charge during my term as AASHTO President with the publication of a report entitled "Communicating: How States Relate the Message on Transportation." Also, a regular column on public affairs, which provides "how to" suggestions concerning public affairs now appears in the AASHTO Quarterly.

On a broader scale, a 1985 survey performed by Public Communications, Inc. of Chicago, reported that the most significant challenge for 1985 facing public relations directors of Fortune 500 companies is developing and maintaining a consistently positive corporate image. The same holds true for government. The public's perception of an agency depends upon what the public believes the agency does and what the agency communicates to the public. People are no longer willing to accept and pay for government services without question. The business community doesn't necessarily believe:

1. that there is a severe funding problem, or
2. that the private sector should share the burden of financing transportation improvements.

There is a greater need to "market" ourselves. This is particularly true in the legislative arena as well as throughout the private sector.

In Minnesota, one approach we have used to bring the public and private sectors together is North Star Workshops. These workshops have covered a variety of topics. The first focused on reducing the use of salt as a de-icer and the second discussed truck weight issues and their importance to our economy. In May, 1986, the third such workshop will be held. It will focus on public-private partnerships. Randy Halvorson, who is helping to organize our workshop, will discuss Minnesota's public/private partnership concept at this conference tomorrow when he discusses transportation finance in Minnesota. One of the objectives of the workshop is to alter the perception that government alone has the responsibility for providing the infrastructure necessary for economic development. The emphasis will be to convince Minnesotans that creative partnerships with the private sector are necessary if development needs are to be met.

We all know that effective communication with business is essential to the development of public-private partnerships, but how do we accomplish it? One way in which we at Mn/DOT are striving to improve this kind of communication is through our "Listen to Business" initiative. The plan calls for top transportation staff to meet personally with business leaders across the state to find out which transportation issues are most important to local businesses. We are carrying out the plan on a district level. Each of our nine transportation offices have identified as many as fifty area businesses of all types and sizes. The meetings are informal, one-to-one and held at the business site.

Transportation engineers don't tell, sell or defend; instead they are listening to problems and looking for ways to solve them. The "Listen to Business" plan increases government awareness and understanding of private sector transportation needs.

Our federal elected officials and state legislators must weigh priorities among different program areas (transportation, education, welfare needs, etc.) and attempt to gauge public interest and public opinion. Roger Moe, Minnesota's Senate Majority Leader, at a recent conference of state government managers, emphasized the need to "sell" government services to the public and to legislators. He recognized this need above all others.

As we attempt to influence key decision makers, it is wise to remember that negative or critical approaches can be counterproductive. Positive approaches which have proven very helpful include the following:

1. furnishing factual information,
2. providing decision makers with alternatives,
3. getting to know decision makers personally,
4. providing testimony at hearings,
5. cooperating with supportive lobbying efforts, and
6. sponsoring symposiums such as a North Star Workshop as previously described.

Taking an active, positive and cooperative approach in communicating with the media is also of key importance. The views expressed by the media can influence public perceptions through the selection of stories to be reported and through the views expressed by interviewees and reporters. I am sure that most of you present have had many opportunities to do this. However, the key word is positive. I don't think enough of us are proactive. Too many times we are reactive only. The stories are there on our good deeds if we just take time to search them out and brag a little about our accomplishments.

Public relations-media specialists and necessary supporting staff are very helpful in conveying our message to the public and to key decision-makers. Mn/DOT established a Public Affairs Tactical Plan in late 1983 and has assembled a team of public affairs specialists to better communicate our message. The objective of the tactical plan was to develop a proactive process to deal with public issues impacting Mn/DOT. In order to be successful, the public affairs function must have the full support of top management. This means that a proactive public affairs process will involve a substantial commitment of time and resources. Mn/DOT public affairs professionals are also responsible for alerting management to potential opportunities, needs or problems that may arise from department actions or actions of those outside the organization. I feel that one of the key ingredients in making your public affairs program work is the timing of the involvement of the public affairs director. He must be part of every staff meeting and major decision-making process. This way he can inform top staff as to the pitfalls in any decision and advise them on how to maximize the use of incidents that portray

a positive image. It just doesn't work to have him "outside the boardroom" waiting for the decision to be announced. We also insist that our District Engineers treat their public affairs directors the same way.

The timing of a proposed highway improvement is also a key ingredient in satisfying the private sector. A prime example of needs arising from proposed private sector development is a proposed "megamall" project in a southern Minneapolis suburb. The proposal, by Triple 5 Corporation of Edmonton, Canada, calls for a combined mall and fantasyworld -- to occupy an 85 acre site formerly the home of a baseball stadium. The project would contain 10.5 million square feet, with 5 million square feet of retail shopping, a 1 million square foot Fantasyworld amusement park, a 500,000 square foot convention center, 2 million square feet of hotel space (2000 rooms) and 2 million square feet of office space. Of course, the projected megamall would have a substantial impact on transportation and the surrounding road network. When fully developed, the megamall is expected to generate 135,000 trips per day or 12,315 trips during the peak hour. Major improvements would be required on surrounding freeways, expressways and interchanges to accommodate this volume. Moreover, none of the immediate impact area improvements is currently scheduled in Mn/DOT's 1986-87 funded Highway Improvement Program or in the 1988-91 proposed Highway Improvement Work Program. The total cost of the immediate impact area improvements is estimated at \$116 million. The city of Bloomington has proposed the costs be paid by a legislative appropriation -- based on new tax revenues to be generated by the megamall project. The reaction to this proposal by the state legislature, however, has been less than receptive. The inclusion of the road improvements necessary to serve the megamall in our normal program without additional funding would drastically alter regional and state-wide highway improvement priorities.

The megamall issue is a prime example of why public affairs professionals need to know the goals and objectives of their agencies in order to be spokespersons when the situations demand it.

One other related item that I feel is worth mentioning concerns how eager a state or area is to accommodate proposed local development. This is especially true when a proposal will produce a large number of jobs in an economically depressed location. From the politicians standpoint this may

very well lead to virtually "giving away the store." Under these circumstances it becomes necessary for the transportation professional to point out the ramifications of shifting funds or granting special tax advantages that are detrimental to the overall state program.

To re-emphasize once more the importance of effective communication, I would like to emphasize the following objectives for public affairs and government communications:

1. the promotion of government services in situations where the private sector cannot provide them
2. fostering of good will between government and the people it serves --
 - (a) good will is achieved through communication
 - (b) the public needs to understand program benefits and costs
3. fostering of a favorable public image by emphasizing our strengths and accomplishments
 - (a) our public image decides our future
 - (b) our public image influences elective officials
4. educating various client groups of government to a particular point of view
5. being responsive to the needs of people

The public needs to be reminded that public works constructed by man wear out, and that therefore funds for rehabilitation and restoration must be available if we are to continue to meet our transportation needs.

WHAT IS THE MESSAGE WE NEED TO COMMUNICATE?

The key importance of the public affairs function needs to be recognized -- but the "medium needs a message" to communicate. Do we have a convincing message to communicate? Are the needs real? In answering this question, I believe we need to emphasize several major points in our message:

1. the key importance of transportation to the national economy
2. why is there a growing need for transportation investment?
3. what are the costs of neglecting transportation infrastructure needs?

America's transportation system is its economic backbone and the key to a growing economy. We all know that efficient commodity movement is

essential to the nation's economic health and vitality. And yet, taking the rail system in my own state as an example, the number of miles has decreased from about 9500 miles in 1929 to about 8000 miles in the mid-1960s, to only 5300 miles today. In 1985 alone, 225 additional miles were abandoned. We anticipate that another 1100 miles, affecting 150 communities, will be abandoned within the next 10 years. These rail abandonments have added more than 170,000 truckloads annually to the state's roads and have increased road maintenance costs substantially. It is this sort of message that we need to communicate.

Among the many other causes which contribute to the growing need for transportation investments, are the following:

1. As population shifts occur throughout the nation, new growth in many states requires a substantial capital investment to accommodate transportation between states and between the major population centers.
2. Population and employment shifts within growing metropolitan areas of some states are creating new mobility needs that are frequently unsuited to transit solutions, and which will require additional highway capacity.
3. The creation of a nationally designated system for the operation of longer and wider trucks will also require significant highway improvements such as lane widening, approach modification, and intersection modification.
4. Increased highway use by heavy vehicles will require additional investments to maintain a safe and adequate level of service for existing highways.

The recently completed biennial report to Congress entitled "Status of the Nation's Highways" (April 1985) reports on highway conditions and needs. The report describes in detail the changing nature of highway finance and changes in the conditions and performance of the nation's major highway systems. Some of the findings in the report include the following:

1. Travel on federal aid systems grew 6.4 percent from 1981 to 1983.
2. The percentage of interstate pavement in need of repair grew from 9% in 1981 to 14% in 1982, then remained constant in 1983.

3. Data for 1983 shows congestion on federal-aid systems is increasing.
4. States estimate travel will increase by 2.7% per year from 1983 thru the year 2000. This means that there will be one trillion more vehicle miles in the year 2000 than in 1983.
5. Projected travel increase will result in 1 million miles of major highways requiring upgrading and repair by the year 2000.
6. The cost of maintaining 1983 road conditions to the year 2000 is estimated at \$324 billion, or \$18 billion annually.
7. An investment level below the cost of maintaining 1983 conditions would result in increased vehicle operating costs, increased travel time and eventually higher road repair costs.
8. Eliminating all deficiencies is estimated to cost \$621 billion, or \$34 billion annually.

These estimates however, do not include interstate completion, bridge deficiencies, local road needs, safety projects, and certain other needs.

The American Transportation Advisory Council (ATAC) in its recently released report entitled "New Directions in Transportation," estimated the additional costs, not included in the "Status of the Nation's Highways" report, over the next 10 years as follows:

- cost to complete the Interstate - \$22 billion
- bridge replacement and rehabilitation - \$54 billion
- local road needs - \$80 billion
- roads, streets, bridges on new location - \$22 billion
- safety needs - \$6 billion

The ATAC report estimates overall transportation capital investment needs for the period 1987-1996 as follows (assumes 4% annual inflation):

Airports	\$ 27.0 billion
Highways	\$494.0 billion
Public Transit	\$ 82.6 billion
Railroads	\$ 56.6 billion
Waterways	<u>\$ 6.6 billion</u>
TOTAL	\$666.8 billion

Findings in the area of highway finance, as reported in the "Status of the Nation's Highways" report, show that substantial new federal revenues

have been generated by the Surface Transportation Assistance Act of 1982 (5 cent gas tax increase, higher truck fees). Numerous states have increased road user fees in recent years so that in combination with the increased federal fees, highway revenue collections reached record highs in 1984. Due to inflation in highway construction costs however, highway revenues in 1984 were worth little more in terms of purchasing power than they were in 1960.

Finally, we need to clearly communicate and emphasize the costs of neglecting transportation needs -- "what if" we fall behind or neglect needed improvements? Pat Choate has outlined many of these costs in his book entitled Bad Roads. Bad roads create five basic types of direct economic costs:

1. increased fuel consumption
 - The Congressional Budget Office reports a 40% increase in vehicle operating costs in vehicles driven on very poor roads.
 - A 1979 study by the TRB and a 1980 study by AASHTO showed that pavement condition can make a 10-30% difference in vehicle fuel efficiency.
2. increased wear and tear on vehicles and premature depreciation
 - A Swedish study showed that road condition can influence tire life by as much as 50%.
 - Road condition affects many other vehicle components including springs, shock absorbers, wheel alignment, etc.
3. increased labor costs
 - Reduced speeds and delays due to blocked roads, closed bridges and traffic congestion increase labor costs.
 - In one study, U.S. Steel reported incurring over \$1 million in increased labor costs due to re-routing caused by deficient bridges in the Pittsburgh area.
4. increased accidents
 - Highway design and condition have a significant impact on accident rates -- the fatality rate on the Interstate system is less than half that on the average U.S. road.
 - The Insurance Information Institute estimates that road accident-related losses rose from about \$10 billion in 1960 to

over \$57 billion in 1980. These losses are reflected in increased insurance premiums.

5. increased construction and repair costs

- Canadian studies indicate that if 2 years of deferred maintenance can be avoided, improvement costs may be reduced as much as 90%.
- A 1979 TRB study showed that deferred capital improvement costs are up to 160 percent higher than improvements made on a timely basis.

The indirect and hidden costs of neglecting transportation needs are also very real. Econometric studies prepared in 1983 by the Transportation Systems Center at MIT defined the devastating impact on the American economy of neglecting transportation. Based on the MIT study, if the deterioration of the nation's highways is permitted to continue, the annual costs to the economy by 1995 would include:

- a 3.2 percent loss of Gross National Product;
- an 8.0 percent increase in the consumer price index;
- a 5.9 percent decline in disposable income;
- a 2.2 percent decline in employment;
- a decline in labor productivity of 2.7 percent in manufacturing and 3.6 percent in non-manufacturing activities;
- up to a 10 percent reduction in annual output in the following industries: pharmaceuticals, books, fruits and vegetables, poultry and eggs, watches and clocks, telephone and telegraph equipment, tourism, medical supplies, apparel, soft drinks and canned foods.

You might ask the question as to why I have spent so much time first of all describing the need for a strong public information program, and secondly, enumerating a series of references that describe the magnitude of that need. Well, I firmly believe that the devastating effect of deteriorating roads on the economic vitality of the nation is clear to us as professionals. But, is it clear to the rest of the country?

The great challenge is to communicate this message, and the resulting need for new "innovative" approaches to transportation financing, to the private sector and to the public. It is in this area of communication (public

relations and public affairs) that we must focus our utmost efforts if we are to succeed in meeting the nations real transportation needs.

CONCLUSION

The need for innovative financial techniques is not as self-evident as we might like to think. We have to convince the private sector that all transportation needs will not be adequately met by the government. Both the medium and the message are important. The medium we need is a strengthened public affairs function that is closely tied to top management. The message must be stated clearly and include the "what if" we neglect needed improvements scenario. Thank you for the opportunity to speak here today.

PART II:
NEW APPROACHES TO USER CHARGES

POLICIES AND POLITICS OF INDEXED MOTOR FUEL TAXES

Roger Schrantz
Administrator, Division of Planning and Budget
Wisconsin Department of Transportation

INTRODUCTION

In recent times, those who are responsible for state transportation finance have sought new ways to convert traditional motor fuel taxes, the dominant state transportation finance resource, into a dynamic revenue source that would grow at about the same rate as inflation. Declining motor fuel consumption and rampant inflation during the late 1970s and early 1980s made this quest one of critical importance to adequate transportation finance.

Most often the solution to the motor fuel tax dilemma has taken the form of conversion from flat gallonage taxes to a motor fuel tax system that indexes the effective tax rate to some measure, such as gasoline price or highway cost inflation, so that fuel tax revenues would approximately stabilize in real dollar terms.

The technical aspects of indexed motor fuel taxes, whether tied to fuel prices or to some inflation index, are comparatively uncomplicated. Consequently, this paper only briefly touches on the details of indexing techniques.

Rather, the purpose of this paper is illustrated with the case history of one state, Wisconsin, the policy and political implications that may be encountered in the effort to enact indexed motor fuel taxes. While the circumstances of each state are different, it is hoped that the experiences of Wisconsin may be informative and of some benefit to other states in their efforts to index their motor fuel tax revenues.

NATIONAL PERSPECTIVE

Significance of Motor Fuel Tax Revenues in Financing State Transportation

At both the state and federal levels, motor fuel tax revenues are now and traditionally have been the mainstay of the highway user revenues that are dedicated to the improvement, maintenance and operations of state and local highways -- and, in some states, other highway purposes and other forms of transportation as well. Any threat to the stability, viability, or

capability of the motor fuel tax resource also constitutes a direct threat to the health of the highway function itself.

To illustrate its financial significance, in 1983 some five dollars of every eight state and federal highway user tax dollars were generated from motor fuel taxes. The other three dollars came from state motor vehicle registration fees, driver license and motor carrier fees, and a variety of federal excise taxes. Motor fuel taxes dwarf all other user tax sources in the share of financing of state and local highways.

In previous years, motor fuel taxes played an even more dominant role in highway finance. The table below shows a modest decline in the fuel tax share of combined state and federal user tax revenues, and a more precipitous decline when only state user tax revenues are considered.

Table 1

Motor Fuel Tax Revenues Share of Total
State and Federal Highway User Tax Revenues

	<u>Percent Motor Fuel Tax Revenues of Total</u>	
	<u>State and Federal</u>	<u>State Only</u>
1968	65.9%	63.5%
1973	66.5%	63.5%
1978	61.4%	58.5%
1983	62.5%	54.5%

Source: Federal Highway Administration, Highway Statistics, Tables MF-3, DF, and FE-201.

Motor fuel taxes are of high policy import, as well as being the significant source of highway finance. Although only a crude tool to measure and collect user fees in accord with the extent of highway use, nonetheless motor fuel taxes are clearly superior to all other user fee forms, save the truck weight-distance taxes used in a handful of states. Motor fuel taxes more equitably collect user fees from an auto driven 20,000 miles annually compared to one driven only 5,000 miles than would a flat vehicle registration fee. This, of course, is true for all vehicle classes. Moreover, states export and import travel. Motor fuel taxes collected in the state where the travel occurs

more equitably distributes highway costs among interstate users than would other user fee forms.

In summary, motor fuel taxes are the primary highway user tax revenue, but are declining in total revenue share. Simply substituting other revenue sources for eroding fuel taxes may contradict important policy criteria that seek to collect fees in accord with extent of highway use.

Motor Fuel Taxes -- A Decaying Financial Resource

In the decade preceding the 1973 oil embargo, state motor fuel taxes constituted a growing, dynamic resource, serving as the prime financial underpinning for the development of a larger and better national highway system. In the decade from 1963 to 1973:

- Consumption of motor fuel grew 80%, from 65 billion gallons in 1963 to 111 billion gallons in 1973 -- the last full fiscal year before the oil embargo and the fuel tax erosion that has since ensued.
- Growing fuel use, coupled with tax rates that increased from an average 6.22¢ per gallon to 7.53¢, produced a more than doubling of net motor fuel tax revenues -- from \$3,951 million in 1963 to \$8,329 million by 1973.
- Even with inflation of 68% in highway maintenance and operations during the decade, growing fuel use and somewhat higher tax rates still produced 25% more real purchasing power from the motor fuel tax revenue in 1973 than in 1963.

The oil embargo of 1973, the muscling of OPEC in the 1970s, the big jump in gasoline prices, the periodic shortages, and the national determination to avoid undue dependence on foreign oil supplies, caused a massive and seemingly permanent shift in patterns of motor fuel use -- and with it, a severe erosion of the motor fuel tax resource that had built and maintained the nation's highways.

Speed limits were cut back to 55 mph to save fuel, and lives too so it happened. Greater use of ride-sharing and mass transit was encouraged. Federal standards and the marketplace resulted in a progressively more fuel efficient vehicle fleet driving on the nation's highways. More costly gasoline encouraged voluntary driving efficiencies. The result: a near stagnation in

annual motor fuel consumption during the decade from 1973 to 1983. Motor fuel use grew but 5% during those ten years; much too little to satisfy the cost pressures of a raging highway inflation with the flat gallonage taxes that were then the universal fashion.

Compare the rosy decade of 1963 to 1973 (summarized above) with the much gloomier picture of the ten years following the 1973 oil embargo -- described below and detailed in Appendix 1. In the decade from 1973 to 1983:

- Despite a 30% jump in the average state motor fuel tax rate, from an average 7.53¢ per gallon to 9.83¢, stagnant motor fuel consumption allowed net motor fuel tax revenues to expand only 39%, from 8.3 billion in 1973 to but \$11.6 billion in 1983.
- The cost index for highway maintenance and operations jumped a booming 138% during that decade, and consequently, when expressed in 1983 real purchasing power, state motor fuel tax revenues plummeted 42%, from \$19.8 billion (1983 constant dollars) in 1973 to \$11.6 billion in 1983.

Whole some revenue substitution occurred, in the main, the severe 42% cutback in the real purchasing power of the motor fuel tax revenue resource no doubt caused a cutback of near similar proportions in basic highway improvement and upkeep.

A Traditional Response: Increased Flat Gallonage Tax Rates

Caught in the dilemma of stagnant fuel tax receipts that were grossly inadequate to pay for the rapidly inflating costs of essential highway improvement and repair, many states -- at first with trepidation, then with more equanimity -- responded in the traditional way. That is, states would increase their tax rates by 1¢ or 2¢ per gallon, find that it didn't solve the problem for very long, and then increase the tax rates again.

In total, some 37 states have increased their flat per gallon motor fuel tax rates at least once since the oil embargo -- some two, three or even four times -- in a continuing attempt to keep pace with inflation. Some of these states have since instituted variable taxes (to be discussed below), while seven states directly shifted to a variable tax form. Only six states have not increased their motor fuel tax rates at all since 1973.

The example of a few states might serve to illustrate the repeated need to increase flat gallonage tax rates so as to prevent falling too far behind in an era of increasing costs:

- Iowa's gasoline and diesel tax rates were 7¢ per gallon in fiscal 1973, on the eve of the oil embargo. The Iowa tax rates were increased in 1978, again in 1979, and once more in 1981 -- culminating in 1983 with a 13¢ gasoline tax and a 15.5¢ diesel tax per gallon. Despite the several tax rate increases, however, the real purchasing power of Iowa's fuel tax revenues in 1983 was 35% less than in 1973.
- Montana's experience is similar. The 1973 tax rates of 7¢ on gasoline and 9¢ on diesel were marginally increased in 1975, 1977, and again in 1979 -- and then were increased by substantial amount in 1983 -- to 15¢ on gasoline and 17¢ diesel. Even though the tax rates were more than doubled, the resulting 1983 motor fuel tax revenues, because of interim inflation, bought 27% less highway care than in 1973.
- South Carolina increased its motor fuel tax rates four separate times, increasing its 8¢ per gallon tax in 1973 to 13¢ by 1983 -- yet the 1983 fuel tax revenues had 25% less real purchasing power than in 1973.

In recent years some states have decided, rather than go through the repeated agony of legislating flat gallonage tax increases year after year, to legislate a series of scheduled flat motor fuel tax increases that would take effect in future years. Connecticut legislated their tax rate to annually increase 1¢ per gallon from the 14¢ in effect in 1983 to a total 22¢ by 1991. Arizona enacted legislation to increase their 13¢ per gallon tax rate by 3¢ in 1986, and another 1¢ in 1990, to a total 17¢ per gallon. Oregon law provides for its motor fuel tax rate, now 10¢ per gallon, to increase to 11¢ in 1986 and to 12¢ in 1987. While a less than perfect hedge on the ravages of inflation, these legislated successive fuel tax increases do help to offset the effects of inflation and to help promote financial stability and continuity.

Separately legislated flat gallonage tax increases have helped to alleviate the financial pitfall of a stagnant fuel tax base running behind inflationary cost pressures. In most states, however, the political will to repeatedly

increase tax rates does not keep pace with costs and needs. The inevitable result: too little money each year for pressing and essential highway needs, culminating ultimately in a deteriorating highway system that doesn't satisfy basic economic and social mobility needs.

Search for a Better Solution -- Variable Motor Fuel Taxes

The continued real dollar decay of the motor fuel tax resource, coupled with the grave political difficulties in securing regular legislated tax increases, sparked the idea of a fuel taxation method that would automatically adjust to the demands of inflation and produce the money needed to keep highway finance on an even keel. Observing the rapid real dollar increase in motor fuel prices, an early thrust was to tie motor fuel tax rates to the price of motor fuel. It was hoped that tax rates, which would automatically expand with expanding pump prices, would produce fuel tax revenues that would keep pace with inflation and declining fuel use.

It was the State of Washington in 1977 that first legislatively enacted a form of variable motor fuel taxes. Their pioneering variable tax rate was the per gallon equivalent of 21.5% of the average net retail price of motor fuel, with a 9¢ per gallon floor and a 12¢ ceiling. Rate adjustments were made every six months, and by 1979 rising fuel prices had boosted the tax rate up to the 12¢ ceiling. But inflation outpaced the tax rate increase, and in 1981 the Legislature changed the formula and upped the ceiling to 16¢, so as to better meet highway construction and maintenance needs. Then fuel prices dropped, and the tax rate froze at 12¢, increasingly too little for essential needs. In 1983, Washington abandoned its experiment with variable fuel taxes, replacing it with a flat 16¢ per gallon tax, since increased to 18¢.

Following in Washington's footsteps, seven other states converted the whole of their flat gallonage tax on motor fuel to a form of variable motor fuel tax that would automatically adjust tax rates, often with some constraints on the extent of adjustment, to changing motor fuel prices. (See Appendix 2 for details.) In 1979, New Mexico enacted a variable tax in which each 10¢ increase in average wholesale fuel price generated a 1¢ tax increase. Kentucky (9% of wholesale price) and Massachusetts (10% of wholesale price) enacted their variable taxes in 1980. Indiana (split price variability) and Rhode Island (11% of wholesale price) followed suit in 1981. Maryland (10% of wholesale price) enacted statutes in 1982 for a variable tax to take effect in

1985. Kansas (10.5% of retail price) also postponed the effective date of their variable tax, legislating in 1983 that the variable tax would start in 1985.

Just as Washington found that variable fuel taxes didn't provide sufficient funds when fuel prices dropped or stagnated and then switched back to a flat gallonage system, so did Indiana and New Mexico decide in 1985 to abandon variable taxes and return to flat gallonage taxes. Kentucky has also expressed concern that stagnant fuel prices have stagnated their tax rate since 1982, and would opt instead for a system tied to inflation.

Another seven states, in effect, hedge their bets with fuel tax systems that in part are flat gallonage taxes, and are supplemented in part with fuel price related taxes that are deposited in the highway fund. Virginia (11¢ plus a tax equal to 3% of the wholesale price), West Virginia (10.5¢ plus a tax equal to 5% of the wholesale price), and Florida (4¢ plus a tax equal to 5% of the retail price) enacted direct fuel tax systems that vary with the price of motor fuel. In less direct fashion, but still operating as de facto partial variable taxes, Hawaii directs the revenues of both its 4% retail sales tax and its 11¢ flat gallonage tax on motor fuel to the highway fund. So is Georgia's 3% sales tax on motor fuel considered to be a "second gas tax." In another variation of de facto partial variable taxes, Connecticut supplements its 16¢ per gallon tax with 2% gross earnings tax on petroleum products, and Pennsylvania combines the revenues from its constrained 6% oil company franchise tax (related to fuels) with its 12¢ per gallon tax.

Nebraska's variable tax system is unique. While no doubt the envy of many states, there are probably few others that could hope for legislative enactment of a system similar to Nebraska's fuel tax, which automatically adjusts an effective tax rate to whatever the legislatively enacted budget requires.

Ohio pioneered a new form of variable motor fuel tax in 1981. It was based on the principle that, if inflation and declining fuel use are the primary cause of motor fuel tax decay, then establish a tax system that directly confronts those twin problems. Fuel taxes indexed to inflation and fuel use are simple in operation: annually the tax rates are adjusted by the same proportion that the FHWA national maintenance and operations cost index changes and by the inverse proportion of fuel consumption changes. In theory at least, tax rates will be automatically adjusted to inflation and fuel

use, so that the real dollar value of total motor fuel tax revenues is stabilized.

Michigan adopted a nearly identical indexed fuel tax system in late 1982, and Wisconsin followed suit with legislation enacted in 1983 providing for the Ohio model of indexed fuel taxes to take effect in 1985. Ohio's tax rate is already at the 12¢ ceiling that constrains their indexed taxes, and Michigan's indexing was limited to tax adjustments in 1983 and 1984 only. Wisconsin's indexed taxes are not statutorily constrained.

WISCONSIN EXPERIENCE

The Background -- Motor Fuel Tax Decay

As in most other states, the combination of inflation and decline in fuel use had by 1980 severely eroded the real dollar value of the state motor fuel tax revenues in Wisconsin. Shown in Table 2 below, after 1973, the eve of the Middle East oil embargo, motor fuel consumption stagnated for a few years, gradually rose about 10% to an all time peak in 1978, and then tailed off as a consequence of the Islamic revolution in Iran. In the meantime, inflation had nearly doubled the cost of state highway upkeep. By 1980, the real purchasing power of Wisconsin motor fuel tax revenues had dropped a catastrophic 40% from 1973 levels. Obviously, something had to be done, and soon.

Table 2

Wisconsin Motor Fuel Tax Revenues (millions of gallons and dollars)

	<u>Total Motor Fuel Tax Revenues</u>		
	Gallons <u>Consumed</u>	Nominal <u>Dollars</u>	1973 Real <u>Dollars</u>
1973	2,225	\$155.7	\$155.7
1975	2,269	156.1	128.0
1977	2,486	170.8	119.4
1978	2,607	176.6	114.5
1980	2,369	178.1	<u>92.5</u>

Reduction in Real Purchasing Power: 1973 to 1980 (-) 40.6%

Wisconsin's motor fuel tax erosion problem was even more severe than in most states, for Wisconsin's highway user revenue system is called upon to pay for more transportation services. Besides direct state and local highway costs, the Wisconsin transportation fund also pays for such indirect highway costs as student driver training and traffic law enforcement, and for state financial assistance for other transportation forms -- urban mass transit, abandoned rail service preservation, transportation for the elderly and handicapped, and harbor repair. Few other states stretch their highway user dollars into as many areas as does Wisconsin. When motor fuel taxes are hurting, then the pain is visited with more than usual intensity on all facets of transportation in Wisconsin.

All through the 1970s, Wisconsin had resisted any increase in its 7¢ per gallon motor fuel tax. In fact, no highway user fee was changed, save for a modest truck registration fee increase in 1978. By mid 1979, now with an upward ratchet of fuel prices making still worse the earlier motor fuel tax doldrums, it was painfully clear that highway user tax rates simply had to be increased in some form, some way.

Even though the 1979-81 two-year transportation budget had just been enacted, including a \$63 million supplement from general funds, fuel tax revenues were already running well behind expectations. A \$50 million revenue shortage, amounting to an 18% shortage for the second fiscal year, loomed large on the immediate horizon. Longer range forecasts estimated that the revenue problem could well grow into a \$200 million gap in the 1981-83 biennium and to \$300 million by 1983-85.

DOT Secretary Lowell B. Jackson warned:

If the transportation finance crisis isn't resolved, the Wisconsin transportation system as we know it will be gutted. Highways will deteriorate. Rail lines won't be saved. Transit systems will be starved. Local aids will be cut back. Day to day services will be severely slashed. Property taxes will increase. Thousands of jobs will simply not exist...The issue must be squarely faced: whether to now put in place a stable long-term revenue solution, or to let the transportation system fall apart.

Then Governor Lee S. Dreyfus, perhaps in less colorful language than Secretary Jackson used, but just as conclusive, emphasized that:

A tax increase for transportation is inevitable if we are to avoid deterioration of this system to a point below where it meets the basic needs of our people...7¢ in 1967 (when the fuel tax was last increased) is 3¢ in 1980. The same user fee as in 1967 buys a lot less transportation program in 1980.

In retrospect, now in the calm economic equanimity of 1985, with a sound user revenue system in place, Secretary Jackson's 1979 warning of impending doom may seem to be excessive hyperbole. But then, with a raging inflation, spot shortages in gas stations, pump prices that jumped upward literally every week, and no evident political will to seriously confront the problem, if anything, Secretary Jackson may have seemed to understate the problem.

An Aborted Effort -- Variable Motor Fuel Tax

Observing a steady increase in gasoline pump prices from about 60¢ per gallon in March, 1979, to a bit over \$1.00 by the end of the year, and believing the common wisdom that pump prices were absolutely bound to approach \$2 by the mid-1980's, more likely \$3, Wisconsin revenue planners, as happened in several other states, thought that some form of price variable fuel tax was the right long-term solution. A fuel tax that went up the price ladder right along with pump prices would provide enough money to compensate for inflation and fuel use decline, and maybe a little bit more besides.

Wisconsin transportation revenue strategists were persuaded that, if the motor fuel tax were converted from a flat 7¢ per gallon, as it had been since 1967, to a variable tax equal to 8% of the before tax retail price of gasoline, then the chronic transportation money problem could be resolved for years to come.

Respecting the legislative distaste for raising taxes in an election year, the strategists decided to seek the enactment of legislation in 1980 that would provide for an 8% motor fuel tax to start in July, 1981 -- so that tax increases would not actually start until well after the November, 1980, election. A \$50 million bonding program would stave off financial disaster until the 8% fuel tax took effect and the new money began rolling in.

With the Iranian hostage crisis at its peak, and gasoline pump prices going up almost on a daily basis, the strategists recognized that the public would and should demand safeguards against runaway fuel taxes. Three safeguards were suggested: a tax increase could not exceed 1¢ in any six months, a sunset provision that froze the taxes in 1985 unless legislatively re-enacted, and tax rate freeze if a surplus developed. It was hoped that these safeguards would quiet fears of a new and strange tax form and smooth the way toward enactment of an 8% motor fuel tax.

For a brief period, then Governor Lee S. Dreyfus embraced the 8% motor fuel tax concept, and in his prepared budget message urged its enactment. But in the time between the preparation of the formal budget message and its public delivery, a legislative backlash caused Governor Dreyfus on the podium to extemporaneously back away from the 8% fuel tax concept. The Governor reacted, "It is clear to me that the Legislature does not like my proposal, that there isn't a snowball's chance in Hades that it will be passed. Therefore, I challenge you to come up with a better one."

With that funeral for the 8% tax idea, Governor Dreyfus appointed a bipartisan legislative and administration committee to hammer out a plan to forestall the impending \$50 million revenue crisis. The ad hoc committee brought forward a proposal to increase the flat fuel tax rate by 3¢ in 1981, with further 1¢ boosts in 1982 and again in 1983.

In the Legislature itself, the Joint Committee on Finance (the Wisconsin version of a combined two-house appropriations committee) endorsed the 3¢ increase, but dropped the two subsequent 1¢ increases in the fuel tax rate. Even that more modest tax boost faced a stormy legislative reception. Only on the last day of the session, and with the active involvement of the Governor's office, did the Legislature finally agree to increase the flat fuel tax rate by 2¢. Ironically, and for reasons not germane to this paper, the impetus for even the 2¢ tax increase was teacher salaries, not the transportation revenue crisis.

While the 2¢ increase in fuel tax rates, along with some expenditure shifts, did avert a transportation disaster in 1980, it only represented a "quick fix." The revenue crisis continued, and would reappear in still larger portion just a year later.

While though the quest to institute a price variable fuel tax died aborning, hindsight did offer valuable lessons for the revenue efforts of subsequent years:

- Showing again that common wisdom sometimes is indeed common, gasoline prices didn't keep going up as experts said they would. In fact, nominal pump prices faltered and fell, and in real dollar terms gas prices spiraled down. Price variable taxes were shown to be no answer to the still continuing revenue dilemma.

- Despite the legislative apprehensions of taxpayer anger over the 2¢ tax increase, there was none. Literally none. Hardly any letters at all. Editorials were favorable. The people really did perceive that good roads required higher gas tax rates, they wanted good roads, and were willing to pay higher taxes if needed. Legislators could vote for gas tax increases and not suffer in the next election.

An Interim, Traditional Motor Fuel Tax Increase

Even though memories of the aborted attempt for a Wisconsin price variable motor fuel tax were still painfully fresh, and even though the compromise 2¢ per gallon tax increase had just gone into effect, it was clear to the Wisconsin transportation revenue strategists that still another tax increase infusion was needed to stop the hemorrhage caused by chronic inflation and fuel use decline. The 2¢ tax increase proved to be only a band-aid on what was a severe transportation finance wound.

In formulating the 1981-83 transportation budget it was evident that new money was needed to fill in the gaps caused by one-time revenue gimmicks in the previous biennium, major cuts in federal transportation aids, inflation then running at 12 to 14%, and an increasingly more fuel efficient vehicle fleet using Wisconsin roads and paying less in fuel taxes. This time, however, the revenue gap was much bigger -- a \$214 million gap for the upcoming two-year budget. A 30% revenue expansion was needed to keep then current programs operating for another two years.

Mindful of the near unanimous legislative rejection of price variable fuel tax systems, and observing the unexpected stagnation of motor fuel prices in the summer and fall months of 1980, the Wisconsin transportation revenue strategists opted for a traditional per gallon increase in the state motor fuel tax rate. A 5¢ per gallon tax rate increase, from the then 9¢ per gallon to 14¢, was proposed by the Department of Transportation and endorsed by the Governor.

While the Legislature scrutinized the proposed 5¢ per gallon tax increase with healthy scepticism, most legislators became convinced that a tax increase of approximately that magnitude was indeed an inescapable necessity. As legislatures are wont to do, this Legislature somewhat reshaped the revenue

package into a 4¢ per gallon tax increase, a \$7 auto license fee increase, and a 5% increase in the panorama of truck registration fees.

The financial crisis impending for the 1981-83 budget period was again averted through increases in traditional fee increases. Again, the public accepted the fee increases without complaint: they well understood that the good roads they wanted meant increases in the tax rate.

But everyone knowledgeable of transportation finance knew that again the revenue problem was only fixed for a short time, and that still another tax increase in the subsequent 1983-85 biennium was inevitable. There was no long-range solution for the chronic transportation financing dilemma visible on the horizon.

It was this clear need for more than a limping-from-budget-to-budget revenue plan that prompted the influential chairperson of the Senate Committee on Transportation, Senator Tim Cullen, to call for a blue ribbon committee that would be entrusted with the responsibility to formulate a long-range revenue program to finance Wisconsin transportation for the rest of the 20th century. While that goal seemed somewhat ambitious, Governor Dreyfus did endorse the Senator's idea in his budget approval message, and did appoint a blue ribbon Governor's Special Committee on Transportation Revenues to "develop a proposed long-range state transportation financing policy and method to provide adequate state and local transportation facilities and services..."

Ohio Has a Better Idea -- Inflation/Consumption Indexed Fuel Taxes

In the early spring of 1982, the Wisconsin transportation revenue strategists became aware of the motor fuel tax innovation that had just been enacted in Ohio -- a motor fuel tax rate that was annually indexed to changes in the National Highway maintenance and Operations Cost Index (as reported by the Federal Highway Administration) and to counter changes in motor fuel consumption. If it were possible to enact a long-range revenue solution at all, the Ohio idea of inflation/consumption indexed fuel taxes was the model for Wisconsin to emulate.

Ohio's indexed fuel tax model embodied several significant advantages over price variable taxes and flat gallonage increases:

- Inflation and declining fuel consumption were the root causes of the transportation finance crisis, and the Ohio model directly and precisely responded to those problems.

- Given the comparative stability and predictability of the highway maintenance cost index (stable at least in comparison to other wildly fluctuating transportation financial factors), indexed motor fuel tax rates and consequent revenues would enjoy similar stability and predictability -- a very important attribute for highway finance.
- Inflation/consumption indexed fuel taxes would avoid the perceived flaws of price variable taxes -- uncertainty of tax rates confounding stable transportation programs, and public apprehension that a price variable tax could result in runaway fuel taxes generated by OPEC greed, and thus an "uncontrolled money machine for the DOT bureaucrats."
- Ohio's indexed fuel tax model would at long last bring real purchasing power stability to the all important motor fuel tax revenue, without the political agony of legislating tax rate increases in nearly every budget.

Recognizing the implicit advantages of the Ohio indexing model, revenue planners in the Wisconsin Department of Transportation soon accepted the Ohio innovation as the path toward stability in transportation finance. Having tasted conclusive defeat in the earlier effort for a price variable tax, they were not at all confident that an indexed tax system could be legislatively achieved. But if it were possible of accomplishment, clearly the Ohio model was to be the preferred revenue strategy, and was to be the primary focus for subsequent revenue initiatives.

An influential transportation interest group, the Transportation Development Association of Wisconsin, concurrently embraced the Ohio indexing model as its objective for Wisconsin, and worked extensively with legislators and interested citizens to explain the operations and advantages of indexed fuel taxes.

After an evaluation of the many and varied transportation revenue sources, the Governor's Special Committee on Transportation Revenues pinpointed the Ohio indexing model as the focal point for its long-range revenue recommendations.

Wisconsin should stabilize the real buying power of the state's motor fuel taxes, to halt the continuing financial drain caused by inflation and more fuel efficient vehicles....Based upon the concepts innovated by Ohio, a stabilized motor fuel tax system will ensure that fuel taxes in any one year will buy just as much transportation services as in prior years -- no more and no less.

The financial compass was pointed toward the Wisconsin adoption of the Ohio model of indexed fuel taxes as the means for stable transportation finance. But the political world, the Governor and the Legislature, they who help measure and mold public opinion, they who must accept and enact any tax form, had yet to consider and respond to the indexed fuel tax concept.

A Boost for Indexed Taxes from a Gubernatorial Campaign

Although it could not have been known at the time, it happened that the gubernatorial election of 1982, particularly events in the primary campaign, garnered valuable political support for indexed motor fuel taxes that would later prove to be of conclusive value in the political battles over tax philosophy. Here is how it happened.

A former legislator and majority leader of the Wisconsin Assembly, and a former secretary of both the Departments of Administration and Natural Resources, early in 1982 Anthony Earl announced his candidacy for the nomination of the Democratic party for the 1982 gubernatorial election. James Wood had announced his candidacy a few months earlier, and former Lt. Governor and Acting Governor Martin Schreiber followed suit a few months later. Political pundits opined that Martin Schreiber was the strong favorite to win the Democratic primary.

Governor Lee Dreyfus surprised the state and his Republican party allies with his April announcement that he would not be a candidate for re-election. A stunned Republican party floundered while several potential candidates tested the water for support. Only two Republicans stayed the course for the primary contest: Terry Kohler, an industrialist and unsuccessful candidate for the U.S. Senate, and Lowell Jackson, who served Governor Dreyfus as Secretary of the Department of Transportation for two and a half years, and then as Secretary of the Department of Industry, Labor and Human Relations for a little less than a year. Whether because of the familiarity of the Kohler name in Wisconsin politics, or other reason, political experts named Terry Kohler as the favorite in the Republican primary.

Anthony Earl and Lowell Jackson did what most political underdogs do: they challenged their opponents to a debate. Martin Schreiber and Terry Kohler did what most favorites do: they found a reason not to debate. So Anthony Earl and Lowell Jackson borrowed a leaf from the 1978 gubernatorial primary campaign, when David Carley and Lee Dreyfus, the underdogs in

that Democratic and Republican primary, engaged in a friendly debate to boost their respective primary candidacies. That device worked well for Dreyfus, who went on to pull an upset in the primary and then win the 1978 general election as well. Evidently Earl and Jackson hoped that lightning would strike twice, at least for one of them. Lightning did strike again, for Earl, but that's getting ahead of the story.

While the debates did articulate and underscore issues for the information of the body politic, the candidates themselves were also taught by each other and found themselves moderating their previous positions. Jackson came to better appreciate the Earl perceptions of social and environmental issues, and Earl, as a result of both the TDA educational efforts and the debates, found more favor with the need for transportation revenue reform.

During the summer months of 1982, Earl and Jackson engaged in good-natured but pointed debates throughout the state, seeking to make primary election day capital from the absence of their opponents in the respective party primaries.

The debates between Earl and Jackson could be and were friendly and mutually informative, for their real opponents were elsewhere. Those debates did serve to enhance the candidacy of Earl at least, and enjoyed strong media recognition of the issues as well as the candidates.

Among the issues debated by Earl and Jackson, of course, was that of the teetering condition of transportation finance. This issue was in Jackson's area of expertise, and as one who intimately understood the need for stabilized transportation finance and how the Ohio model would work, he took the lead in arguing for indexed fuel taxes. Because indexed taxes are neither partisan nor philosophical, but rather serve to bring stability to public finance, after awhile Earl too endorsed the concept of indexing.

Moderating an earlier adverse position, here is how Anthony Earl spoke to indexing in an August questionnaire of candidates that was conducted by the Transportation Development Association:

I will support the raising additional revenues....I could support the extension of the sales tax to motor fuel, or some form of franchise tax, or the indexing of the state's motor fuel tax....There must be a stable funding base for our future transportation needs. We need to adopt revenue mechanisms which allow us to collect equivalent amounts of dollars each year. If indexing is the answer, then such items as the cost of fuel, level of consumption and highway maintenance costs should be considered.

That endorsement of fuel tax indexing by soon to be Governor Anthony Earl was strengthened in the months following, and proved later to be instrumental in the legislative adoption of indexed fuel taxes.

Earl did go on to surprise the political pundits by winning the Democratic primary, and then, to the surprise of no one, go on to comfortably win the general election. A few days later Earl again surprised the observers of Capitol happenings by naming Lowell Jackson, a long-time and active Republican party member, the Dreyfus DOT Secretary, and his summertime debate companion, to again be the Secretary of Transportation. Jackson accepted, and this Earl-Jackson team went on to be the key in persuading the Legislature to enact a version of indexed fuel taxes very similar to the Ohio model.

Indexed Fuel Taxes Setting the Stage

It seemed probable in early 1983 that things were at last ready for the adoption of an indexed motor fuel tax system in Wisconsin. Legislators had increased motor fuel tax rates twice in the previous three years, and found that the public readily understood and accepted the need to do so, and no legislator was defeated on that fuel tax issue. There was good reason to believe that they could vote for indexed fuel taxes with similar immunity from voter backlash, and could feel comfortable that they had taken strong action to help correct the chronic financial problems that plagued transportation.

Indexed fuel taxes had taken on the aura of respectability. The chaotic circumstance of uncertain transportation finance was well understood as the result of earlier tax increase dialogues, and indexing seemed a responsible way to put things right. The Governor's Special Committee on Transportation Revenues had strongly endorsed indexing. The Transportation Development Association sponsored extensive educational efforts with legislators and interest groups on the ills of transportation finance and the potential cure of indexing. The transit association as well as road builder groups endorsed indexing, as did local government associations. Some groups did oppose indexing, the Highway User Federation and the Motor Carriers Association for example, but the opposition was largely a soft-spoken minority. All in all, indexed fuel taxes appeared to be an idea whose time had come.

Crucial to the ultimate adoption of inflation/consumption indexed motor fuel taxes in the legislative halls was the strong adherence by now Governor Tony Earl to the concept, and his tough-minded insistence that it be adopted.

As the next section explains in more detail, indexing was strongly resisted by some influential legislators. Were it not for Governor Earl's persistent demand that indexed fuel taxes become effective sometime during the 1983-85 biennium, coupled with his willingness to compromise on other initiatives, it is quite unlikely that indexed fuel taxes would have been legislatively approved.

The experience and capabilities that Jackson brought to his reincarnation as the DOT Secretary was another key ingredient in the ultimate adoption of indexed fuel taxes. His first term had already provided him with the general agency and issues background that often occupy new department heads, so that he could instead concentrate his efforts on gathering public and legislative support for fuel tax indexing. Secretary Jackson expended considerable time in explaining the programmatic need for and the underlying rationale for indexed fuel taxes with legislators (see Appendix 3 -- a briefing memo for legislators and the public), transportation interest groups, and the editorial boards of most daily newspapers. That public information effort paid great dividends in the eventual public understanding and support.

A corollary transportation issue of high significance in that 1983 legislative session was the Earl proposal to accelerate the construction of 14 long-delayed major highway projects. Some observers note that many legislators were pleased to see that the backlog of important highway projects would at last get serious attention. While the accelerated program was primarily funded from increased federal funds and long-term bonding, those legislators recognized that stable funding, as would be provided by indexed fuel taxes, was needed for future debt service costs and to provide a financial base for future programs. In some respects, they considered a vote for indexed fuel taxes was also a vote for the major highways that they wanted.

Ironically, the federal Surface Transportation Act passed in late 1982, with its 5¢ per gallon increase in federal fuel taxes and expanded federal aid programs, also boosted the chances for indexed taxes in Wisconsin. Increased federal aids, particularly the new minimum allocation funds that more fairly treated Wisconsin and a handful of other states, allowed new federal money to substitute for the comparatively large increase in the state tax base that otherwise would have been needed to continue current programs. Thus, indexing could be phased in directly, without an accompanied base tax increase that would have clouded perceptions of the impact of indexed taxes.

Legislative Reluctance

While the Wisconsin majority party legislative leadership of 1983 and the chairpersons of the transportation committees were agreeable to the concept, a strong undercurrent in both political parties opposed indexed fuel taxes. A particular threat was the opposition of several influential members of the Joint Committee on Finance. Except for the "bottom-line" demand by Governor Earl that fuel tax indexing be enacted, legislative opposition probably would have torpedoed indexed taxes on motor fuel.

There were many crosscurrents swirling about in the legislative opposition to indexed taxes. Perhaps the most prevalent was the conviction by many legislators in both parties that tax rates ought to be changed only by specific legislative act; that it was improper for that important public act to be delegated by formula to an administrative agency. Many who embraced this philosophy accompanied it with statements that they understood the need for increasing fuel tax rates and would readily vote for specific tax changes in separate legislative acts. At root here seemed to be the belief that legislators should be accountable for such major public actions as tax rate changes, and that indexing fuel tax rates by formula constituted an inappropriate avoidance of legislative responsibility.

Arguments countering the legislative accountability philosophy took several paths. One counter was that implicit in the formula itself was a significant legislative policy -- that the predominant motor fuel tax resource should be stabilized in real purchasing power -- which was much more important than annual votes on a minor tax rate change. Another argument centered on comparing indexed fuel taxes to the actual tax impact dynamics of income and sales taxes, where taxes paid do automatically grow with growth in income or the prices charged for taxable commodities.

Some opposition to indexing was born of simple misunderstanding. Despite the extensive explanations that the indexed tax rate keyed on the national cost index and fuel consumption, there continued to be some mistaken belief that the tax was related to the price of motor fuel, and thus "OPEC would set Wisconsin's fuel taxes." Another misconception was that indexed taxes would be a "runaway money machine" for the DOT. To counter that error, it was emphasized repeatedly that fuel taxes indexed to inflation/consumption could by their very nature only stabilize the real purchasing power of fuel tax revenues, and could not possibly turn into a

"money machine." The legislative budget agency further countered the "money machine" argument with the information that DOT could only spend money that was specifically appropriated by legislative act, and that any indexed fuel tax revenues in excess of appropriations could only be reserved for further legislative act.

Talk of "indexing" fuel taxes arose at an unfortunate time in the dialogue concerning national economic ills. Often mentioned as a cause for inflation and runaway federal spending was the then propensity to "index" social security benefits, union wages, government purchases and other economic happenings. It was in this early 1983 setting of "indexing" as a dirty economic word that "indexed" fuel taxes came to be tarnished.

A counter argument to the indexing label problem was to relate fuel tax indexing to income tax indexing, where, at both the state and national level, income tax rates were indexed to inflation to hold tax collections down to real income levels. Fuel tax indexing was simply a device to bring fuel tax revenues up to constant purchasing power levels. Another means to try to counter the indexing label was to shift the title to "stabilized" motor fuel taxes, focusing on the product of indexing instead of its mechanics.

The most serious legislative threat to indexed fuel taxes, however, came from the perception that indexing would erode the legislative bargaining power held by a handful of influential legislators. When the stability of transportation finance required specific legislative action in each budget to increase fuel tax or other user fee rates, then that rate increase could also help serve the programmatic interests of these legislators. However, indexing would automatically expand the fuel tax revenues at the same pace as inflation, with no need for further legislative action. No longer could fuel tax increases be held captive for some programmatic purpose, and thus the power of these influential legislators would be diminished.

The loss of legislative power concern was not, of course, openly voiced, and thus could not be openly countered. It was in reaction to this threat that the demand by Governor Earl for legislative approval of indexed fuel taxes proved to be essential to its ultimate enactment.

Enactment of Indexed Fuel Taxes

Early in the 1983 legislative session Governor Earl formally advanced his transportation budget, including the indexed motor fuel tax proposal. His

budget would have statutorily set the fiscal 1983-84 tax rate at 14.7¢ per gallon, the same as estimates of the indexing formula and then would have started the automatic indexing on July 1, 1984. Adjustments to the indexed tax rates would automatically occur each July 1 thereafter.

This indexed tax proposal joined the swirling pot of legislative reaction, and quickly became the focus of transportation tax policy debate. Just before a subcommittee of the powerful Joint Committee on Finance was to make its report it became known that the subcommittee intended to reject indexing, and substitute legislated tax rates of about the same amount that indexing would have provided -- 15¢ per gallon in fiscal 1983-84 and 16¢ in fiscal 1984-85. It was here that Governor Earl successfully stepped in with his demand that indexed taxes be enacted in some form.

Then the timing of when indexing would become effective was the issue. It was commonly agreed that the 15¢ and 16¢ tax rate would be accepted. But one camp wanted the start of indexing to be postponed to July 1, 1985 -- so that the 1985 legislative session could again debate the efficacy of indexed taxes. An opposing legislative camp, led by now Senate Majority Leader Tim Cullen, successfully urged that indexing begin on April 1, 1985 -- so that the issue of indexing be settled with some finality.

And so Wisconsin, modeling its tax technique after the Ohio idea, enacted the nation's only motor fuel tax that is indexed to inflation and fuel consumption and is not restricted by maximum tax rates or sunset law provisions.

A Retrospective

Inflation/consumption indexed motor fuel taxes are now an operational reality in Wisconsin, working about as expected, and with minimum controversy. This last 1985 legislative session saw some re-emergence of the philosophic argument that tax rates should be changed only by legislative act, but that was quickly and quietly spurned by the legislative leadership. While those arguments may recur periodically, there now is no reason to believe that a future legislature will retreat from indexing.

Inflation was modest in 1984, and fuel consumption increased instead of the expected decline, so the April 1, 1985, indexing increase was but 0.5¢ -- increasing the total fuel tax to only 16.5¢. This increase was appreciably less than the 1.5¢ average annual increase that had been forecast during the indexing debate, and so the reality was well within the bounds of expecta-

tion. Moreover, that gradual indexed rate increase will mean only about a 20¢ per month increased cost for the average motorist, imperceptible in the larger cost of driving.

Indexed tax rates for the future, assuming continued moderate inflation and relative stability of fuel consumption, are expected to annually increase by less than 1¢ per gallon -- but still keep pace with gradually rising costs. By increasing the tax rate a little each year, rather than accumulating revenue erosion over several years and then a large tax boost, public acceptance of fuel taxation is enhanced.

In that vein, perhaps the biggest potential threat to continuation of indexed fuel taxes would be an unexpected big jump in tax rates, say 3¢ per gallon or more because of a sudden shift in fuel consumption or inflation rates. None is expected, but the possibility always exists. Another possible discomfort could be short-term aberrations caused by a sudden drop in fuel consumption. While inflation/consumption indexed fuel taxes will almost surely provide stable real dollar purchasing power over a several year period, short term problems are possible.

Some people are still confused over the revenue result of indexed fuel taxes. For example, the editorial writers of a major daily newspaper thought that an unanticipated \$62 million surplus brought about by the fixed tax 15¢ and 16¢ tax rates during improved economic times was the result of indexing -- when indexing was not even scheduled to start for another 15 months. Ironically, the surplus would have been much less had the Governor's original indexing tax proposal been adopted -- indexing would have prevented an unwarranted surplus.

Others, who don't seem to fully comprehend that indexed fuel taxes can only stabilize the real purchasing power of motor fuel tax revenues, not enhance it, argue that the state transportation fund can now afford some nicety because of indexed taxes. Probably more explanation regarding what indexing does do and does not do will continue to be needed for at least a few more years.

In a final retrospective, what were the Wisconsin factors in 1983 that allowed a controversial concept like indexed motor fuel taxes to be enacted? First, in Wisconsin at least, automatic tax rate adjustments could probably be accepted only after the legislative agonies of repeated statutory tax increases. Correspondingly, legislators learned that fuel taxes could be regularly in-

creased without voter backlash -- that the voters wanted good transportation and understood the relationship of that desire with fuel tax increases.

Extensive efforts to explain the need for stabilized revenues and the rationale for indexing as the right method to produce that stability paid dividends. Most, but not all, misconceptions and apprehensions were alleviated. Most major newspapers editorialized in support of indexed taxes. Interest groups came to appreciate that their interests were better served with stability of revenues. Those who have a stake in transportation revenues expressed their endorsement when they understood the values of indexing.

Although not done with that purpose in mind, changes in the transportation budget appropriation structure that were enacted in 1977 helped to gain acceptance for fuel tax indexing in 1983. In 1977, Wisconsin shifted from the automatic, unconstrained trust fund appropriation formulas still common in many states to specific legislative appropriations for specific purposes. That change helped to quell apprehensions that indexed fuel tax revenues would become a DOT "money machine," and assure reluctant legislators that only budgets they approved could use indexed fuel tax revenues. Similarly, a new statutory listing of authorized major highways quieted fears that DOT could go off and build roads in a way that would be out of concert with legislative policy.

The 1983 legislative session in several other respects focused on other tough-to-enact responsible financial measures. The unemployment compensation fund had to be bailed out with higher contributions and reduced benefits. Chronic prison overcrowding had to be faced. Persistent cash flow problems had to be resolved. There was no responsible choice but to temporarily increase taxes in order to continue essential services in a time of severe recession. Indexed fuel taxes were added to the list of difficult, but unavoidable measures to restore financial responsibility. Perhaps there was some synergism in dealing with these tough measures; passing the first one made the next one easier, and so on.

The prime impetus for the adoption of indexed taxes in Wisconsin, however, came from the political determination and skills of the Governor Tony Earl and Secretary Lowell Jackson team. The mutual respect and opportunity to become a team blossomed with the 1982 summer primary campaign debates, and these debates solidified inflation/consumption indexed fuel taxes

as an article of transportation finance faith. The priority that the Governor gave to indexed taxes in a time of severe state economic problem, and his leadership and will to see those priorities adopted, were essential to the ultimate success. The transportation experience and public information skills enjoyed by Secretary Jackson enabled an extensive understanding by most legislators and the opinion leaders back home that indexing was a responsible means to address long-range transportation revenue ills. It is difficult to imagine the acceptance of indexed fuel taxes in Wisconsin, but for the persistence and skills of the Earl-Jackson team.

ACKNOWLEDGEMENTS

The author, as the Administrator of the Division of Planning and Budget, was directly involved in a staff capacity throughout the 1979 to 1985 period, and so was well familiar with the indexing tax efforts. Other persons who have offered suggestions and critiqued drafts of the paper include: Lowell B. Jackson, P.E., Secretary of the Department of Transportation; Don Schott, Legislative Liaison for Governor Earl; Steve Watters, Legislative Fiscal Bureau; and, Thomas Walker, Executive Director of the Transportation Development Association of Wisconsin. The author, however, is responsible for any errors of fact or interpretation, or for any omissions of significant information.

STATE MOTOR FUEL TAX REVENUES

<u>Year</u>	<u>Taxable Motor Fuel Consumption(1)</u>	<u>Weighted Average State Tax Rate Per Gallon</u>	<u>State Net Motor Fuel Tax Receipts(2)</u>	<u>Highway Maint. & Ops. Cost Index(3)</u>	<u>State Motor Fuel Tax Revenues In 1983 Constant Dollars(4)</u>
1973	111,021	7.53¢	\$ 8,329	42.01	\$19,826
1974	106,746	7.57¢	8,102	47.02	17,310
1975	109,450	7.65¢	8,332	51.26	16,254
1976	116,300	7.71¢	8,870	55.74	15,913
1977	120,314	7.79¢	9,285	60.14	15,446
1978	125,586	7.83¢	9,686	64.85	14,936
1979	122,653	N/A	9,763	71.07	13,737
1980	115,538	8.24¢	9,540	80.94	11,786
1981	114,882	9.11¢	10,029	87.98	11,399
1982	114,149	9.11¢	10,541	96.25	10,952
1983	<u>116,661</u>	<u>9.83¢</u>	<u>11,572</u>	<u>100.00</u>	<u>11,572</u>
Percent Change 1973 to 1983	+ 5.1%	+30.5%	+38.9%	+138.0%	1-) 41.6%

- (1) Millions of Gallons
(2) Millions of Nominal Dollars
(3) 1983 Equals 100
(4) Millions of 1983 Constant Dollars

Source: Federal Highway Administration Highway Statistics, Tables MF-1, MF-2, and PT-5

VARIABLE MOTOR FUEL TAXES

State	Variable Tax Form	Year Instituted	Tax Formula	Current Status
Connecticut	Gross Earnings Tax Add-On	1984	2% gross earnings tax, receipts added to flat gallonage tax.	Gallonage tax statutorily scheduled to increase from current 16¢ to 22¢ by 1991.
Florida	Partial Price Variable	1983	4¢ plus 5% of retail price. No constraints.	Modified in 1985 so that tax can be no less than 5.7¢, plus 4¢. Equivalent current tax is 9.7¢ per gallon.
Georgia	Sales Tax Add-On	NA	3% retail sales tax added to flat gallonage tax.	Gallonage tax is 7.5¢.
Hawaii	Sales Tax Add-On	1981	4% retail sales tax added to flat gallonage tax.	Gallonage tax increased from 8.5¢ to 11¢ in 1985.
Indiana	Full Price Variable	1981	10% of price up to \$1, 8% thereafter. 14¢ tax ceiling.	Eliminated in 1985 (because tax had not increased since 1982) and replaced with flat gallonage tax.
Kansas	Full Price Variable	1985 (leg. 1983)	10.5% of unweighted average retail price.	Equivalent current tax is 11¢ on gasoline and 13¢ on diesel.
Kentucky	Full Price Variable	1980	9% of wholesale price.	Minimum of 10¢ equivalent set in 1982. Equivalent current tax is 10¢.
Maryland	Full Price Variable	1985 (leg. 1982)	10% of wholesale price of unleaded regular gasoline. 13.5¢ tax base. Increase limited to 1¢ annually.	Equivalent current tax is 13.5¢.
Massachusetts	Full Price Variable	1980	10% of average wholesale price. 11¢ minimum tax.	Equivalent current tax is 11¢.
Michigan	Inflation/Fuel Use Indexed	1983	Tax rate adjusted to reflect FHWA maintenance inflation index and inverse of fuel consumption. Limited to no more than 2¢ annual increase in 1983 and 1984 only.	Equivalent current tax is 15¢

State	Variable Tax Term	Year Instituted	Tax Formula	Current Status
Nebraska	Budget Needs Indexed	1980	Tax rate adjusted quarterly to produce revenues needed to finance enacted budget.	Equivalent current tax is 16.4¢.
New Mexico	Full Price Variable	1979	Tax rate increases 1¢ per 10¢ increase in average wholesale price. Increases limited to 1¢ per year and 11¢ maximum.	Variable tax eliminated in 1985 (concern that rate would decrease by 1¢) and replaced with flat gallonage tax.
Ohio	Inflation/Fuel Use Indexed	1981	Tax rate adjusted to reflect FHWA maintenance inflation index and inverse of fuel consumption. 7¢ tax basement, 12¢ tax ceiling.	Equivalent current tax is 12¢.
Pennsylvania	Franchise Tax Add-On	NA	6% of petroleum products price, constrained to remain within 90¢ to \$1.25 per gallon whatever price.	Franchise tax may vary between 5.4¢ to 7.5¢, added to 12¢ gallonage tax.
Rhode Island	Full Price Variable	1981	11% of weighted average wholesale price. 13¢ tax basement.	Equivalent current tax is 13¢.
Virginia	Partial Price Variable	1982	11¢ plus 3% of average wholesale price.	Equivalent current tax is 13.6¢.
W. Virginia	Partial Price Variable	1983	10.5¢ plus 5% of average wholesale price. Minimum for 5% is 4.85¢.	Equivalent current tax is 15.35¢.
Wisconsin	Inflation/Fuel Use Indexed	1985 (leg. 1983)	Tax rate adjusted to reflect FHWA maintenance inflation index and inverse of fuel consumption. No constraints.	Equivalent current tax is 16.5¢.

Note: Washington initiated variable fuel taxes in 1977, and then repealed its variable tax in 1983.

Source: Survey of the states. Reports of the Highway Users Federation.



1983 TRANSPORTATION LEGISLATIVE BRIEFING SERIES

STABILIZED MOTOR FUEL TAXES
MEMO NUMBER 2 - FEBRUARY 1, 1983

TO: Members of the Wisconsin Legislature

FROM: Lowell B. Jackson, P.E.
Secretary

Introduction

As Governor Earl has frequently emphasized, the traditional transportation financing system doesn't work anymore. In the 1960s and early 1970s, more and bigger cars and increased driving automatically produced enough user revenues to pay for inflation and make some modest improvements. No longer does that happen. Now, stagnant revenues and rising costs consistently result in a transportation revenue base that falls far short of meeting even basic transportation needs.

In his 1983-85 budget, Governor Earl will propose an innovative means to stabilize the real buying power of motor fuel taxes. Fuel tax rates will be tied to the national highway maintenance cost index and to Wisconsin motor fuel consumption. Thus stabilized, motor fuel taxes will provide constant transportation services buying power from year to year..

A cautionary word about what stabilized fuel taxes are not: stabilized fuel taxes are not indexed to the price of gasoline. OPEC or the oil companies will not determine the Wisconsin fuel taxes. If gasoline prices were to jump sizably, that would not necessarily mean any corresponding big increase in state fuel tax rates. Fuel taxes would not be a percentage of fuel prices, as is the case in about ten states, and which was proposed in Wisconsin several years ago.

Instead, stabilized fuel taxes are directly keyed to the principal transportation finance problems: declining fuel consumption and inflationary pressures on transportation service costs. Pioneered by Ohio, and also recently adopted

by Michigan, stabilized fuel taxes that are indexed to inflation and fuel consumption are likely to be the new means of fuel taxation that many states will adopt in the coming years.

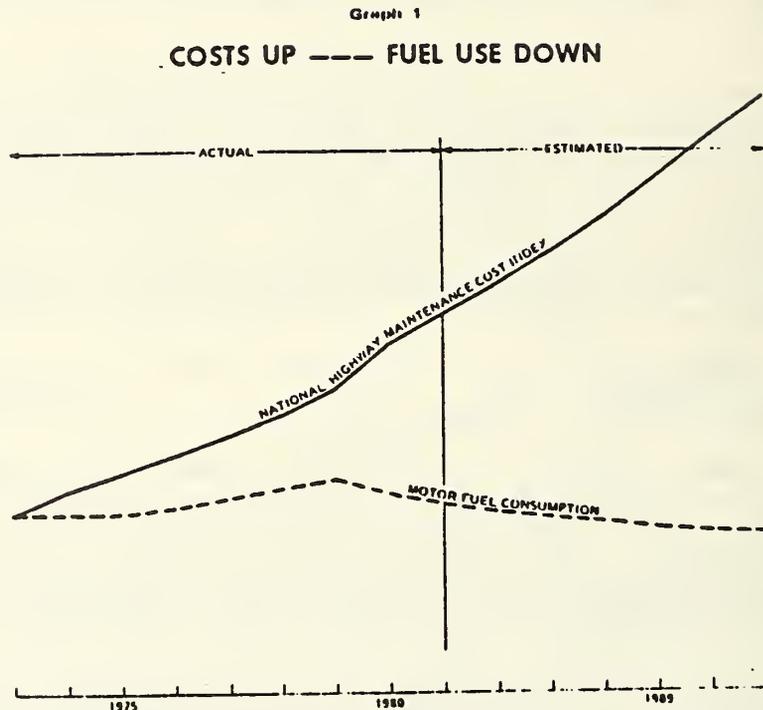
Because motor fuel taxes are about 60% of all state transportation revenues, stabilizing the real buying power of fuel taxes will--over time--solve only about 60% of the transportation revenue problem. But that 60% transportation finance solution is vitally important. While other supplementary revenue actions may be needed from time to time, the linchpin for stable and adequate transportation revenues is cost indexed fuel taxes.

The Fuel Tax Problem

The buying power stability of the dedicated state transportation fund is directly tied to the adequacy of motor fuel tax revenues. Motor fuel taxes constitute 60% of all transportation revenues. Shortages in the purchasing power of fuel tax revenues inevitably mean overall shortages of transportation funds.

To keep pace with the inflating costs of providing transportation services, on the average, fuel tax revenues should have increased 9.3% annually over the past ten years. Instead, until 1979 fuel tax revenues increased an average of only 3.4% annually--barely one-third of the increase needed to keep pace with inflation. As a result, the purchasing power of motor fuel tax revenues dropped a full 30% in just the six years from 1973 to 1979.

Then things went from bad to worse. Not only did costs keep going up, but starting in fiscal 1980 motor fuel use turned from slow increases to absolute decreases. In 1980, inflation pushed up costs by 13.9% while fuel use dropped 6.7%--causing the purchasing power of motor fuel tax revenues to drop precipitously almost 21% in just one year. No longer could the transportation revenue problem be ignored, and fuel tax rates were increased from 7¢ to 9¢ per gallon in May, 1980. But even with the 2¢ tax increase, the purchasing power of fuel taxes in fiscal 1981 was still 8% less than in fiscal 1979.



The fuel tax problem continued. Facing continued increases in the cost of providing transportation services and continued decreases in motor fuel use, there was no choice but to again increase fuel tax rates--an increase to 13¢ per gallon in August, 1981. Further supplementing the short transportation revenue base, auto license fees were increased from \$18 to \$25 and truck fees were increased 5% at the same time.

While no one knows with absolute certainty what will happen in the future, it appears almost inevitable that motor fuel use will continue to decline in the years ahead--as the vehicle fleet becomes more and more fuel efficient. Perhaps the transportation inflation will moderate from the high levels of recent years, but some inflation level will continue to push up the costs of transportation. As a result, the real buying power of motor fuel taxes will inevitably continue to decrease from year to year--perhaps not by the huge 21% drop of 1980, but probably by 10% to 12% per year.

These choices are starkly clear:

- Either suffer an annual 10% to 12% loss in the transportation services--local transit and road aids, as well as state programs--that fuel taxes will buy; or
- Each year ask the Legislature to increase the fuel tax rates by 10% to 12%; or
- Enact a carefully controlled system to stabilize the real buying power of motor fuel taxes.

Logic compelled Governor Earl to recommend the adoption of stabilized motor fuel taxes in his 1983-85 transportation budget.

Stabilized Fuel Taxes: The Concept

Stabilized motor fuel taxes are intended to keep relatively constant the real buying power of fuel tax revenues, despite rising prices and declining fuel consumption. Fuel tax revenues, when thus stabilized, will buy just as much transportation services in 1985, or 1987, or 1990 as the fuel tax revenues bought in 1983--no more and no less.

Motor fuel tax rates would be determined annually by the Department of Revenue, in accordance with a precise statutory formula, to reflect the actual transportation inflation and actual fuel consumption change that was experienced in the prior year. In this way, rising costs and reduced fuel consumption are accommodated automatically by the annual adjustments in fuel tax rates.

While different parts of the transportation budget experience different inflation rates, experience shows that inflation for the whole of the transportation budget is very similar to the National Highway Maintenance and Operations Cost Index that is determined by the U. S. Federal Highway Administration. Moreover, a national cost index provides an independent and objective basis for determining state fuel tax rates. For both reasons--independence and close correlation to actual state transportation inflation--the national cost index is a desirable measure for the inflation component of stabilized motor fuel taxes.

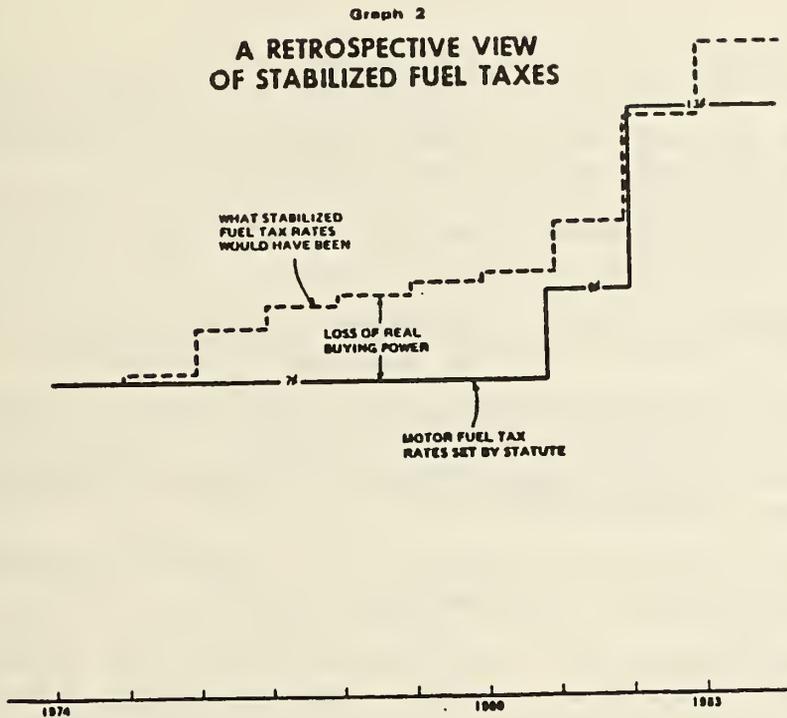
Fuel consumption changes would be directly determined by the Department of Revenue from their own records of motor fuel consumed.

Because the inflation factors are determined nationally by the U. S. Federal Highway Administration, and because the Department of Revenue would determine fuel consumption changes, and because the tax determination method is set by statute, the Department of Transportation would have no part in fuel tax rate determinations. That is as it should be.

No legislative policy controls are lost with a stabilized motor fuel tax. There is no "money machine"; fuel tax revenues may be expended only by specific legislative appropriation. If the Legislature decides to increase or decrease the level of state transportation services, the fuel tax base is adjusted accordingly, and then the motor fuel tax revenues will stabilize at the new level set by the Legislature.

Changes in fuel tax rates with a stabilized fuel tax system, of course, depend upon how much inflation actually increases and fuel consumption actually decreases. If the stabilized fuel tax had been in effect in fiscal year 1982-83, for example, the tax rate would have increased 1.7¢ per gallon--from 13¢ to 14.7¢. Annual tax rate changes will likely range between 1¢ and 2¢ per gallon for the balance of this decade.

Stabilized fuel tax rates should be roughly similar to what the Legislature would specify if the "rate increment" were statutorily set. Graph 2 shows a retrospective for stabilized fuel taxes. If the fuel taxes had been stabilized in 1973, the tax rates would have "incrementally" increased each year from 7¢ per gallon to 9.2¢ by fiscal 1979. A legislative fuel tax increase was put off, causing transportation services to decline, but then fuel taxes were increased to 9¢ in May, 1980. Stabilized fuel taxes would then have climbed to 12.8¢ by July, 1981; in comparison, the Legislature statutorily increased fuel taxes to 13¢ in August, 1981. All in all, this seems to show that stabilized fuel taxes are really quite similar to legislative policy decisions on fuel tax rates.



A Comparison With GPR

Fears that stabilized fuel taxes will become a transportation "money machine" are not well founded. If the past eight years are any guide to what will happen in the future, we might well find that automatic growth in GPR taxes will continue to outstrip growth in stabilized fuel taxes.

From 1973-74 to 1981-82, GPR income tax rates were revised downward, and then indexed to stay down to inflation levels. During the same period, fuel tax rates were statutorily increased to about the same level as they would have been if stabilized, and vehicle license fees were also increased. With GPR tax rates down, and transportation tax rates up, compare how the two tax sources performed from 1973-74 to 1981-82;

- In terms of average annual increases in tax collections:
 - GPR tax revenue increased 8.8% each year, on the average.
 - Transportation tax revenue increased 8.1% each year, on the average.

- In terms of real buying power, that is, tax collection adjusted for consumer price inflation:
 - GPR tax collections grew 2.1% in CPI real buying power from 1973-74 to 1981-82.
 - Transportation tax collections declined 4.3% in CPI real buying power in the same eight years.
- In terms of amount of personal income:
 - GPR tax revenue, as a share of Wisconsin personal income, dropped 7.8%.
 - Transportation tax revenue, as a share of Wisconsin personal income, dropped more--13.1%.

Hardly a "money machine!" GPR tax rates were cut sizably; while fuel tax rates were increased to about what a stabilizing formula would have produced, and vehicle registration fees were increased besides. Still, the GPR tax system outproduced transportation taxes by any measure, and will continue to do so.

Stabilized Fuel Taxes; The Mechanics

Stabilizing the real buying power of motor fuel taxes is a simple and straightforward process. Each year in March the Department of Revenue would formally determine the stabilized motor fuel tax rate to be effective for the following fiscal year. That determination would be based on changes in the National Highway Maintenance and Operations Cost Index, as reported by the U. S. Federal Highway Administration, and changes in motor fuel consumption from DOR's own records. The Department of Revenue would then formally notify the motor fuel wholesalers and other fuel tax collectors of the stabilized motor fuel tax rate to be in effect on July 1.

DOR will determine the stabilized fuel tax rate using this statutory formula:

- Calculate the inflation factor by dividing the national highway maintenance cost index for the most recent calendar year by the index for the year prior to that.

- Calculate the fuel consumption factor by dividing the gallons sold in the prior year by the gallons sold in the most recent calendar year.
- Calculate the tax stabilizing factor by multiplying the inflation factor by the fuel consumption factor.
- Determine the tax rate by multiplying the tax stabilizing factor by the existing fuel tax rate, and rounding the result to the nearest 1/10 cent.

As an example, imagine that the last session of the Legislature had enacted a stabilized fuel tax system to begin in fiscal 1982-83. In March of 1982, the Department of Revenue would have made this determination:

- Inflation Factor

$$\frac{146.20}{134.58} \begin{array}{l} \text{Cost Index in 1981} \\ \text{Cost Index in 1980} \end{array} = 1.0870 \begin{array}{l} \text{Inflation} \\ \text{Factor for 1982-83} \end{array}$$

- Fuel Consumption Factor

$$\frac{2,454}{2,363} \begin{array}{l} \text{Gallons (millions) in 1980} \\ \text{Gallons (millions) in 1981} \end{array} = 1.0385 \begin{array}{l} \text{Fuel} \\ \text{Consumption Factor} \\ \text{for 1982-83} \end{array}$$

- Tax Stabilizing Factor

$$\begin{array}{l} \times \text{ Inflation Factor for 1982-83} \\ \text{Fuel Consumption Factor for 1982-83} \\ = 1.1288 \text{ Tax Stabilizing Factor for 1982-83} \end{array}$$

- Stabilized Tax Rate

$$\begin{array}{l} \times 13.0\text{¢ Fuel Tax Rate in 1981-82} \\ \underline{1.1288 \text{ Tax Stabilizing Factor for 1982-83}} \\ = 14.7\text{¢ Fuel Tax Rate for 1982-83 (if the formula} \\ \text{had been in effect)} \end{array}$$

On or before April 1, the Department of Revenue would publish the fuel tax rate to be effective during the following fiscal year.

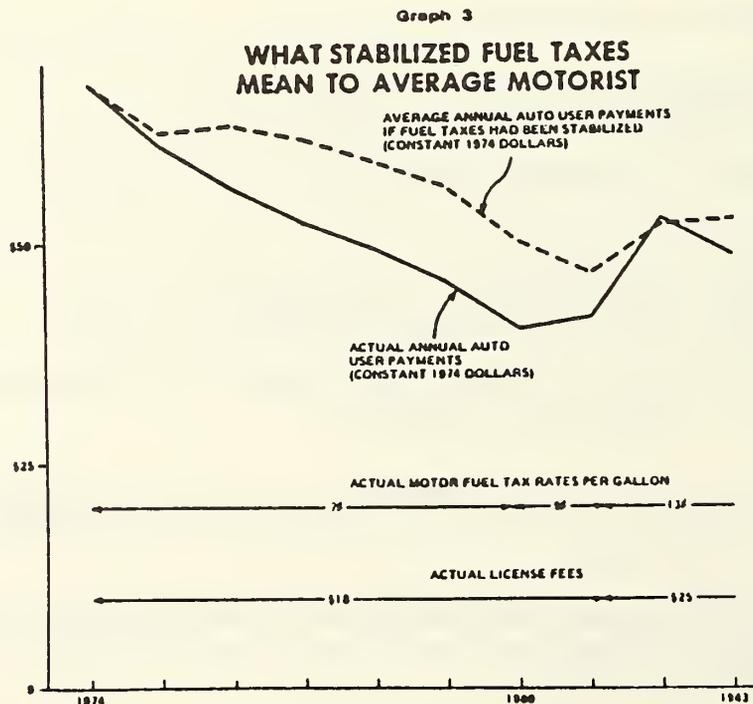
Refunds for nonhighway agricultural, recreational, and other nonhighway purposes would continue to be made at the tax rate actually paid.

Cost To Average Motorist

An average Wisconsin auto is driven about 10,000 miles per year, and currently has a fuel efficiency of about 16 miles per gallon--up from the 13 to 14 mpg of a few years ago. Smaller and more efficient autos will become a larger part of the total fleet, and by 1990 the average auto should enjoy at least a 21.5 mpg efficiency. Current state highway user fees, fuel taxes, and license fees cost the average motorist about 1.06¢ per mile.

At the current 13¢ per gallon tax rate and \$25 license fee, the average motorist pays about \$8.85 per month in highway user fees. If stabilized fuel tax rates increase 1.5¢ each year, then the highway user fees for an average motorist would each year increase about 75¢ per month--to \$9.60 in 1984, \$10.35 in 1985, \$11.10 in 1986, and so on. When inflation is taken into account, there is essentially no increase in the real dollar cost of average motorist highway user fees.

Graph 3 shows what stabilized fuel taxes would have meant to the average motorist if the fuel taxes had been stabilized in 1973. Of course, the out-of-pocket costs would have increased, but when inflation is considered, the real dollar cost of stabilized fuel taxes would have declined over the ten years.



In summary, stabilized fuel taxes will not become significant real dollar costs to the average motorist, when compared to the other costs of personal transportation.

HIGHWAY REVENUES AND EXPENDITURES: SOME EMERGING POLICY DIRECTIONS AT THE STATE LEVEL

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University of Iowa

Two interrelated public policy concerns are having an impact on state-level highway financing within the United States. The first pertains to revenue: a realization that traditional motor fuel taxes and registration fees are neither particularly fair nor likely to generate the level of revenue needed to sustain and improve the highway system. The second policy concern relates to expenditures: a desire to promote economic development through highway improvements. Areas experiencing rapid growth are searching for ways to finance additional highway facilities, while stagnant or declining areas see highway improvements as a key method for attracting badly needed economic activity.

This paper examines how various states are approaching the intertwined issues of redirecting highway financing methods and using highways as a lever for attracting economic development. Two separate surveys were sent to all 50 state departments of transportation to investigate the steps being taken to address these policy concerns. The results of the two national surveys are discussed and the implications for future directions in highway financing policy are assessed.

EMERGING STATE-LEVEL HIGHWAY FINANCING PRACTICES

During the past decade or so, highway financing practices have undergone subtle but significant changes. To a large extent, these changes have been reactions to external forces such as rapidly escalating energy prices and high inflation rates. The changes also have been responses to societal forces of a different nature. Increased concern exists about the social impacts of transportation policy, including financing methods. User groups and other transportation-related organizations appear to be less tolerant of imbalances in cost allocations; equity in highway financing is receiving far more attention

than once was the case.¹ Financing methods that are closely tied to cost responsibilities and to benefit incidence gradually are seeing more widespread application. A brief examination of the changing roles of specific highway financing mechanisms precedes a discussion of the survey on emerging state-level practices.

Motor Fuel Taxation

During the 1960s and early 1970s, motor fuel taxation accounted for two-thirds of all state highway revenue in the U.S. Today, only about half of all state highway revenue comes from this source, and the fraction is steadily falling. Even though the states have been raising their motor fuel tax rates quite steadily in recent years, total receipts have not been increasing, in real terms.² In some states receipts are down substantially.

This old mainstay of highway financing is likely to play a diminished role in the future; gains in fuel efficiency will continue to work against revenue growth in motor fuel taxes.³ A logical step to bolster revenue generation would be to tie this tax to an appropriate index, preferably one related to highway construction and maintenance costs (Forckenbrock and Hoefler, 1983). To assure revenue stability, the index could be inversely tied to fuel purchases. Unfortunately, political considerations have prevented indexing from becoming popular. Today, only 15 states have any form of variable fuel taxation mechanism.

Conceptually speaking, one should not feel too badly about the decline in importance of the motor fuel tax; from an equity standpoint, very little can be said for it when heavy vehicles are involved. The problem is that fuel

¹Examples of these organizations include the American Association of State Highway and Transportation Officials, The Road Information Program (TRIP), and the Highway Users Federation. See, for example, Systems Design Concepts, Inc. (1983).

²For example, in 1983, 27 states increased their motor fuel tax rates.

³A study by the Office of Technology Assessment has estimated a range of new automobile fuel efficiency for the year 2000 or 48 to 78 miles per gallon. See Office of Technology Assessment (1982). For a discussion of the policy implications of higher motor vehicle fuel efficiency, see Skinner (1985).

consumption is not even close to linearly related to vehicle weight. Trucks in the 26,000 to 50,000 pound weight range average approximately 5.0 miles per gallon, while those weighing over 75,000 pounds achieve about 4.6 miles per gallon (U.S. DOT, 1982, Table IV-13). Vehicles in the latter weight category occasion more than twice as much cost to the highway system per mile operated as do vehicles in the former weight category (U.S. DOT, 1982, Table V-1). Lighter vehicles, mainly autos and light trucks, substantially cross-subsidize heavier vehicles when the same gallonage tax is assessed.

Registration Fees

The other major traditional source of highway revenue is registration fees. Although most states have adopted fee schedules that increase with vehicle weight, the result has been rather short of impressive. Cooper (1984, p. 11) has observed that nationally, registration fees have not generated increased real revenue since 1965. Politically, it is difficult to raise registration fees much more because they constitute a sizable and visible front-end payment.

Despite their simplicity and the apparent good sense of the weight-based rate graduation, registration fees are ill advised from an equity standpoint. They are completely insensitive to the fact that within each weight category, some vehicles travel many more miles each year than do others. The averaging phenomenon means that some vehicles' per mile tax is very low (i.e., when the number of miles operated each year is high), while the rate on particularly low mileage vehicles can border on confiscatory. It could be argued that the proper role for registration fees is to defray the limited common costs of highway service provision that do not vary with vehicle characteristics or even usage rates (e.g., registration, per se).

Weight-Distance Taxation

Theoretically, a tax that takes into consideration both vehicle weight and distance traveled on the highway system could facilitate a near-perfect distribution of highway costs among users.⁴ In practical terms, however, it is

⁴It should be noted that if a weight-distance taxation approach were
(Footnote Continued)

not feasible to ascertain the exact weight of all heavier vehicles every mile that they operate. Motor carriers take on and discharge cargo at numerous locations. Weight-distance taxes therefore must be based on approximations of weight during the time the vehicle operates within the state.

On equity grounds, it must be conceded that weight-distance taxes may overcharge a vehicle that is operating at less than its registered (allowable) weight. It is, of course, possible to take into account in the per-mile rates that are assigned to each weight class the fact that motor carriers do not operate at the full registered load all of the time. More sophisticated weight-monitoring equipment eventually may enable precise cost assignments, at least on major highways (see Henion, 1983).

Still, a considerable amount of controversy lingers as to the proper relative tax rates for vehicles of different axle loadings. The roles in pavement wear of vehicle weight, pavement qualities, and weather certainly are not universally agreed upon (see American Trucking Associations, 1983, and American Association of State Highway and Transportation Officials, 1984).

The specter of retaliatory taxation is a serious concern that undoubtedly has slowed the adoption of weight-distance taxes. Most states participate in reciprocity agreements with other states, whereby motor carriers based within a certain state are granted registration concessions when they operate in another state, as long as the reverse is true (see American Trucking Association, n.d.). As one would expect, reciprocity works best when the same methods of taxing vehicles and equal rates are in place. In other circumstances, the states exchange privileges of unequal value, and an unstable condition arises. Thus, when a state adopts a weight-distance tax (and greatly lowers its registration fees), an imbalance is created. Quite often weight-distance taxes have led to retaliatory taxes, whereby vehicles from the "offending" state are charged higher user taxes. This, of course, seriously diminishes the viability of motor carrier firms from the state.

(Footnote Continued)

adopted for vehicles over 26,000 pounds, the standard motor fuel tax could fairly charge lighter vehicles for their use of the highway system (see Forkenbrock, 1983).

Nonuser Taxation

Various forms of nonuser taxes are growing in importance in state-level highway financing. Particularly at the sub-state level, most jurisdictions levy property and other taxes for the construction and maintenance of their streets, roads, and highways. In Iowa, for example, property taxes contribute nearly one-third of the revenue for the state's highway system. Historically, property taxes have been the largest source of revenue for providing urban transportation services; they now are becoming an important funding source for rural roads, as well (see Fricker, 1983). Where usage rates are very low, the rationale goes, the principal beneficiaries of rural roads are those who are provided access to their property.

Other nonuser taxes also are seeing increased application. Oil company gross receipt taxes have been adopted by ten states, and seventeen others are considering them (Cooper, 1984, p. 16). Interestingly, a mineral severance tax contributes 58.6 percent of Wyoming's total highway revenue (Hazen, 1983, p. 56). Generally speaking, however, this form of nonuser taxation comprises only a minor portion of total state highway revenue. Conceptually, it is difficult to see the appropriateness of gross receipt or severance taxes for financing highways. They bear little relation to highway costs or benefits.

A SURVEY OF DIRECTIONS IN HIGHWAY REVENUE SOURCES

To gain a further perspective on highway financing directions at the state level, a survey was sent to all 50 state departments of transportation. DOT directors were asked about the following issues:

- Level of concern over physical deterioration of the state's highway system.
- Estimated cost of rehabilitation to bring the highway system up to the desired standard.
- User taxation directions, with emphasis on possible revisions and the rationale for them.
- Interest in weight-distance taxation and related changes.

Survey Findings

A total of 47 departments of transportation responded to the survey, and many sent a variety of documents ranging from needs studies to financial analyses.

Highlights of the information provided by these DOTs include:

- Twenty-three states have completed needs studies which have been used to establish rehabilitation cost estimates. These estimates range from \$14 million to \$16 billion.
- Twenty-one states are evaluating their entire approach to highway user taxation. Dedicated motor vehicle use taxes are receiving serious attention in seven states.⁵ Nine states now levy a sales tax on gasoline; in almost every case the revenue is dedicated to transportation-related uses.
- Fifteen states sent documents that contain extensive financial analyses of highway financing issues and options.⁶ Extensive mention is made in these documents of a desire for public-private cooperation in financing highway improvements.
- Seventeen states have adopted weight-distance taxes, and seven other states are actively studying the possibility of doing so. An interest in improving the fairness of user taxation and the need for additional revenue are the most often cited rationales.⁷

Significantly, a group of western states is evaluating a regional approach to highway financing based on weight-distance taxation. By doing so, they feel, the problem of retaliatory taxation can be avoided, and administrative burdens for both the states and motor carriers can be minimized. The National Governors Association and the American Association of State Highway and Transportation Officials also are examining possibilities for greater inter-state cooperation in highway financing.

⁵Most states (45) assess a transfer or use tax on motor vehicles that is essentially a sales tax. In 25 of these states, however, the revenue goes to the general fund, rather than to the road use tax fund.

⁶Nearly all documents mention the need to increase motor fuel taxes.

⁷For an account of Oregon's experiences with a weight-distance tax, see Henion (1983).

Implications of the Emerging Trends

Reviewing state-level highway financing trends, it is clear that changes are in the offing. Motor fuel taxes and registration fees both are shrinking in relative importance as generators of revenue. Perhaps a rethinking of highway financing methods has been sparked by the growing realization that current (or declining) levels of user charges will not be sufficient to defray the enormous, and imminent, costs of rehabilitation and reconstruction. Certainly, publication of the 1982 Federal Highway Cost Allocation Study Final Report has had an impact on the options considered by the states. An increased awareness of cost responsibilities and equity in financing is evident. Careful analysis in the area of highway financing policy, all but nonexistent not many years ago, is emerging as a major activity in many state departments of transportation.

To the extent that the survey just discussed bespeaks a trend, weight-distance taxation will gain more widespread application. Regional consortia and eventual multistate pacts -- extending the progress made by the International Registration Plan -- are key elements in the propagation of weight-distance taxation. Respondents to the survey have indicated a rather general willingness to pursue cooperative methods for improving highway financing.

Nonuser (and nontraditional) approaches to highway financing are likely to grow significantly in importance, especially for new construction. Success stories about joint public and private projects seem to be stimulating increased interest (see Krasner and Penne, 1982, and Meisner, 1984). A major National Cooperative Highway Research Program (NCHRP) study has been commissioned to investigate legal and institutional issues attendant to private financing of public highway facilities. The pursuit of economic development is likely to become an even greater force behind the methods used to finance highways in the near future.

CHANGING PRIORITIES IN HIGHWAY EXPENDITURES

Just as the sources of highway revenue are undergoing steady and significant change, so also are the ways in which available funds are being spent. An ever decreasing portion of most states' highway budgets is being devoted to new construction, and in some states less traveled rural roads are

receiving reduced maintenance than once was the case. Across the land, so-called "4-R" (resurfacing, restoration, rehabilitation, and reconstruction) projects are claiming much larger portions of state highway funds.

Given the fiscal strain most state highway programs are enduring, system expansions now require strong justification. This justification is likely to be in the form of positive economic impacts, rather than forecasts of average daily trips (travel demand), which have been the traditional measure of need. Tied to the pursuit of economic gains is a new-found emphasis on using state highway dollars to leverage larger improvements, including non-transportation facilities.

To pursue economic growth, an increasing number of states are establishing programs that differ significantly from traditional highway programs. Improved highways, per se, are not the objective of these emerging programs. Rather, they are designed to help fund improvements to the highway system that will directly lead to job formation, primarily through the attraction, expansion, or even retention of employment-generating activities. The general expectation is that the benefits to society arising out of the creation of jobs will exceed the costs of the highway-related improvements financed with public dollars.

A SURVEY OF ECONOMIC DEVELOPMENT-RELATED HIGHWAY PROGRAMS

Although a number of states have been establishing highway improvement programs that are tied to economic development, little has been written about them. To facilitate comparisons and identify emerging trends, a second survey was sent to all state departments of transportation, and each of the 50 states responded. A summary of the results of the survey is followed by brief discussions of two of the more innovative programs.

Program Orientation and Features

The nature of involvement in economic development-related activities by the responding state departments of transportation is presented in Table 1. Most states (36) have indicated that they explicitly take economic development into account in their highway programming activities. Of these states, 15 simply incorporate economic development objectives into their normal programming process and do not have special funds or programs for the specific purpose of fostering economic development. The methods used range from

Table 1

Summary of State DOT
Involvement in Economic Development

<u>State</u>	<u>Econ. Devel. Objectives In Programming¹</u>	<u>Special Econ. Devel. Funds/Bonding²</u>	<u>Industrial Park Road Program³</u>	<u>Quick- Response Capabilities⁴</u>
Alabama	X	X	X	
Alaska		X		
Arizona				
Arkansas	X	X	X	
California	X			
Colorado	X			
Connecticut	X			
Delaware	X			
Florida		X		
Georgia	X			
Hawaii	X			
Idaho	X			
Illinois	X	X	X	
Indiana	X			
Iowa	X	X		X
Kansas	X	X	X	
Kentucky	X	X	X	
Louisiana	X	X		
Maine	X	X		X
Maryland				
Massachusetts	X	X	X	X
Michigan	X	X		
Minnesota	X	X		X ⁵
Mississippi				
Missouri				
Montana				
Nebraska				
Nebraska				
Nevada	X			
New Hampshire				
New Jersey				
New Mexico	X			
New York	X	X		
North Carolina	X	X		X
North Dakota				
Ohio	X			
Oklahoma	X	X	X	
Oregon	X			
Pennsylvania	X			
Rhode Island				
South Carolina				
South Dakota	X	X	X	
Tennessee	X		X	
Texas	X			
Utah	X			
Vermont				
Virginia	X	X		X

Table 1 (continued)

State	Econ. Devel. Objectives In Programming ¹	Special Econ. Devel. Funds/Bonding ²	Industrial Park Road Program ³	Quick- Response Capabilities ⁴
Washington	X	X		
West Virginia	X	X	X	X
Wisconsin ⁶	X	X		X
Wyoming	X	X	X	

- Notes:
1. "Economic Development Objectives in Programming" means that the state specifically takes economic development into account in its capital programming process or has special highway programs to encourage economic development.
 2. "Special Economic Development Funds/Bonding" means that the state has a categorical funding source or bonding authority for economic development or industrial park roads.
 3. "Industrial Park Program" means that the state has a special program dedicated to constructing this type of road.
 4. "Quick-Response Capabilities" means that the state has the ability to expedite economic development-related road projects.
 5. Expedites environmental review for economic development projects.
 6. Proposed "AHEAD" program. Has not yet passed in the state legislature.

informal petitions on the part of local governments for priority programming to point systems for ranking projects.

A surprisingly large number of states, 22, have categorical funding or bonding authority for economic development. Iowa, for example, has a dedicated two-cent motor fuel tax, the proceeds of which flow into a special fund. Programs vary in scale from Maine's \$400,000 industrial park matching program (to supplement private sector funds) to more extensive efforts, such as those in Florida, Iowa, Massachusetts, Michigan, and Washington (see Table 2).

Eleven states' programs are mainly oriented toward making industrial parks more accessible. These programs supplement local and private funding sources in financing the construction of such improvements as interchanges, frontage roads, or other access roads. Some states specify funding limitations based on the amount of local or private funds contributed or on the number of jobs created. South Dakota, for example, requires:

- A commitment to actual construction of the industrial facility in the near future.
- A committed capital investment of at least five times the required state participation costs.
- Total employment for all facilities in the industrial park of at least 50.
- Local participation in funding of industrial park roads of at least 20 percent of the approved state project construction budget.
- Dedication of the roadway and adjacent right-of-way to public use.
- State participation limited to roads within the industrial park that are one mile or less in length.

The motivation for specifying match rates is to use limited state funds to leverage as much local and private funding as possible. Even states that do not have specific percentage limits have indicated that they place considerable emphasis on the relative size of the non-state funding share.

Eight states' programs include the capability for "quick response" to development-related highway projects. Quick-response program features apply when a development is being negotiated between a local government and private sector investors and highway facilities are a significant issue. The

Table 2

Details of Special Economic Development
Highway Funds/Bonding Authority

<u>State</u>	<u>Approximate Annual Budget (\$ Millions)</u>	<u>Program Name/Description</u>
Alabama	No annual budget	Single-bond Issue of \$25 million
Alaska	No annual budget	State Economic Development Program
Arkansas	Not reported	Industrial Access Roads
Florida	\$10.0	Economic Development Transportation Fund
Illinois	\$4.4	Five-year average. Part of "Build Illinois"
Iowa	\$27.5	Six-year average. "RISE" program
Kansas	\$3.0	Economic Development Fund
Kentucky	No fixed budget	Industrial Access Road Program
Louisiana	No fixed budget	Discretionary funds
Maine	\$0.4	Federal funds
Massachusetts	\$10.0	Public Works and Economic Dev. Program
Michigan	\$13.3	Three-year average. Economic Dev. Program
Minnesota	No annual budget	Municipal bonding, reimbursed by state
New Mexico	No annual budget	Special Econ. Dev. Projects funded with tax
New York	\$5.0	Industrial Access Program
North Carolina	\$2.0	State Economic Development Program
Oklahoma	\$1.6	Industrial Access Road Program
South Dakota	\$0.5	Industrial Park Construction Program
Tennessee	\$2.0	Industrial Access Road Program
Virginia	\$3.0	Industrial Access Fund
Washington	\$10.0	Community Economic Revitalization Board
West Virginia	No fixed budget	Contingency funds
Wisconsin	\$4.9	Proposed "AHEAD" Program
Wyoming	\$1.0	Industrial Road Program

nature of these quick-response capabilities varies from expedited environmental review procedures in Minnesota to readily-available capital, as in Florida and Iowa and in Wisconsin's proposed program.

Two Noteworthy Programs: Florida and Iowa

Florida initiated its Economic Development Transportation Fund in the 1980-1981 fiscal year, when \$7 million was appropriated. Since then, annual appropriations have been in the \$8.8 to \$11 million range. The Florida Department of Commerce (FDC) has estimated that the 70 projects funded by the \$36.6 million in state appropriations through the 1983-1984 fiscal year have led to \$86 million in road construction. This construction has been instrumental, FDC feels, in stimulating a total capital investment of \$1.6 billion and in creating upwards of 63,000 jobs.

In its 1985 session, the Iowa General Assembly established a program not unlike that of Florida. Funded by a two-cent increase in the motor fuel tax, the program will have available approximately \$27.5 million annually. The legislation mandates that these funds will be devoted to highway projects that foster economic development. The highest funding priority is assigned to "immediate opportunity" projects, where a firm developmental commitment is being negotiated. Other funds are allocated on the basis of a competitive rating system that considers:

- Developmental potential
- Economic impact
- Local commitment and initiative
- Transportation need
- Area economic need

Greater weights are assigned to the first three factors. Worth noting is that the economic impact factor takes into account such measures as:

- Total jobs per \$1,000 in state highway investment.
- Total capital investment per \$1,000 in state highway investment.
- Private investment in roadway facilities per \$1,000 in state highway investment.

SUMMARY AND CONCLUSIONS

This paper has examined two issues in state-level highway finance: (1) improving the methods for generating revenue and (2) using expenditures to

leverage other resources and stimulate economic growth. The point was made that the major traditional sources of user revenue -- motor fuel taxes and registration fees -- have not grown in terms of real revenue generated and are unlikely to do so in the future. Increasing attention is being given to weight-distance taxes which in principle can be quite equitable and which have good revenue-generating ability. Certain types of nonuser revenue sources are growing in relative importance. In rural areas where travel demand is very low, property taxes assigned to those who are provided access have a certain merit.

To stretch limited state highway funds and to bolster local and state economies, a new form of program has been gaining widespread application. A number of state departments of transportation are becoming actively involved in economic development by devoting funds to help provide the facilities needed to attract increased employment-generating activities. State transportation funds are being used to leverage contributions from local governments and the private sector.

Charging highway users more fairly while increasing available revenue, facilitating a stronger economy through carefully selected highway investments, and attracting financial contributions from other participants in economic development are clearly emerging trends. If these policy directions are adopted by increasing numbers of states, the gloomy prognoses commonly heard regarding the future condition of the nation's highways very well may prove inaccurate.

ACKNOWLEDGMENTS

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INTEGRATED TRANSPORTATION FINANCING IN DELAWARE

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SYNOPSIS

This paper explains the unique features of state transportation financing in Delaware and reviews the recent movement to initiate integrated funding mechanisms. Local public transportation authorities have been absorbed by the State and established as subagencies within the Department of Transportation. The funding source for these subagencies and other State public transportation is toll revenues generated from the Delaware Turnpike. Some movement has also been made toward funding a totally dedicated State transportation fund. A percentage of State motor fuel tax and motor carrier registration revenues now are pledged to the Department. Recent legislative and organizational changes establishing the current structure is reviewed -- how they occurred and how they are working.

WHERE AND WHAT IS DELAWARE

Delaware is a small state -- the second smallest in the nation. We are 96 miles from north to south and 9 to 35 miles from east to west. We have a population of 613,000 -- the fourth smallest populated yet only six other states are more densely populated.

A large portion of the State is located south of the Chesapeake and Delaware Canal and is part of the rural Delmarva Peninsula. However, the northern section is densely populated and lies within the northeast corridor (see Figure 1).

Delaware has a robust economy. The personal income is 7% higher than the national average and unemployment is substantially less than the national average. Wilmington is known as home for DuPont, Hercules and other corporations. Recently changed laws have lured a number of banking institutions to the State. To the south we have a thriving agricultural economy including Frank Perdue.

There are just three counties in the State and an important consideration is that there is no county or township road system. Except for local streets

within incorporated towns and cities the State is responsible for the entire roadway system. This amounts to 4,700 miles of highways of all types.

DELAWARE'S FISCAL POLICIES

Now some background material on the state government's financial position. I believe Delaware is in a very sound position. There has been a remarkable improvement in recent years and this has been confirmed by the investor rating services.

Delaware has adopted a constitutional requirement for balanced budgets including funding of a reserve or rainy day fund.

We have a constitutional requirement in place requiring a 3/5 majority of both Houses of the General Assembly to increase or enact new taxes.

We have a statute limiting new general fund bond authorization so as to bring debt service into manageable levels. Debt service as a percent of General Fund receipts has fallen from 16.8% in 1977 to 9.8% in 1985.

Delaware taxes have been cut by about 10% in each of the last two years, yet we have had substantial budget surpluses (see Figure 2).

This strong financial position is relatively new. It has occurred since 1977. One of the ingredients of the turnaround is our transportation financing program.

Transportation programs and their financing have undergone substantial change in this period. In 1976, we had an independently financed and operated Turnpike, independently managed and financed public transportation systems and we were not keeping up with our needs.

Today we are moving ahead with improvements and are actually having trouble finding the manpower necessary to do the work mandated by the funding available to us. Publicly-owned facilities have been integrated into the State's Department of Transportation.

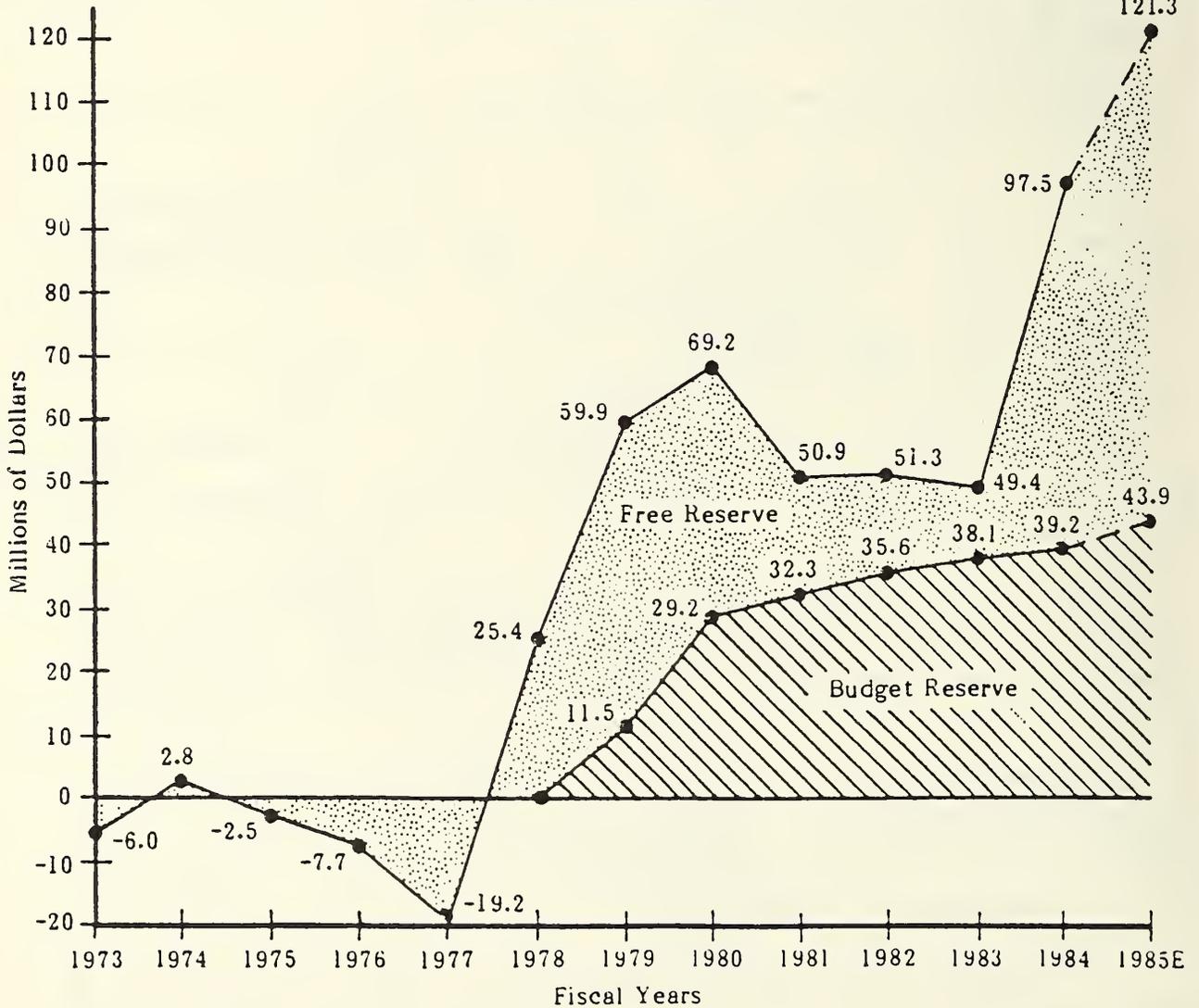
In 1970, the State changed from commissions to a cabinet form of government and the Department of Highways and Transportation was established. This was a move to provide better control and coordination of state government agencies. However it was not a cure all. State finances slipped to "crisis" proportions with deficit budgets and growing indebtedness.

Delaware - Economic Overview

STATE MAINTAINS A HEALTHY RESERVE :

Not only has the State maintained controls on expenditures, but Delaware's spending limit now automatically guarantees a continuing surplus. Delaware's surplus at the end of Fiscal 1984 was the second highest of any state in the U.S. Delaware's Constitution requires the maintaining of a budgetary reserve fund equal to 5% of State estimated revenue for the next fiscal year. Access to this fund is possible only when there are unexpected revenue shortfalls or if there is a legislated reduction in tax rates.

Cumulative Cash Balance



Source: Delaware Office of the Budget, 1/85

The cumulative cash balance shown above consists of the Budget Reserve, or "Rainy Day Fund" built-up from prior years, and the Excess Reserve. The Excess or "Free" Reserve Fund must be used first to cover prior years' commitments and then may be used to pay for nonrecurring expenditures. In recent years, selected road improvements, capital equipment purchases, and prefunding for pension increases have been financed from these excess reserves.

1976-77 was the turning point. Problems were recognized and solutions put in place through a transition of governors and a dedication of the legislative body.

THE 1976 REORGANIZATION

A new direction to return the State to a sound financial footing was proposed by the incumbent Governor in his State of the State message on January 27, 1976. This included reorganization of the transportation agencies.

This reorganization proposal was studied, reviewed and finally signed into law on June 30, 1976.

The laws provided for the following changes:

1. The Department of Highways and Transportation was reorganized as the Department of Transportation and a new entity called the Delaware Transportation Authority was created within this Department.
2. The Delaware Turnpike was made a subdivision of the Authority and enabling legislation for refinancing was provided. Refinancing was necessary to eliminate the Trust Agreement in place and allow funds to be used for other transportation purposes.
3. No state federal funds were budgeted for the Authority but a \$700,000 loan was provided until financing could be completed. The Authority would operate entirely with user-generated funds.
4. Operating subsidies for two independent transportation authorities traditionally funded from the State's General Fund were placed in the Delaware Transportation Authority's "Special Fund" budget.

On July 16, 1976 the Governor also signed into law the requirement that local ramp tolls on the Turnpike be eliminated.

THE DELAWARE TURNPIKE

Immediately after the Interstate Program was established in 1956, the State initiated the studies and design contracts necessary to get a facility on the ground to relieve the existing through traffic problem. Delaware must cope with the heavy movement of north/south traffic which is funneled to it

from the north via the New Jersey Turnpike and the Delaware Memorial Bridge.

After design was completed for the segment of I-95 connecting the Memorial Bridge to Maryland, it was reasoned that the road could be put in place much faster as a toll road. Delaware joined with the State of Maryland and had very good language inserted in the Federal Highway Act of 1960 (Public Law 86-657, 86th Congress, July 14, 1960, 74 Stat. 522):

REPAYMENT OF FEDERAL-AID FUNDS

Section 6. (a) The amount of all Federal-aid highway funds paid on account of those sections of Federal-aid Interstate Route 95 in the States of Delaware and Maryland from a point in the vicinity of Farnhurst, Delaware, to a point in the vicinity of the proposed Whitmarsh Interchange in Baltimore County, Maryland, proposed as the location for a toll express highway, shall, prior to the collection of tolls thereon, be repaid to the Treasurer of the United States and the amount so repaid shall be deposited to the credit of the appropriation for "Federal-aid Highways (Trust Fund)." At the time of such repayment, the Federal-aid projects with respect to which such funds have been repaid and any other Federal-aid project located on such sections of said Interstate Route and programmed for Federal-aid participation shall be cancelled and withdrawn from the Federal-aid highway program. Any amount so repaid, together with the unpaid balance of any amount programmed for expenditure on any such project, shall be credited to the unprogrammed balance of Federal-aid highway funds of the same class last apportioned to the States respectively. The amount so credited shall be available for expenditure in accordance with the provisions of Title 23, United States Code, as amended or supplemented.

(b) Upon the repayment of Federal-aid highway funds and the cancellation and withdrawal from the Federal-aid highway program of all projects on said sections of Federal-aid Interstate Route 95, as provided in subsection (a) of this section, such sections of said route shall become and be free of any and all restrictions contained in Title 23, United States Code, as amended or supplemented, or in any regulation thereunder, with respect to the imposition and collection of tolls or other charges thereon or for the use thereof.

This language has proven to be very good and it has been recommended often to many others considering toll roads. As you see, it completely exempts the road from Title 23 yet makes the highway a part of the Interstate Highway System -- I-95.

Following passage of this law, Turnpike Revenue Bonds were sold and the highway constructed. The road was opened and dedicated by President

Kennedy as one of his last acts on November 15, 1963. It is known officially as the J.F. Kennedy Memorial Highway.

The highway has been very successful as toll roads are measured. A highly captive audience with a very low elasticity.

The original trust agreement had stood since financing in 1960. In addition to the original bond issues, there had been sales for improvements including an initial offering in 1970 to finance a portion of a dual-dual concept of improving the highway to six (6) lanes of traffic in each direction.

This proposal was nearing the final design stage in 1975 when cost estimates and environmental concerns shelved the project.

1976 TURNPIKE REFINANCING

In accordance with the legislative directive, on September 30, 1976, outstanding Turnpike bonds were refinanced and a new Trust Agreement was created. Funds necessary to cover all outstanding bonds were placed in escrow.

Only \$14.85 million in new bonds were required and the term of these bonds was set at a short five years to allow maximum flexibility for future administrations. All the bonds were purchased by local (Delaware and Maryland) banks with the sale negotiated. About \$44 million was placed in escrow to pay principal interest and call premiums on the outstanding bonds.

Defeatance of the original trust agreement allowed:

1. Elimination of local interchange tolls as required by legislation enacted in July.
2. Assumption of maintenance for the connecting interstate highways. (This was accomplished by enlarging the Turnpike maintenance force and by providing facilities and equipment.)
3. Establishing a Transportation Fund as the lowest priority fund of the Turnpike. (After all above funds are funded excess revenues of the Turnpike could flow into this fund to pay for other expenses of the Authority.)

Maintenance of the connecting interstate system commenced in 1977 under an Intra-Departmental Agreement.

1978 LEGISLATION

A new Administration was elected into office in 1976 with a mandate to turn the state finances around.

In 1978 legislation was approved to require "priority planning" for major highway or corridor projects. Powers of final approval for a six-year Capital Improvement Program completed under a legislated system of priority planning was given to a Council on Transportation. The Council was established as a nine-member body.

The Council was advisory in nature but was required to approve:

1. The Department's six-year CIP.
2. New route alignments for major corridor projects.
3. The priority planning procedures.

The Council remains as an entity of the Department with essentially these same duties today.

1978 STUDIES

One of the nagging problems of the state was the control of DART and DAST which were independent authorities.

1. DART - Delaware Authority for Regional Transit. A 100 bus fixed route system serving the Wilmington urban area.
2. DAST - Delaware Authority for Specialized Transportation. A door-to-door statewide service of small vehicles serving the elderly and handicapped population.

These authorities were independent creatures of the State and were run by appointed citizens who answered to no elected body. Funding was accomplished annually by a "hat-in-hand" visit to all layers of government -- local towns and cities, county, state and federal.

In 1978, a DART Funding Study Committee was formed including representatives of all local governments and interested citizens.

This study concluded that DART should be made an entity of the Department of Transportation with all non-federal funds (other than user fees) coming from the State.

1978 also produced a conclusion that there would be no North-South extension of the Delaware Turnpike. A study for a major north-south extension south to the state capital at Dover had been underway for a number of

years. Instead it was concluded that there was a higher need for improvements to existing roads in the vicinity of the Turnpike called "feeder roads."

A study of absolutely necessary Turnpike improvements also produced a program to add a 4th lane in each direction in the highest volume areas near Wilmington.

It is of interest to note that the elimination of local interchange tolls resulted in substantial increases in commuter traffic on the Turnpike. Much more than had been anticipated. The local population was very sensitive to these seemingly insignificant tolls (10 cents to 25 cents).

These two conclusions (1) to completely fund DART and DAST and (2) to provide funds for connecting feeder roads lead to the need to further expand the use of Turnpike funds and required new enabling legislation and another new trust agreement.

1979 ENABLING LEGISLATION

The new enabling legislation that stands with minor modifications was finalized on July 12, 1979. This Act provided for a reorganization of the Delaware Transportation Authority:

1. DART and DAST were made subsidiary administrations of the Delaware Transportation Authority.
2. Allowed the Turnpike to fund improvements to "Feeder Roads" defined and named in the act by way of bond issues backed by revenues of the Turnpike.
3. Established by legislation a funding priority for the Turnpike:
 - a. Operating Expenses for the Turnpike
 - b. Operating Reserve Fund
 - c. Debt Service
 - d. Debt Service Reserve
 - e. Turnpike Improvement Fund
 - f. Operating Expenses for the Connecting Interstate System
 - g. Interstate Improvement Fund
 - h. Transportation Fund
4. Allowed the Authority to establish and create other subsidiaries as necessary to provide a unified transportation system for the State.

Under this legislation, the budget is subject to review and approval by the state General Assembly each year. However, if the General Assembly refuses to approve; the budget is adopted by the Authority.

On November 1, 1979, the financing and refinancing was completed. The 1976 Trust Agreement was defeated and a new 1979 Trust Agreement was created providing these new conditions.

The 1979 financing provided bond funds for the newly defined Turnpike Improvement Fund, for feeder roads and for refinancing of all outstanding bonds.

Through the 1979 financing, all bonds of the Authority were backed solely by Turnpike Revenues.

1981 LEGISLATION

On July 24, 1981 as part of the annual bond bill the Authority received additional dedicated funding. The state motor fuel tax was raised by 2 cents per gallon to 11 cents per gallon and motor fuel taxes were deposited with the Authority. However, the legislation required that 9 cents/gallon be returned to the State General Fund:

Additionally a new funding mechanism was established by adding a new lowest funding priority of a "Road Improvement Fund."

1982 LEGISLATION

On October 1, 1982, motor carrier registration fees were raised from \$3 to \$10. Motor carrier registration fees were also deposited with the Authority. (Again the legislation requires that the original \$3 be returned to the State's General Fund.)

These funds are permitted by the legislation to be used to support bonds for practically any transportation need of the state.

In 1981 and in 1984, the Delaware Transportation Authority issued bonds (which are designated motor fuel tax revenue bonds) to finance road improvements throughout the state. These bonds are supported by the dedicated motor tax revenues and motor carrier registration fees. It is interesting to note that the priority of funds established both in state law and the Trust Agreement allow the debt service to these bonds to be supported by

the entire 11 cents fuel tax and \$10 registration fee. Refunds to the General Fund are a lower priority. Thus in case of a financial disaster, the bonds receive a higher priority than the State General Fund. This provision has improved the bond ratings and lowered interest costs.

The Authority now has the following funding priority system established by law for revenues:

1. Operating Expenses for the Turnpike
2. Operating Reserve Fund
3. Debt Service for Turnpike Revenue Bonds
4. Debt Service Reserve Fund
5. Turnpike Improvement Fund
6. Operating Expenses for the Connecting Interstate System
7. Interstate Improvement Fund
8. Motor Fuel Tax Reimbursement Fund
9. Motor Carrier Reimbursement Fund
10. Transportation Fund
11. Road Improvement Fund

PUBLIC TRANSPORTATION

A few words about the operating public transportation subsidiaries (DART and DAST) of the Authority are in order.

When the agencies were integrated, the established authorities were abolished and members of the authorities became members of advisory boards. These advisory boards continued to meet monthly for several years but eventually lost interest and have been abolished.

All advisory messages now come to us from the Department's Council on Transportation and the public at large.

The Authority appoints an administrator to act as the chief operating officer of each subsidiary. Employees are not state employees but rather employees of the independent subagencies. Union organizations and their agreements were taken into the Authority with the subsidiaries.

Increases in operating costs, which were running out of sight in 1978, are now very moderate -- at about the national rate of inflation. Calls for great expansions in service have been reduced and we fully believe we have more efficiently operated systems today.

OVERALL BUDGET

The Governor assembles a state budget recommendation in the fall of each year for presentation to our state legislature in January. This is carried through the Legislature by the powerful Joint Finance Committee. This is a committee of both House and Senate who hold hearings and recommend a final budget to the full General Assembly. Their recommendation is seldom modified.

The Authority's budget receives favorable reviews. The Legislature understands the trust agreements and the need to follow established priorities.

The following estimates for fiscal 1986 give you an idea of the mix of funding used by the department.

FISCAL 1986 DELAWARE DEPARTMENT OF TRANSPORTATION

<u>Sources of Funds</u>	<u>\$(Millions)</u>
General Funds	66.0
Motor Fuel Taxes	7.3
Motor Carrier Registration Fees	2.9
Delaware Turnpike Revenues	
Tolls and Concessions	21.6
Investments	6.7
Bus Users	3.8
Bond Proceeds	
Turnpike Revenue Bonds	7.2
Motor Fuel Tax Revenue Bonds	10.9
General Obligation Bonds	26.4
Federal Funds	
FHWA	53.0
UMTA	4.6
	<u>TOTAL</u>
	210.4
<u>Uses of Funds</u>	
Debt Service	47.0
Operations and Maintenance	54.8
Capital Acquisition and Construction	108.6
	<u>TOTAL</u>
	210.4

DEPARTMENT ORGANIZATION

The Delaware Transportation Authority operates as a division of the Department of Transportation. The Director reports to the Secretary who is a cabinet officer reporting to the Governor.

The Secretary is appointed by the Governor and confirmed by the State Senate. The Director of the Authority is appointed by the Secretary and approved by the Governor.

The Delaware Transportation Authority has six (6) operating subsidiaries that are directed by appointed administrators:

1. The Delaware Turnpike Administration
2. The Delaware Administration for Regional Transit (DART)
3. The Delaware Administration for Specialized Transportation (DAST)
4. The Delaware Railroad Administration
5. The Delaware Aeronautics Administration
6. The Delaware Ride Sharing Administration

All of these organizations are funded outside the general fund of the state.

In addition, the Authority produces funds that relieve the General Fund of a significant portion of the funds necessary for state general highway construction by way of the Road Improvement, Interstate Maintenance and Improvements, and Debt Services Funds.

THE FUTURE

The Department is studying the following areas for consideration in the near future:

1. There is consideration of more toll facilities to serve the state. These might be only partially funded with tolls.
2. There is the consideration of additional, traditional road user taxes moving to the Authority.
3. There is consideration of integrating additional operations and funding into the Department including:
 - a. a county airport (New Castle County), and
 - b. a municipal port (Wilmington).

TOLLING CONCEPTS IN HIGHWAY FINANCING: TEXAS EXPERIENCE

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INTRODUCTION

Since the Federal Aid Road Acts of the 1920s, the federal government and most states have taken a toll free attitude toward highway financing. Although a number of toll facilities have been constructed since World War II, the attitude is still quite prevalent. However, current funding considerations have fostered reconsideration of their attitudes and policies.

The scarcity of resources due to revenue shortfalls and the ensuing decline in road quality have prompted calls for affirming the user pay policy and studies to ascertain user responsibility. This lack of revenue for highways will be the main thrust behind tolling as many states are experiencing dwindling shares of budgets for roads. For example, in 1965, Texas allocated one third of its budget to highways; by 1982, that figure had been reduced to about six percent (1).

Current Issues in Toll Financing

In the current debate surrounding toll financing of highway facilities, the following issues have been identified:

- a. Conversion of existing or previously planned highways to toll facilities:

With few exceptions, which can only be granted by congressional approval, roads financed (even partially) by federal funds are not eligible for such operation. This also affects the feasibility of the advocated use of tolling as the principal (and according to some, the only practical) means of completing the remaining four percent of the

interstate system, which involves very costly construction of urban links.

b. Financial considerations:

The user pay structure of tolling allows an increase in the user share of support for transportation as "it is estimated that non-users contributed 24 percent of the expenditures for highway purposes, yet were responsible for only 7 percent of the costs" in 1977 (2).

Equity of tolling relative to general taxation; it is argued that while tolling is not as progressive as the income tax, it seems less regressive than a motor fuel tax (3).

Flexible toll pricing could allow a more equitable allocation of costs to various user groups; in this regard, pricing on the basis of cost seems to be easier to implement (technologically and politically) than some other schemes.

c. Public acceptance:

Travel for free is taken for granted in most states. The public is generally not well informed about toll financing for highways. Attitudes of a public accustomed to driving on exclusively tax financed roads are therefore likely to present an obstacle, at least initially, to the expansion of road financing by tolls.

The potential impact on tourist trade and the accessibility to businesses may lead to objections to toll roads from the affected business community. This has to be compared with the potential low service levels offered by improperly maintained or severely congested roads.

Safety: The IBTTA (International Bridge, Tunnel, and Turnpike Association) and other organizations compile statistics that seem to indicate that toll parkways are safer than other major freeways.

d. The potential of tolls to achieve other objectives:

Besides revenue generation, tolls might achieve other objectives such as congestion relief and efficient pricing especially when coupled with operating concepts such as exclusive truck facilities or high occupancy vehicle lanes.

Recommendations have been made regarding a few of these issues in recent times including those by the TRB (4):

- new federally constructed roads should be allowed to be tolled
- revenues should be used on a facility specific basis

- tolls should be removed after bond retirement
- no tolls should be allowed on existing federal projects

by the Institute of Transportation Engineers (5):

Transportation agencies should be permitted to develop toll highways in conjunction with use of federal funds on federally aided projects. Tolls should be allowed on federal aid highways and bridges where high maintenance, construction, or reconstruction costs exist. There should be no obligation to repay federal aid highway funds that have been expended on the facility.

and by the Federal Highway Administration (6):

1982 - tolls should be allowed to fund federal construction

- tolls should be removed after bond retirement
- no 4R funds should be appropriated for use on the facility during bond life

1984 - Senate bill 524 (this bill is similar to the 1982 recommendations, but was specifically legislated for the State of Illinois).

However, no such legislation has been enacted.

Scope and Objectives of Paper

The preceding discussion reveals a multitude of complex considerations, faced by agencies and researchers alike, in assessing the desirability of tolling as a financing mechanism. This is further complicated by the existence of a confusing array of tolling concepts, or approaches to implementing and operating a toll facility. The principal objective of this paper is to present an operational typology of tolling concepts for highway financing in order to provide a framework for the analysis of such concepts and examination of related policy issues in a systematic manner. In addition, the intention is to show the typology's usefulness as a classification tool by its application to the Texas case. Issues surrounding the present and increasing use of toll financing in the state are identified by the typology, and promising institutionally feasible tolling schemes for Texas are investigated.

A third objective is to document and characterize existing toll operations in the United States. This is accomplished through a survey of operators, the results of which are analyzed according to the above typology. Note that the scope of this work is limited to toll collection for the principal purpose of road financing. As such, tolls on urban bridges and tunnels, which serve an important congestion relief function, are not included.

**DIMENSIONS AND LEVELS FOR
TOLL ROADS TYPOLOGY**

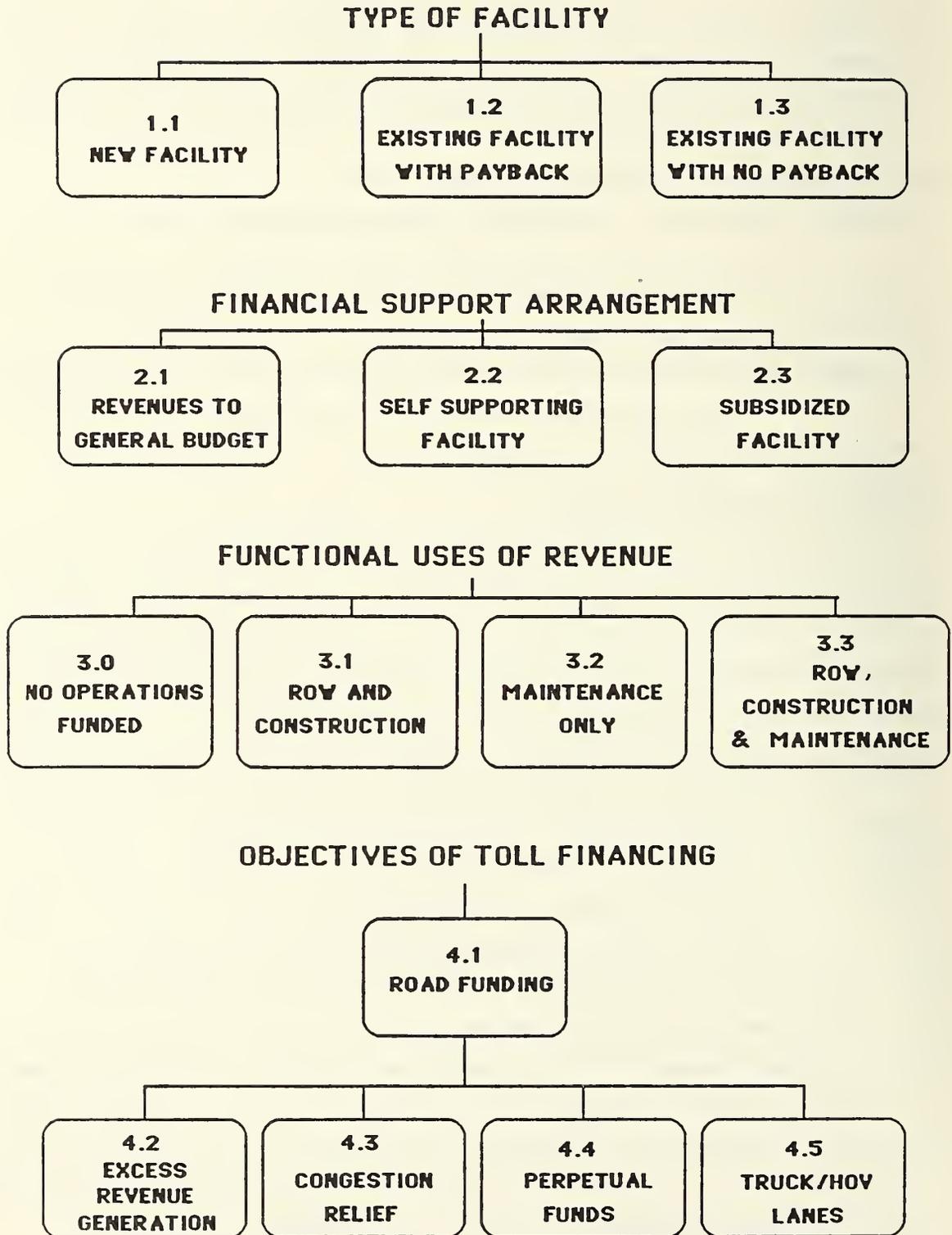


FIGURE 1

The dimensions of the typology and their corresponding levels are presented in the next section. Following this introduction, a survey of operating agencies and its results are discussed, highlighting cells of the typology which correspond to existing and proposed tolling concepts. The typology is then utilized to analyze tolling on a statewide basis in the section entitled "Application to the Texas Context." The typology also helps to identify tolling approaches that may not currently be in use but may nevertheless be worthy of further consideration, as is discussed in the concluding section.

THE TYPOLOGY

The typology consists of three dimensions of operating characteristics; each dimension comprised of a number of mutually exclusive levels. Each combination of possible facility operating characteristics defines a "cell," which represents a particular method of toll road operation. Of the total number of possibilities, many of the cells are found to be internally inconsistent, while others are not found in current practice. However, the typology allows us to highlight some tolling concepts which, while not found in current practice, seem to exhibit good potential for applicability in a variety of contexts.

Those characteristics shared by all facilities have been omitted from the typology. For example, since all toll facilities, with the exception of those contributing all revenues to a state's general budget, fund administration and toll collection with gate receipts, this common attribute is not listed as a level within the third dimension of the typology.

The dimensions and levels of the typology have been identified as the following (see Figure 1):

Dimension 1 is road status when tolls were introduced and contains three levels:

- 1.1 Placement of tolls at a new facility
- 1.2 Toll placed on an existing facility with payback of original financing
- 1.3 Tolling on an existing facility with no payback of original financing

Dimension 2 captures the administrative arrangement of the flow and use of toll revenues from a given facility, coupled with the contribution of these

revenues to the facility's overall financing. This dimension also has three levels:

- 2.1 All revenues contributed to a general budget
- 2.2 The facility is completely self supporting
- 2.3 The facility requires or is provided with some subsidy

Dimension 3 describes the functional use for revenues at the facility level:

- 3.1 No toll revenues support purchase or development of right of way (ROW), construction, or maintenance
- 3.2 Tolls support ROW and construction only
- 3.3 Revenues support maintenance only
- 3.4 Gate receipts fund ROW, construction and maintenance

The total number of cells that can be formed is equal to the product of the respective numbers of levels within each of the first three dimensions. Therefore, the total number of possible cells is $3 \times 3 \times 4 = 36$ possible cells. This number is further reduced by elimination of inconsistent cells which produces the final typology which consists of 9 cells (see Figure 2), which are discussed in the next section in conjunction with the results of a survey of toll operators in the U.S. Details of the development of the typology can be found in reference (7).

A fourth dimension can be used in conjunction with the typology's feasible cells to examine the compatibility of these cells with tolling objectives under consideration. This dimension consists of five levels which, however, are not mutually exclusive:

- 4.1 Road funding
- 4.2 Revenue generation
- 4.3 Perpetual funds
- 4.4 Congestion relief
- 4.5 Truck or authorized vehicle lane tolling

SURVEY OF TOLL OPERATORS

To substantiate the typology's usefulness as a classification tool, and document current toll operations, a survey of toll operators was conducted to obtain the data needed to identify: (1) the relative prevalence of the various cells among current toll operations, (2) cells not currently

TYOLOGY FOR TOLL ROAD FINANCING

IDENTIFICATION OF CELLS

		DIMENSION 1 - TYPE OF FACILITY								
		LEVEL 1			LEVEL 2			LEVEL 3		
		DIMENSION 2 - FINANCIAL SUPPORT ARRANGEMENT								
		LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 1	LEVEL 2	LEVEL 3
FUNCTIONAL USES OF REVENUE	LEVEL 0	CELL 1 B								
	LEVEL 1			CELL 3 Y						
	LEVEL 2			CELL 4				CELL 8 A	CELL 9	
	LEVEL 3		CELL 2 CDEF GHIJ LMNO PQRS TUVW Z AA	CELL 5 DKX		CELL 6 C I L M Q*	CELL 7			

* Also proposed by Wisconsin and Pennsylvania

 - CELLS ELIMINATED BY INCONSISTENCY

* LETTERS REPRESENT TOLL AGENCIES (SEE APPENDIX)

(FIGURE 2)

represented, and (3) related issues and trends. The following section contains a discussion of the survey results.

The survey results led to the grouping of 27 agencies into six of the nine cells of the typology identified in the previous section. Cells are numbered in order of appearance in the dimensions and levels of the typology and descriptions of the cells' characteristics are as follows:

- 1 - Cell 1 is represented by one agency and is characterized by collecting tolls on a new facility (level 1.1) with all revenues going to the state's general budget (level 2.1). The facility then in turn is wholly supported by an allotment from this budget (level 3.0).
- 2 - Cell 2 is by far the best represented cell with 22 of the 27 agencies operating roads by this method. The cell's characteristics are appealing to user-pay advocates as operation is with new facilities (level 1.1), is self supporting (level 2.2), and pays for ROW and construction as well as maintenance (level 3.3).
- 3 - Cell 3 is represented by one toll road operator. This method of operation on a new facility (level 1.1) includes subsidy in two forms. First, maintenance is provided by another agency (level 3.1), and second, support is available in the event of inadequate gate receipts (level 2.3).
- 4 - Cell 4 is currently unrepresented by toll road agencies. It characterizes new facilities (level 1.1) operating with subsidies (level 2.3) where only maintenance is funded by revenues (level 3.2). This cell will probably never be represented as new facilities are expected to recover at least some of the ROW and construction costs.
- 5 - Cell 5 is represented by 3 toll agencies and is similar to cell 2 (level 1.1) in that all operating expenses may receive funds from toll revenues (level 3.3). However, tax or other subsidies exist to make up possible operating deficits (level 2.3).
- 6 - Cell 6 is represented by 5 agencies. Pennsylvania and Wisconsin are also proposing such facilities. This cell is characterized by facilities that are completely self supporting (level 2.2), (level 3.3) and that have been converted from free facilities by repayment of original financing (level 1.2).
- 7 - Cell 7 remains unrepresented at this date. It characterizes existing facilities tolled with payback of original funding (level 1.2),

subsidized for operations (level 2.3), and using revenues to fund the repayment and maintenance (level 3.3). This cell could become better represented if subsidy requirements for operation are not extensive.

- 8 - Cell 8 is represented by one agency. This cell is characterized by the use of tolls only for maintenance (level 3.2). The operation can be labeled self sufficient (level 2.2) because the road was constructed before tolls were introduced (level 1.3). This cell could become better represented in the future as less tax revenues are being made available for road funding.
- 9 - Cell 9 is not represented by any toll road authority. It characterizes tolls placed on existing facilities (level 1.3) where subsidy is required (level 2.3) and maintenance is at least partially funded by tolls (level 3.2). This cell could become represented in the future by states having problems with support of maintenance on heavily travelled roads.

The results of a survey of agencies operating toll roads in the United States indicated that methods used by the agencies could be grouped into 6 of the 9 cells identified in the typology developed in this study. These methods differed by type of facility on which tolls were introduced, administrative level of financial support, and by the functional use of revenues. Cell 2 of the typology is represented by 22 of the nation's 27 toll road operators identified in this study. This cell characterizes facilities built specifically as toll financed facilities, are completely self supporting, and that utilize gate revenues to support operations, right of way and construction obligations, and maintenance and rehabilitation. In the following section, we will examine the Texas situation in greater detail.

APPLICATION TO THE TEXAS CONTEXT

The typology is next applied to examine existing and proposed toll facilities and their operations in Texas. The Texas Turnpike Authority (TTA), a state agency, was created to, "build toll traffic facilities in areas where need and feasibility were present, but public tax funds for highway construction were not" (8). The Harris County Toll Road Authority (HCTRA) was created by the Harris County (Houston) Commissioners Court after a referendum was approved in 1983 by voters. The vote authorized creation of

the HCTRA and the issue of up to \$900 million in general obligation/revenue bonds for the purpose of constructing two county toll roads.

The Texas Turnpike Authority

The agency was created by the Texas legislature in 1953 to construct, maintain, and operate toll financed turnpikes and bridges within the State of Texas and to issue turnpike revenue bonds redeemed solely from revenues generated by these facilities. Excess revenues are applied toward the early retirement of bond debt. The credit of the state is not pledged to support the projects of the TTA, and the agency is the only toll authority in the U.S. currently using revenue bonds as its sole source of income (2). Hence, its Moody bond rating is BAA, which causes the agency to pay an interest rate 1.25 percent higher than that of AAA bonds. Its board of directors consists of twelve appointees which includes the three members of the State Department of Highways and Public Transportation (SDHPT) commission. In addition, the SDHPT must approve all TTA projects (9).

Within the first dimension of the typology, type of facility, all roads tolled by the TTA are new (level 1.1) and are financed by revenue bonds. The authority operates, by law, only self supporting facilities (level 2.2). No outside funding is permitted; however, legislation has been proposed that would allow tax support within a limited geographical region (county). With this change, the TTA would then become classified under level 2.3 (subsidized facilities). All operating expenses including right of way purchase and development, construction, and maintenance (level 3.3) are provided by the gate receipts. Finally, the objectives of the TTA for the toll facilities they operate are road funding (level 4.1) and congestion relief (level 4.3).

In 1957, the TTA opened the Dallas-Fort Worth Turnpike, a 30-mile traffic thoroughfare linking downtown Dallas to Fort Worth. Each end of the turnpike connected with Interstate 20, and the facility also connected with all other major arteries in the area. Construction was completed in 23 months at a cost of \$58,500,000.

In 1968, the TTA opened the Dallas North Tollway, a 9.8-mile section, extending from downtown to Interstate 635 North. Completion took 28 months and cost \$33,650,000.

Although both the Turnpike and the Tollway were built and operated by the TTA, they were entirely separate projects, with sharing of funds prohibited by state law. Both facilities were financed by the sale of revenue bonds and were planned to revert to the free highway system upon retirement of debt.

One amendment to the original bill creating the TTA allows a one-time pooling of projects by the TTA within the same county. This permits a financially profitable project to subsidize a less feasible one, and equity problems are reduced by restricting the pooling to the smaller geographical area. Another amendment to the bill allowed up to one million dollars of excess revenues from the TTA's first project, the DFW Turnpike, to be used to create a feasibility study fund. This fund is used to investigate alternative sites for the implementation of a new toll road, with the money being replaced by the new project's revenues.

In 1977, the bonds on the Turnpike were retired, and on December 31, the tolls were removed. The Dallas North Tollway remains a toll facility and is currently being extended to include an additional 17.1 miles that will serve to relieve traffic congestion in northern Dallas County. An existing roadway in the proposed path of the extension would have to be removed, so construction has begun on free access lanes parallel to the Tollway to be consistent with state law prescribing that free access facilities must remain free.

The Harris County Toll Road Authority

The HCTRA does not currently operate any toll road facilities; however, it is constructing the two new roads (level 1.1) mandated in the aforementioned referendum: the Hardy toll road, and the West Belt toll road. These facilities are being constructed on right of way presently supporting free roads. Because state law prohibits the conversion of free roads to toll, the HCTRA is obligated to maintain free access along these routes. This will be accomplished by reconstruction of old Hardy Road parallel to the toll facility. On the West Belt section, the Texas State Department of Highways and Public Transportation is constructing free access roads. The major difference between the TTA and HCTRA can be identified in Dimension 2 of the typology. In the event of revenue shortfall, HCTRA's facilities may be subsidized by county taxes (level 2.3). Dimension 3, functional uses of

revenue, identifies that all expenses at the facility are supported by the agency (level 3.3). Finally, the objective of the toll financing can be characterized as road funding and congestion relief (levels 4.1 and 4.3).

CONCLUSION

The typology serves as a mechanism for identifying the various toll road financing and operating schemes, thereby providing a starting point and an input to the evaluation and decision-making process, and an organizing framework for the discussion of related legislative issues. Subsidy, perpetual funding, truck tolling, revenue generation, congestion tolling, and especially repayment of original financing are some of the issues that are of importance to transportation planners and decision makers.

Some of the typology's cells identify promising methods for toll financing of highways and will probably generate some interest in the future. If tolling is undertaken on a large level, cell 1 would present a method to consolidate funds (level 2.1) thereby facilitating the administration of a number of operations. Cells 6 through 9 perhaps represent the methods for operations that exhibit the most promise. However, new legislation would be required as all of these cells represent conversion of existing facilities to tolling (level 1.2 for cells 6 and 7, level 1.3 for cells 8 and 9). Such legislative changes seem to be favored by current attitudes.

When the nine presently feasible cells are combined with the five primary objectives for tolling comprising Dimension 4, a number of new possibilities emerge. However, some inconsistencies reduce the number of possible schemes. The following inconsistencies involving the Dimension 4 combinations have been identified:

- a. The objective of revenue generation (level 4.2) is inconsistent with operating a subsidized facility (cells 3,4,5,7 and 9).
- b. The objective of perpetual funding (level 4.4) is inconsistent with all revenues going to a general fund (cell 1), operation of a subsidized facility (cells 3,4,5,7, and 9), and exclusive use of funds for ROW and construction (cell 3).

These inconsistencies are illustrated in Figure 3.

With regard to the Texas situation, there are four state laws that govern the role of toll financing of highways. Some of this legislation precludes the

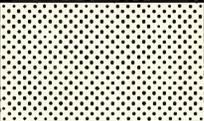
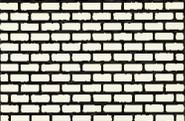
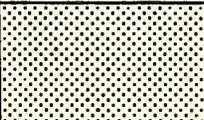
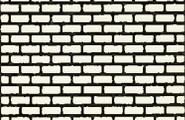
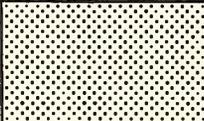
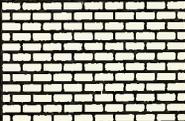
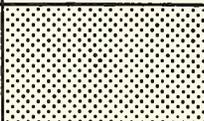
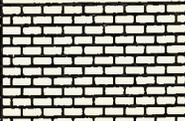
use of tolling in some of the methods defined by the levels of the typology, hence further reducing the number of presently feasible cells. The first two of these laws are contained in the bill creating the TTA. The TTA is not allowed to finance tolling in any method other than revenue funding or, in the same county, by cross subsidy from another project on a one-time pooling basis. These laws prohibit the TTA from operating facilities characterized by levels 2.1, 2.3, 3.0, 3.1, 3.2, 4.2, or 4.4, and leave only cells 2 and 8 to be represented by the TTA (see Figures 1 and 2). Another law prohibits the conversion of free state roads to toll, thereby excluding any combination with levels 1.2 or 1.3, and limiting the TTA to cell 2 only under current legislation. The final law examined permits the creation of local toll authorities within counties along the Texas gulf coast. This bill permitted the formation of the HCTRA. Because the HCTRA is not subject to the restrictions of the TTA bill, the authority can operate facilities within cells 1,2,3,4, or 5. Although these are the only schemes for operation of toll facilities within the state currently possible, proposed legislation could allow more progressive methods and possibly more widespread use of toll financing in the future.

ACKNOWLEDGEMENTS

Funding for this study was provided by a research contract with the Texas State Department of Highways and Public Transportation. Special thanks go to the International Bridge, Tunnel, and Turnpike Authority, to the Texas Turnpike Authority, the Harris County Toll Road Authority, and to all toll facility operators listed in the appendix for their assistance in providing information for the survey. The contents of this paper reflect the views of the authors, who are responsible for the facts and the accuracy of the data presented herein. The comments do not necessarily reflect the official views or policies of the State Department of Highways and Public Transportation.

TYOLOGY FOR TOLL ROAD FINANCING

COMBINATIONS OF CELLS WITH TOLLING OBJECTIVES

	4-1 ROAD FUNDING	4-2 EXCESS REVENUE GENERATION	4-3 CONGESTION RELIEF	4-4 PERPETUAL FUNDING	4-5 TRUCK/ AVL TOLLING
CELL 1					
CELL 2					
CELL 3					
CELL 4					
CELL 5					
CELL 6					
CELL 7					
CELL 8					
CELL 9					

CELL INCONSISTENCIES



(See Conclusion)

FIGURE 3

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APPENDIX

PUBLIC TOLL ROAD OPERATORS

- A - City of Colorado Springs (Colorado)
Pikes Peak Auto Highway
- B - Connecticut Department of Transportation
Connecticut Turnpike
Merritt Parkway
Wilbur Cross Parkway
- C - Delaware Turnpike Administration
John F. Kennedy Memorial Parkway
- D - Florida Department of Transportation
East-West (Miami) Tollway
Alligator Alley (Everglades Parkway)
36th Street (Miami) Expressway
Airport Expressway (Miami)
Bucaneer Trail (Ocean Highway)
South Dade Expressway
South Crosstown (Tampa) Expressway
- E - Florida Department of Transportation and Florida Turnpike Authority
Florida's Turnpike
- F - Florida Department of Transportation and Orlando-Orange County
Expressway Authority
Bee Line Expressway
East-West Expressway
- G - Jacksonville Transportation Authority (Florida)
Jacksonville Toll Road
- H - Illinois State Toll Highway Authority
Northwest Tollway
Tri-State Tollway
East-West Tollway
- I - Indiana Department of Highways
Indiana East-West Toll Road
- J - Kansas Turnpike Authority
Kansas Turnpike
18th Street Expressway
- K - Kentucky Turnpike Authority
Western Kentucky Parkway
Western Kentucky Parkway Extension
Mountain Parkway
Bluegrass Parkway
Jackson Purchase Parkway
Pennyrile Parkway

Audubon Parkway
Daniel Boone Parkway
Cumberland Parkway
Green River Parkway

L - Maine Turnpike Authority
Maine Turnpike

M - Maryland Transportation Authority
John F. Kennedy Memorial Highway

N - Massachusetts Turnpike Authority
Massachusetts Turnpike

O - New Hampshire Department of Public Works and Highways
New Hampshire Turnpike
F.E. Everett Turnpike
Spaulding Turnpike

P - New Jersey Expressway Authority
Atlantic City Expressway

Q - New Jersey Highway Authority
Garden State Parkway

R - New Jersey Turnpike Authority
New Jersey Turnpike

S - New York State Thruway Authority
Thomas E. Dewey Thruway (Main Line)
Berkshire Section
Niagara Section
New England Section
Garden State Parkway Connection

T - Ohio Turnpike Commission
Ohio Turnpike

U - Oklahoma Turnpike Authority
Turner Turnpike
Will Rogers Turnpike
H.E. Bailey Turnpike
Indian Nation Turnpike
Muskogee Turnpike
Cimarron Turnpike

V - Pennsylvania Turnpike Commission
Pennsylvania Turnpike
Northeastern Extension

W - Texas Turnpike Authority
Dallas North Tollway

X - Harris County Toll Road Authority (Texas)

Hardy Toll Road
West Belt Toll Road

Y - Richmond Metropolitan Authority (Virginia)
Powhite Parkway
Downtown Expressway

Z - Virginia Department of Highways and Transportation
Richmond-Petersburg Turnpike
Norfolk-Virginia Beach Toll Road
Dulles Toll Road

AA - West Virginia Turnpike/Toll Road Commission
West Virginia Turnpike/Toll Road

USE OF TOLLS IN HIGHWAY FINANCING

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This paper discusses three topics that are related but somewhat contradictory. These three topics are:

- An explanation of why traditional toll road financings can rarely be successful today.
- A description of the Commonwealth of Pennsylvania's proposal to dramatically expand their highway system through the use of tolls, and
- A report on the success of Virginia's Dulles Toll Road, the nation's newest.

TOLL ROAD FINANCING: 1950s and Today

Since the heyday of new toll roads 20 or 30 years ago, there have been substantial changes which impact any new toll financing. Toll roads can no longer rely only on tolls as a basis for financing as so many of them did in the 1950s. This is not only because the corridors with the greatest potential have already been developed but also because the arithmetic of toll road financing has changed dramatically.

Factors Affecting Toll Financial Feasibility

The feasibility of a toll facility depends on an array of factors. On the expense side of the ledger are:

- Initial cost: Principally made up of construction costs but also includes design, right-of-way acquisition and the establishment of reserve funds.
- Financing Costs. Controlled by interest rates, length of issue and coverage requirements.
- Annual Operating Expenses. Includes cost of maintenance, administration, toll collection, police and other operational costs. Rehabilitation costs should also be included here. They were sadly overlooked in many of the earlier financings.
- Annual Change in Operating Expenses. Affected by inflation and changing physical condition of facilities, i.e., age.

On the revenue side of the ledger we have:

- Traffic Levels. The number of vehicles willing to pay tolls to use the facility and the percentage of trucks which pay higher rates.
- Toll Rates. Level of charges for various vehicle types and any special rates for regular users.
- Annual Change in Toll Revenues. Affected by traffic growth and toll rate adjustments.
- Other Revenue Sources. Principally monies received from concessions and interest on fund balances.

Let's look at each one of these factors and see how they've changed since the mid 1950's.

Expense Factors

As you all are painfully aware, it costs much more today to build a mile of road or a bridge than it did 25 or 30 years ago. In the 1950s, a mile of highway could be built for one to two million dollars, possibly an average of one and an half million. Today the same mile of highway may cost some eight to ten million or six times what it used to cost.

On top of this is the change in the financial market. I am afraid I am ancient enough to clearly remember a financing of a 40-year, 2.1-percent interest rate revenue bond issue. Not only have interest rates increased greatly but the terms of the issues are generally shorter. Both of these changes, of course, increase the annual debt service requirements. For each million dollars of debt at 10 percent for a 25-year issue -- reasonable parameters for a current tax-exempt financing -- the annual debt service for interest and amortization is \$110,000. This compares with \$50,500, the debt service that a 4-percent, 40-year issue carries, which was typical 25 to 30 years ago. We now need over two times what it took before to repay every dollar raised through revenue bond financing.

Added to this glum picture is the great increase in the annual costs of maintenance and operations which were at levels of about \$10,000 to \$15,000 per mile when many of our existing toll roads were financed and are now at levels of some \$60,000 to \$90,000, or about six times the former levels. The figure for current levels probably is understated since we are only now learning what rehabilitation really costs.

In calculating financial feasibility, however, it is not the initial levels that concern us as much as the average costs of revenues and expenses over the life of the bond issue. In the 1950s, we generally projected increases in the level of operating expenses at annual escalation rates of 2 to 5 percent. These projections weren't too bad in the early years of the bond issue. By the end of the 1960s, however, escalation increased sharply and we learned that the earlier estimates were too low. What inflation rate should we be using today? I doubt very much whether you could get a consensus from leading economists. What is apparent, however, is that we must recognize rates substantially greater than those we used two or three decades ago. Let's assume that we should be using a rate twice as high as we did in early projections and see what happens. A \$1,000 escalated at an annual rate of 3 1/2 percent -- a typical rate used in the heyday of toll road financing -- reaches almost \$2,000 over a 20-year period. The average annual level over the entire 20 years is about \$1,500 or 50 percent above the initial year. If a rate of 7 percent were used, after 20 years the \$1,000 starter would escalate to \$3,900 with an average of about \$2,200 over the period. This is 120 percent over the initial year and one and a half times the average annual level at a lower inflation rate.

The additional effect of this increase in inflation rates is the further widening of the gap between these costs as they now must be projected as compared with earlier estimates. The base annual rate per mile that we used previously for expenses was about \$12,500 and, with escalation, the average annual rate was slightly under \$20,000 (\$18,500). Now the average annual rate escalated from the \$75,000 base is about \$165,000, or over eight times the earlier level.

When we compile all these changes in the factors on the expense side, the problems of financing today become apparent. For a typical one mile of toll road, the changes are as follows:

	<u>1950s</u>	<u>Today</u>	<u>Change</u>
Initial Cost Per Mile	\$1,500,000	\$9,000,000	up 6 times
Annual Debt Service*	75,000	990,000	up 13 times
Average Annual Maintenance and Operating Costs	20,000	160,000	up 8 times
Total Annual Revenue Requirements	95,000	1,150,000	up 12 times

*Annual debt service based on 40-year, 4 percent bonds in 1950s and 25-year, 10 percent bonds today.

Thus it now takes 12 times as much annual revenue to pay for one mile of toll road as it did in the 1950s. Obviously if coverage were included, actual amounts shown would be increased.

Revenue Factors

Let's now look at the other side of the ledger. As you will remember, all we have on this side are toll rates, traffic levels, traffic growth and income from concession and interest. For this discussion let's ignore the income revenues from other sources as they generally contribute only a small part of the total revenues. Toll rates, of course, have increased since the opening of the roads in the 1950s. At that time, base passenger car rates were about one and a quarter cents a mile with higher levels for larger vehicles and, where they were in effect, lower rates for commuters. Today, the going rates are about double -- hardly enough to make up for the increase in costs that we have just analyzed. This discrepancy between the increase in costs and the increase in toll rates is not one that can be eliminated simply by raising tolls. While higher average tolls can be instituted without significant loss of traffic, I believe we would all agree that increases of the magnitude required to catch up with inflated costs are out of the question. The traveling public and their elected representatives are accustomed to current toll levels and just would not accept increases of five or six times those levels.

Therefore, for a project to be financially feasible to the degree it used to be, it is necessary for traffic levels at today's toll rates to be substantially higher than those projected for the old toll roads. To show the same degree of feasibility with tolls twice as high as they were, average traffic levels must be six times as high as those we used to project.

Initial traffic levels must be even higher now because traffic growth these days is substantially lower than we anticipated in earlier financings. Estimates of average annual growth rates of 5 percent were not uncommon then. Over a 20-year period these rates produce an average level some 63 percent above the initial year volume. Using 2 percent, probably optimistic under today's conditions, the growth to the average level is only about one-third of that amount.

To finance one mile of road, therefore, the changes in the traffic levels over the last two or three decades are:

	<u>1950s</u>	<u>Today</u>
Total Annual Revenue Requirements	\$ 95,000	\$1,150,000
Average Toll Rate (All Vehicles)	1.4¢/mile	2.8¢/mile
Daily Traffic Levels Required - Average Year	18,500	110,000
Growth: Initial Year to Average Year	63%	22%
Daily Traffic Levels in Initial Year	11,500	90,000

What these figures indicate is that years ago potential traffic volumes of less than 12,000 were sufficient to build a toll road, ignoring coverage requirements. Today we must be able to identify potential volumes of over 90,000 or more than 8 times that previously required to attain the same feasibility.

These volumes are mighty high for a new road. Even if toll rates were twice as high as those currently prevailing, traffic volumes between 45,000 and 50,000 vehicles would be needed -- still far above the levels we can expect on any new corridors.

We can see therefore that we can rarely expect a toll road to be built and financed by tolls alone. Tolls, however, are still an important financing source as we will see in the following examples.

THE PENNSYLVANIA PROPOSAL

In spite of the gloomy figures just shown, the Commonwealth of Pennsylvania, through a specially-appointed Toll Roads Task Force, has developed a \$3.7 billion toll road expansion program.

Background

In the early 1970s, Pennsylvania had one of the largest highway development programs in the country. Miles of needed roadways were planned, designs were commissioned and construction was initiated on many. Commonwealth bond financing was a major source of funding. In the mid 1970s, however, the program came to an almost complete halt because of inflated costs, the growing demands for maintaining and rehabilitating the existing system and -- more recently -- a decreasing level of fuel tax revenues.

As a result, projects that were started were not completed, others never left the drawing boards, and the Commonwealth was over two billion dollars in bond debt. With few exceptions, all highway monies -- both federal and state -- are now dedicated to maintaining and restoring the existing system. Even with the Commonwealth's recently enacted bridge repair bill and the five-cent additional federal fuel tax, there is a substantial shortfall in the funds available for critically-needed rehabilitation. Under these circumstances, the only ray of hope for building new highways, which are believed to be essential for the economic health of many areas of the Commonwealth currently experiencing major economic problems with high levels of unemployment, is through the possible use of toll financing.

The Program

To investigate the feasibility of toll road financing and to develop a potential program using tolls for new routes and for rehabilitation of existing roads, the Governor appointed a special Task Force. This Task Force and its consulting team, which was directed by our firm, developed a program which includes new routes and reconstruction of heavily-used existing ones. It was developed by a combination of engineering studies, financial analyses and political trade-offs. The first phase of the program relies heavily on use of tolls on the highly successful existing Turnpike and the placement of tolls on the existing heavily-travelled interstate routes. The second phase looks to other additional funding.

The program as developed by the Toll Roads Task Force includes the following projects.

	<u>Estimated Construction Cost</u> (millions of dollars)	
<u>Phase A</u>		
<u>New Routes:</u>		
Beaver Valley Expressway	\$193	
Greensburg Bypass	144	
Mon Valley Expressway	562	
Rt. 219 - Section between Ebensburg and I-80	<u>535</u>	
Subtotal		\$1,434
<u>Improvement/Reconstruction</u>		
Pennsylvania Turnpike Program	\$225	
I-80 Reconstruction	297	
I-70 (West) Reconstruction	<u>81</u>	
Subtotal		<u>\$ 603</u>
Total - Phase A		<u>\$2,037</u>
<u>Phase B</u>		
<u>New Routes:</u>		
Rt. 219 - Section between I-80 and N.Y. State	\$706	
Rt. 219 - Section between Maryland and Turnpike	424	
Rt. 220	286	
Rts. 119/40	<u>322</u>	
Total - Phase B		<u>\$1,738</u>
TOTAL PROGRAM		<u>\$3,775</u>

Financing the Program

The previous analyses of toll road financing under today's conditions indicates that high traffic volumes are necessary if the road is to be self-supporting. The new routes in the Pennsylvania program, while important to the local regions, are not in high volume corridors. Not surprisingly, therefore, they are not self-supporting. Yearly net revenues from the four Phase A projects fall short of annual debt service requirements by a total of some \$160 million. The Phase B project's annual net revenues fall short by over \$200 million.

These shortfalls therefore must be made up from other sources. The inclusion of the existing Turnpike and the two interstate routes provides an overall toll road system that can support a major part of the package. The

extent of support depends on the level of toll rates and the requirements for repayment of federal aid on the interstate routes.⁸

For example, the Phase A program can be completely funded by tolls, if no federal aid repayment is required for funds spent on the interstate routes, with toll rates on the existing and all new facilities at 3.9¢ per mile for passenger cars and proportionally higher for trucks. The current Turnpike passenger toll rate is 2.4¢ per mile for passenger cars and is somewhat below the average of rates charged on other toll facilities. It is expected, however, by 1990 that this rate will increase to about 3.3¢ per mile on the Turnpike due to escalation of costs of about 5 percent annually. The 3.9¢ needed to finance Phase A is less than a 20 percent increase above the 1990 "base" rate of 3.3¢.

If partial repayment is made of federal aid, Phase A can be funded fully at a 4.2¢ per mile rate, or 25 percent over the "base" rate. With full federal aid repayment, a 5.0¢ per mile toll rate, or 50 percent over the base rate, is needed to complete funding of Phase A through tolls.

Phase B requires other sources of funding. At the time when Phase B would be under construction, it is likely that the interstate system will be completed and federal policies may be somewhat modified in regard to providing funds for toll roads. If 50 percent federal aid were available for the new routes in Phase B, the remaining funds could be raised by increasing tolls by 1 1/2¢ per mile or by a combination of lesser toll increases and state or local funds. A case can be made for some state subsidy, since the maintenance of the toll system, including the interstate elements, would be paid for out of toll revenues rather than through Department of Transportation funding. A 1/2¢ per mile passenger car toll increase combined with \$60 million annually from other services would fund the entire Phase B package, assuming receipt of 50 percent federal aid. If no federal aid were obtained, an additional \$100 million would be needed annually.

⁸It has been policy in the few cases when federally financial routes were "brought back" by states to require full repayment of the federal funds. A
(Footnote Continued)

Current Status

The program is moving ahead. While there have been delays because of local political problems related to control of the Turnpike Commission, legislation has been recently passed and signed by the Governor providing for implementation at the state level. This will permit portions of Phase A to proceed. To permit tolls on the interstate system, however, modifications are required at the federal level as current policy generally prohibits the combining of federal aid and tolls. Traditionally, there has been substantial resistance in Washington to modifying this policy. Recently, there have been mounting pressures to do something about the needed rehabilitation of the interstate system and, as a result, the potential for using tolls for this purpose is much greater today than it was several years ago.

The Pennsylvania program, because of its size and because of its planned pooling of resources, is an excellent example where tolls can potentially assist in construction of needed new routes.

DULLES TOLL ROAD SURVEY

There are two reasons for discussing the Dulles Toll Road. First, it is an exception to the case made previously that you cannot finance new toll facilities today; second, it provides an excellent opportunity to find out why people are willing to pay toll for the use of a new road.

Background

The Dulles Toll Road in Virginia opened at the end of last year for local travellers in the corridor between the airport and the Beltway serving the capital area. The previously-constructed Dulles Airport Access Road had provided a free express route for those going to and from the airport since its opening. This road, however, only served airport users since no entry points were provided for local traffic. Nevertheless, many commuters took advantage of the express route by back tracking to the airport and then

(Footnote Continued)

strong argument can be made, however, that these routes have depreciated, as evidenced by their deteriorating condition, and therefore no repayment should be made.

getting on the access road. With this local traffic threatening to congest the airport direct access route and with the rapid growth in the corridor, there was a demand for an express route for local users.

Some years ago, in response to this demand, the State of Virginia -- which did not have funding available for major construction in this corridor -- surveyed potential users to determine whether they would be willing to pay tolls if a new route was built. The response was positive and roadways adjacent to the original Dulles Airport Access Road connecting with the local arteries have been added. The costs of the construction are to be repaid from toll revenues. The total length is 13 miles. There is one 50¢ toll barrier near the eastern end and 25¢ toll barriers on eastbound entering and westbound exiting ramps and on the eastbound exit and westbound entry ramps just west of the main barrier. The full trip toll of 75¢ equates to over six cents a mile, substantially higher than on other toll roads.

There has been a good deal of interest concerning the use of this new toll road. The evidence to date is that the facility is a real success. Since its opening, traffic on the Dulles Toll Road is above the earlier forecasts and revenues are 20% greater than expected.

Why Toll Financing was Feasible

The Dulles Toll Road is an exception in its ability to rely on tolls for financing. The principle reasons for its strong financial capability, in addition to its relatively high toll rate, are its construction in a previously acquired right-of-way of the Dulles Airport Access Road and its location in an established heavily-travelled corridor. Also, the Toll Road is not completely dependent on tolls because maintenance of the facility is carried out and largely paid for by the Virginia Department of Transportation with regularly appropriated funds. These are two conditions that are not likely to be duplicated.

The Toll Road Survey

It was previously noted that there is a substantial resistance at the federal level to toll-financing, particularly for a facility which may also receive federal aid funds. This resistance to permitting tolls on existing routes or on new routes comes from a perception that the public -- and particularly the voting public -- strongly rejects the toll road concept. Many of us,

including the Transportation Infrastructure Advisory Group, or TIAG, do not believe this perception is correct. TIAG is a coalition of organizations seeking solutions to the urgent problem of providing funds for rebuilding the deterioration transportation infrastructure. One of TIAG's goals is to provide the policy makers with an understanding that tolls are not a major bone of contention for their constituents. As part of this program to show why drivers are willing to pay tolls, our firm, one of the founding members of TIAG, conducted a survey last spring to identify the characteristics of the users of the new Dulles Toll Road. Here is what we found out:

- 84% of all users travel on the road five or more days per week.
- 84% of the patrons use the road for their journey-to-work trip.
- Two thirds of the users stop and pay two tolls for a total of 75 cents for their one-way trips. These regular users therefore pay over \$350 in tolls annually.
- Average occupancy per vehicle is 1.5 persons. This high number is probably influenced by the direct connection of the toll road with Interstate Route 66 which has a dedicated high-occupancy vehicle lane.
- Over three quarters of the patrons say they use the toll road because it saves them time.
- Over 60 percent of those who use the road because of the time savings say that they save more than 10 minutes on each trip. 25 percent claim time savings of over 15 minutes.

The specific survey questions and responses are summarized and if anyone would like a copy we would be pleased to provide this information.

Willingness to Pay

The survey documents the fact that people are willing to pay when the benefits are obvious to them. The Dulles Toll Road is also an example of how tolls can be used to solve a local problem when other sources of funding are not available. Interestingly, when I last spoke with Virginia's Department of Transportation officials they informed me that they had received many comments regarding the crowded conditions on the new road and requests for additional access points, but they had not received a single complaint regarding the tolls.

CONCLUSION

I have tried to show you why toll road financing is much more difficult today than in the "good old days" basically due to increases in costs that are not matched by higher toll rates. We have seen, however, that under special conditions -- such as those for the Dulles Toll Roads -- financing of a facility based principally on its tolls can be successful. Even when the tolls cannot fully support the new facilities, as in the case of the Pennsylvania Toll Road Study, programs can be developed taking advantage of the toll concept. Tolls are now principally a means of augmenting a financial package. However, they generally need to be combined with other funding mechanisms.

The question arises as to why toll financing isn't used more. The answer is that current federal policies make it extremely difficult to use tolls with other funding sources. In order to provide the flexibility for using federal funds with tolls, a change in federal policies is required. In view of the substantial needs, not only for new facilities, but to prevent existing ones from falling apart, many of us think it is time to change these policies. We hope that you, who are influential in setting policies, will consider the advantages and possibly work with us to effect these changes.

AN EQUITY ANALYSIS OF HIGHWAY USER TAXES: A Case Study

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INTRODUCTION

One of the major concerns in imposing a highway user tax is how well it would achieve equity among all highway users. Although there does not exist a universally agreed-upon formal definition of equity, the general notion of this term in the area of highway financing and cost allocation is to distribute highway costs fairly among different highway users.

At both the federal and the state levels, the main support of highways is from road-user taxes in one form or another. There are, however, widespread differences from state to state in their highway user tax structures and rates. The form of tax structures in many states remain basically unchanged ever since road-user taxes were introduced early in the century. The problem of having insufficient funds to meet required highway improvement needs has become increasingly critical in recent years. There is therefore a need to examine critically the reasonableness and fairness of existing taxes as well as of any proposed revision of tax rates.

Highway cost allocation analysis has now been widely accepted as the basis for assessing equity of user taxes in many states. Based upon the results of the recently completed Indiana Highway Cost Allocation Study (1), an investigation was performed to study the relative merits of different state-level highway user tax options in terms of their ability to provide an equitable tax structure in Indiana. This paper presents the findings of this case study.

INDIANA HIGHWAY USER REVENUES

Revenues considered in the Indiana study were defined as those revenues contributed by highway users which were used to support highway activities. The following sources of revenue supported those activities in Indiana:

1. State gasoline and special fuel taxes
2. State motor carrier fuel use tax
3. State vehicle registration fees
4. State motor carrier identification stamp fees
5. Reciprocity identification stamp fees
6. Oversize and overweight permit fees
7. Federal gasoline and special fuel taxes
8. Federal tax on truck sales
9. Federal heavy vehicle use fee
10. Local option user taxes

In 1983, the state gasoline and special fuel taxes were 11.1 cents per gallon. States motor carrier fuel use tax was collected for the fuel not purchased in Indiana but consumed on Indiana roads from all commercial vehicles with more than two axles, including passenger vehicles that seated more than nine passengers. State vehicle registration fees included such items as license fees on passenger cars, commercial vehicles, personal license plate fees and short term permit fees.

Federal revenue sources included motor fuel taxes and other taxes and fees. It should be noted that as Indiana is a donor state, only that part of the Indiana highway user payments to the highway trust fund that was returned to Indiana was included in the revenue contribution calculation.

A summary of the fiscal year 1983 user revenue contribution is summarized in Table 1. As can be seen from the table, the most important source of revenues was motor fuel taxes and vehicle registration fees. A total of \$305.18 million state fuel taxes was collected in 1983. Out of this amount, 81% were from gasoline tax, 17% from special fuel (diesel) tax and 2% from motor carrier fuel use tax.

Vehicle registration fees, the next major source of state revenues, amounted to \$109.70 million in 1983. This item consisted approximately of 44% from passenger cars and 56% from single-unit and combination trucks. A flat vehicle registration fee of \$12 was charged to private automobiles, while the fee schedules for commercial vehicles were graduated by registered weight. In Table 2 are shown the annual registration fees for single-unit and combination trucks of different registered weights (2).

Table 1. 1983 Indiana Highway User Revenues

<u>Revenue Source</u>	<u>Amount in Millions</u>	<u>Percent Revenue</u>
State Motor Fuel	35.18	53.17%
State Vehicle Registration Fees	109.70	19.11%
Other State and Local Fees	3.56	0.62%
Federal Motor Fuel Taxes	11.03	19.34%
Other Federal Taxes	44.53	7.76%
TOTAL	574.00	100.00%

Table 2. Vehicle Registration Fees in Indiana

<u>Vehicle Type</u>	<u>Gross Weight (lb.)</u>	<u>Annual Registration Fee (\$)</u>
Passenger Car Single Unit Trucks	All Weights	\$ 12
	Less than 7,000	20
	7,000 - 9,000	30
	9,000 - 11,000	50
	11,000 - 16,000	100
	16,000 - 20,000	125
	20,000 - 26,000	150
	26,000 - 30,000	220
	30,000 - 36,000	280
	36,000 - 42,000	345
	42,000 - 48,000	405
	48,000 - 54,000	470
	54,000 - 60,000	500
60,000 - 66,000	530	
over 66,000	565	
Combination Trucks	Less than 20,000	\$140
	20,000 - 26,000	240
	26,000 - 30,000	295
	30,000 - 36,000	355
	36,000 - 42,000	390
	42,000 - 48,000	450
	48,000 - 54,000	480
	54,000 - 60,000	515
	60,000 - 66,000	545
	66,000 - 72,000	605
	72,000 - 74,000	625
	74,000 - 76,000	680
76,000 - 78,000	730	
over 78,000	790	

FINDINGS OF INDIANA COST ALLOCATION STUDY

A common concept of equity used in many cost allocation studies is based upon revenue/cost ratios of individual users. This concept is particularly useful for analysis and design of highway user taxes because it relates directly the tax payment of individual highway users to their respective cost responsibilities.

The revenue/cost ratio of a given vehicle class may be obtained by comparing its user tax revenue contribution with its cost responsibility for highway expenditures. It is usually calculated by dividing the percent revenue contribution of the vehicle class by its percent cost responsibility. A revenue/cost ratio of 1.00 implies that the vehicle class concerned is paying its fair share of tax payment, a value greater than unity indicates overpayment, and a value smaller than unity means underpayment.

The results of the Indiana Highway Cost Allocation Study in terms of revenue/cost ratios are presented in Table 3. Listed below are the major findings of this study:

1. Passenger cars as a group overpaid their cost responsibility in 1983. There was, however, a significant imbalance between costs and revenues within the group. In particular, small cars underpaid their cost responsibility, while large cars considerably overpaid.
2. Single-unit trucks as a group also overpaid their cost responsibility in 1983. While 2-axle and 4-axle single-unit trucks overpaid, 3-axle single-unit trucks underpaid their cost responsibility.
3. Combination trucks significantly underpaid their cost responsibilities. The underpayment was consistent among all combination trucks. However, the extent of underpayment varied within the group.

A comparison of the findings of Indiana study to those in other studies is provided in Table 4. In this table are shown the revenue/cost ratios for three generalized vehicle classes. Although a direct comparison cannot be made precisely due to the differences in procedure, geographic location and expenditure patterns, the ratios presented in the table give a broad indication of the reasonableness of the results of the Indiana study.

Table 3. Results of Indiana Highway Cost Allocation Study

Vehicle Type	Vehicle Class (*)	Summary for Fiscal Year 1983			
		Percent VMT	Percent Cost-Resp.	Percent Revenue	Revenue/Cost
Passenger Car	1	19.124	10.869	8.080	0.743
	2	68.921	41.510	56.670	1.365
	5	0.623	0.387	0.453	1.171
	8	0.107	0.081	0.078	0.963
		88.775	52.847	65.281	1.235
Bus	4	0.164	0.488	0.372	0.830
Single-Unit Truck	3	2.666	6.766	8.020	1.185
	6	0.692	2.605	2.210	0.848
	9	0.091	1.087	1.620	1.490
		3.449	10.458	11.850	1.133
Combination Truck	7	0.196	0.974	0.540	0.554
	10	0.040	0.107	0.069	0.645
	11	0.688	2.525	1.211	0.480
	12	6.385	30.253	18.900	0.625
	13	0.224	1.285	1.260	0.981
	14	0.078	1.110	0.520	0.468
		7.611	36.254	22.500	0.621

(*) Vehicle Classes are as defined as follows:

- Class 1 - small passenger cars
- Class 2 - standard and compact passenger cars, panel and pickup
- Class 3 - two-axle trucks
- Class 4 - buses
- Class 5 - cars with one-axle trailers
- Class 6 - three-axle truck
- Class 7 - 2S1 tractor-trailers
- Class 8 - cars with two-axle trailers
- Class 9 - four-axle trucks
- Class 10 - 3S1 tractor-trailers
- Class 11 - 2S2 tractor-trailers
- Class 12 - 3S2 tractor-trailers
- Class 13 - other five-axle tractor-trailers
- Class 14 - six- or more axle tractor-trailers

Table 4. Comparison of Findings of Indiana Study to Findings of Other Studies (1)

(USER REVENUE/COST-RESPONSIBILITY) RATIOS

	<u>Passenger Cars</u>	<u>Single Unit Trucks</u>	<u>Combination Trucks</u>
Florida (1979)	1.04	0.91	0.51(*)
Georgia (1979)	1.03	0.66	0.44(*)
Oregon (1980)	1.00	1.25	0.92
Colorado (1981)	1.22	1.24	0.56
Kentucky (1982)	1.57	--	0.57(**)
Maryland (1982)	1.17	0.83	0.56
Connecticut (1982)	1.11	1.61	0.63
Ohio (1982)	0.90	2.25	0.35
Wisconsin (1982)	0.94	1.40	0.89
Maine (1982)	1.02	1.16	0.97
N. Carolina (1982)	0.96	2.14	0.78
Federal (1982)	1.10	1.50	0.60
Indiana (1984)	1.24	1.13	0.62

(*) for trucks with 5 or more axles

(**) for all trucks

The net result of the Indiana study was that combination trucks were heavily subsidized by passenger cars and single-unit trucks. The same general conclusion also held true for most of the studies listed in Table 4. This clearly shows that the case study presented in this paper is not an isolated case, but is likely to have wide representation and implication.

TAX REVISION OPTIONS

The findings of the Indiana study indicated that the tax structure concerned was highly inequitable among different vehicle classes. A number of tax revisions were proposed for discussion in the Indiana legislature in an effort to provide a more equitable tax structure in Indiana.

In general, each of these proposals included one or more of the following taxing mechanisms available at the state level:

1. Increasing of gasoline tax
2. Increasing of special fuel (diesel) tax
3. Increasing of truck registration fees
4. Addition of a third-tier weight-distance tax

Vehicle registration fees are sometimes referred to as first structure fees, and fuel taxes as second structure fees. Practically all states collect vehicle registration fees and fuel taxes. An increasing number of states are

turning to some form of third structure taxes, such as a third-tier weight-distance tax, in an attempt to distribute more equitably the user tax burden.

In order to investigate how each of these changes would affect the revenue/cost ratios of different vehicle classes, the four options listed above are analyzed in the following sections.

For the sake of simplicity and easy explanation, the 1983 Indiana data are used for illustration. It is noted that a tax structure revision would affect the percent revenue contribution of each vehicle class, but would not change the percent cost responsibility values. This means that, in Table 3, values in the two right hand columns would change when the tax structure is revised.

Each of the four tax changes would affect different vehicle classes to different extents. Depicted in Table 5 are the vehicle classes the revenues of which would be affected by the tax revision indicated. A change in gasoline tax would affect passenger car revenues most, although some of the single-unit trucks would also be affected. While either an increase in special fuel tax or a change in truck registration fees would affect both single-unit and combination trucks, the introduction of a third-tier weight-distance tax would have its impacts limited primarily to heavy combination trucks.

Option 1: Increasing of Gasoline Tax

A practically acceptable range of gasoline tax increase presented in various proposals submitted to the Indiana legislature was found to vary from 1.9 cents to 6.0 cents per gallon. The original gasoline tax was 11.1 cents per gallon. The proposed changes covered a range of 17.12% to 54.05% increase in gasoline tax.

Three cases are analyzed herein to illustrate the effect of gasoline tax changes. The first case represents an increase of 2.0 cents per gallon in gasoline tax; the second and third case 4.0 and 6.0 cents increase, respectively.

The results of these analyses are presented in Table 6 where the revised revenue/cost ratios for all the fourteen vehicle classes are computed for the three cases of gasoline tax changes. These results show that as gasoline tax is increased, the inequity gap between light vehicles and heavy trucks

widens. This trend is best illustrated graphically by a plot presented in Figure 1.

Table 5. Effect of Tax Revision Options on User Revenues

	<u>Vehicle Class</u>	<u>Increase Gasoline Tax</u>	<u>Increase Diesel Tax</u>	<u>Increase Truck Registration Fee</u>	<u>Third-Tier Weight-Distance Tax</u>
Passenger Car	1	X			
	2	X			
	5	X			
	8	X			
Bus	4		X	X	
Single-Unit Trucks	2	X	X	X	
	6	X	X	X	
	9	X	X	X	
Combination Trucks	7		X	X	X
	10		X	X	X
	11		X	X	X
	12		X	X	X
	13		X	X	X
	14		X	X	X

Note: X means that the revenue of given vehicle class would be affected by indicated tax revision.

The revenue/cost ratios of three generalized vehicle types are plotted against gasoline tax rate in Figure 1. Also shown in this figure is an equity line which is defined as a line parallel to the horizontal axis and has a revenue/cost ratio of unity. With a completely equitable tax system, one would expect the revenue/cost ratios of all vehicle classes to fall simultaneously on the equity line.

The plot in Figure 1 clearly shows a diverging trend of the three revenue/cost ratios away from the equity line as gasoline tax is raised. Revenue/cost ratios were also computed for 8 cents/gallon increase in gasoline tax and plotted in Figure 1 to show that as gasoline tax is increased further, both single-unit trucks and combination trucks would eventually be subsidized by passenger cars.

A conclusion which can be derived from the analysis is that increasing gasoline tax would further aggravate the inequity of the Indiana tax

Table 6. Equity Analysis for Tax Revision by Increasing Gasoline Tax

Vehicle Type	Vehicle Class	Existing Tax Rates	Revenue/Cost Ratio		
			Case 1	Case 2	
		2.0 cent Increase	4.0 cent Increase	6.0 cent Increase	Case
Passenger Cars	1	0.743	0.768	0.790	0.809
	2	1.365	1.408	1.446	1.479
	5	1.171	1.215	1.266	1.292
	8	0.963 (1.235)	1.012 (1.275)	1.037 (1.309)	1.086 (1.339)
Bus	4	0.830	0.768	0.716	0.671
Single-Unit Trucks	3	1.185	1.148	1.119	1.089
	6	0.848	0.814	0.781	0.752
	9	1.490 (1.133)	1.389 (1.089)	1.288 (1.051)	1.214 (1.017)
Combination Trucks	7	0.554	0.525	0.499	0.476
	10	0.645	0.608	0.570	0.542
	11	0.480	0.448	0.421	0.397
	12	0.625	0.580	0.541	0.507
	13	0.981	0.909	0.848	0.795
	14	0.468 (0.621)	0.434 (0.576)	0.405 (0.538)	0.379 (0.504)

Note: Values in parentheses refer to revenue/cost ratios of vehicle types.

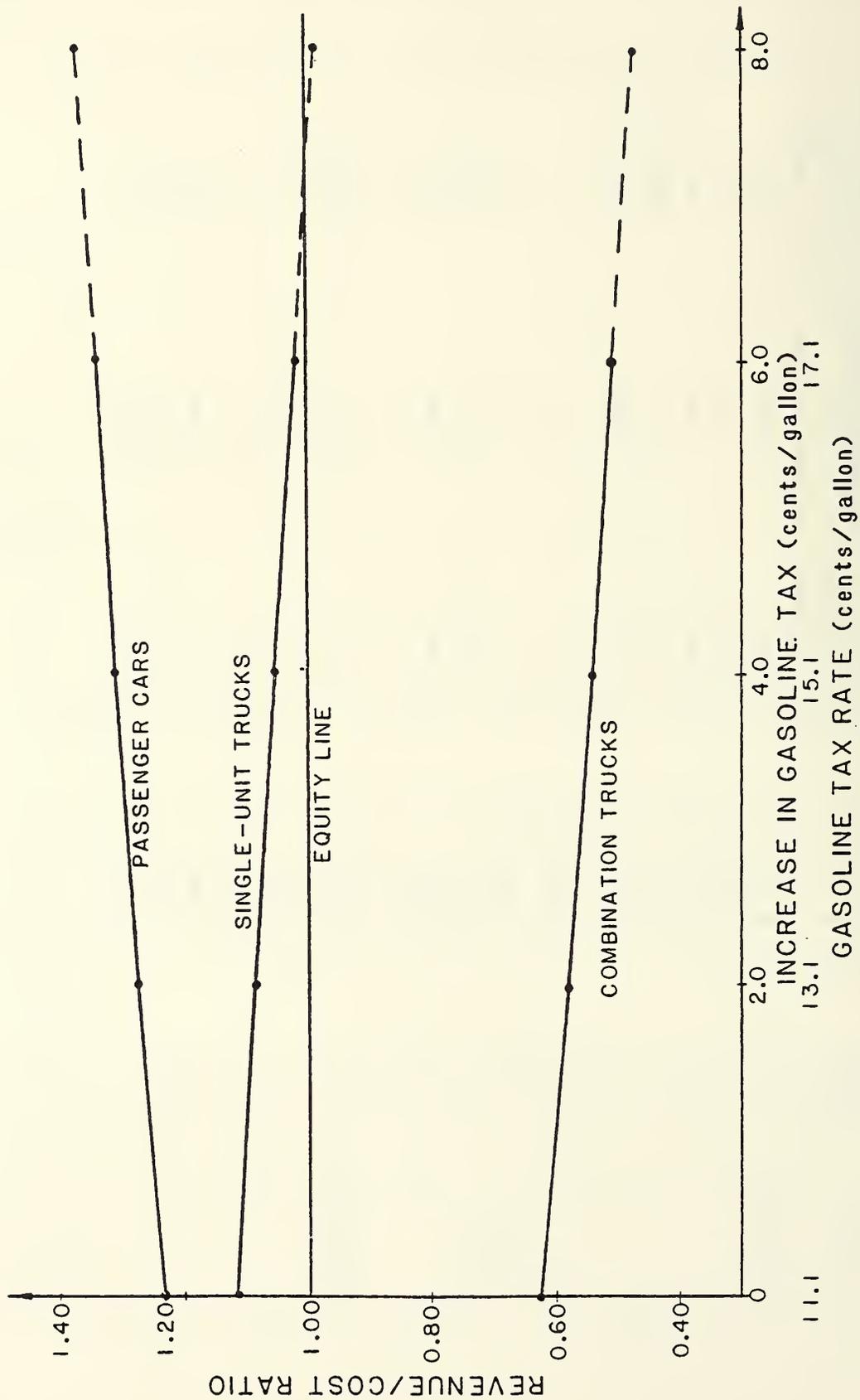


FIGURE 1 EFFECT OF GASOLINE TAX CHANGES

structure. Raising road fund revenues by the simple expedient of increasing gasoline tax would add more burden to passenger car owners.

Option 2: Increasing of Special Fuel Tax

There was no tax rate differential between state gasoline and diesel taxes in Indiana in 1983. Subsequent to the Indiana Highway Cost Allocation Study, it was felt that higher diesel fuel tax was required in order to achieve a more equitable taxation system. The amount of diesel fuel tax increase suggested in various proposals ranged from 4 cents to 12 cents per gallon. In terms of percentage change, it represented a range of 36.04% to 144.16% increase in diesel fuel tax.

To investigate the effectiveness of diesel fuel tax revision in improving the equitability of Indiana tax structure, four cases were analyzed as shown in Table 7. The resulted revenue/cost ratios for passenger cars, single-unit trucks and combination trucks are plotted in Figure 2 against diesel fuel tax changes.

All the three revenue/cost ratio lines converge toward the equity line of unit revenue/cost ratio. In theory, as depicted in Figure 2, it is possible to increase diesel fuel tax until the most equitable structure is reached. This most equitable tax rate is attainable with a diesel fuel tax increase of approximately 22 cents per gallon. This represents nearly 200% increase over the original tax rate and it is far beyond the maximum 12 cents per gallon increase considered acceptable by decision makers and/or politicians.

In practice, beside the equity issue, one must also take into consideration other short term and long term impacts a drastic increase in diesel fuel tax might have. For instance, the State of Indiana might lose a large amount of diesel fuel sales to its neighboring states as a result of imposing very high diesel fuel tax, thus defeating the original intention of increasing trucker's share of user revenues through diesel fuel sales. A drastic increase in diesel fuel tax therefore does not provide a stable long term solution to the inequity problem.

Option 3: Increasing of Truck Registration Fees

Raising truck registration fees is another way to increase truck operators' share of user revenue contribution. An increase of up to 35% for all truck registration fees was proposed and discussed in the Indiana legislature.

Table 7. Equity Analysis for Tax Revision by Increasing Diesel Tax

Vehicle Type cent	Vehicle Class	Existing Tax Rates	Revenue/Cost Ratio			
			Case 1 4 cent Increase	Case 2 8 cent Increase	Case 3 12 cent Increase	Case 4 16 cent Increase
Passenger Cars	1	0.743	0.717	0.692	0.669	0.648
	2	1.365	1.317	1.272	1.230	1.190
	5	1.171	1.129	1.090	1.054	1.020
	8	0.963 (1.234)	0.934 (1.191)	0.902 (1.151)	0.872 (1.113)	0.844 (1.077)
Bus	4	0.830	0.960	1.083	1.194	1.306
Single-Unit Trucks	3	1.185	1.154	1.124	1.297	1.071
	6	0.848	0.894	0.936	0.975	1.013
	9	1.490 (1.1337)	1.473 (1.122)	1.457 (1.112)	1.441 (1.102)	1.428 (1.094)
Combination Trucks	7	0.554	0.597	0.637	0.674	0.707
	10	0.645	0.785	0.910	1.009	1.140
	11	0.480	0.568	0.651	0.729	0.800
	12	0.625	0.693	0.756	0.815	0.800
	13	0.981	1.020	1.057	1.090	1.124
	14	0.468 (0.621)	0.455 (0.686)	0.443 (0.747)	0.432 (0.804)	0.422 (0.857)

Note: Values in parentheses refer to revenue/cost ratios of vehicle types.

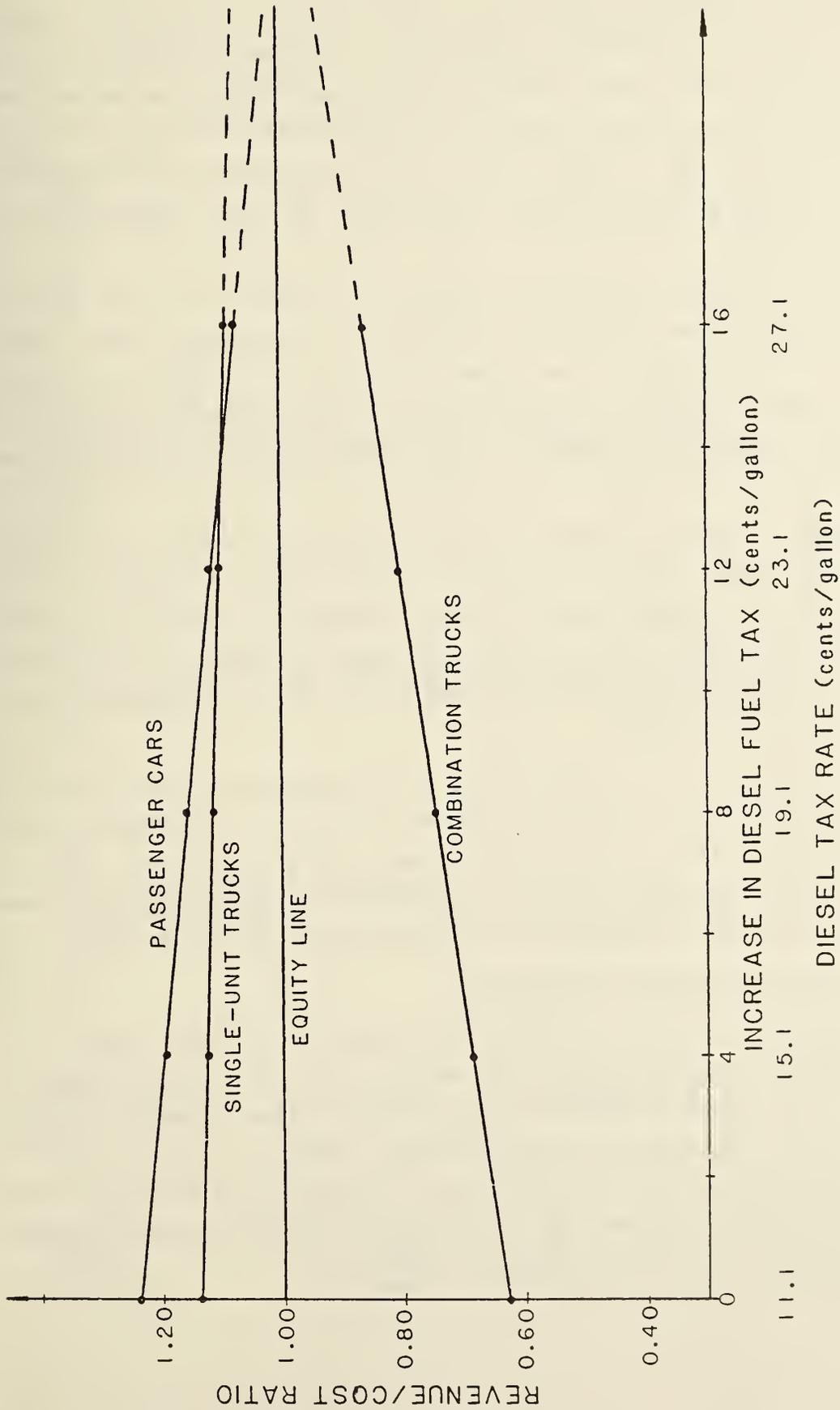


FIGURE 2 EFFECT OF DIESEL FUEL TAX CHANGES

The results of equity analysis for raising fees are presented in Table 8(a). These results are plotted in Figure 3 to highlight the effects of such raises. The plot reveals that while the inequity gap between passenger cars and combination trucks became narrower, the gap between passenger cars and single-unit trucks tended to widen after a fee increase beyond approximately 20%. There was also no improvement of equity between single-unit and combination trucks.

Instead of increasing registration fees for all trucks, one may opt for selective registration fee increase by raising only combination truck registration fees. This selective fee increase scheme was feasible in Indiana because, as shown in Table 2, single-unit trucks and combination trucks were classified into separate groupings in the Indiana vehicle registration fee schedule.

The results of equity analysis for this scheme are found in Table 8(b) and Figure 4. From the equity point of view, Figure 4 shows that the selective fee increase scheme offered a better solution than the earlier scheme in which all truck registration fees were increased uniformly. All the three revenue/cost ratio lines converge toward the equity line as combination truck registration fees are increased.

The plot, however, also reveals that the revenue/cost ratio changes of vehicle classes are quite 'inelastic' to percent increase in combination truck registration fees. Based on the 1983 Indiana tax structure and rates, it would take as much as 300% increase in combination trucks registration fees before a reasonable equity among various vehicle classes could be reached.

Option 4: Third-Tier Weight-Distance Tax

An alternative to raising the registration fees of combination trucks is to impose a third-tier weight-distance tax on those trucks. An advantage of weight-distance tax over registration fees is that it helps to reduce inequity between vehicles with greatly different annual mileages of travel (VMT). However, being merely a third-structure tax, it would not be able to eliminate completely the inequity between high and low VMT vehicles that were inherent with the existing first and second structure taxes.

Table 8(a). Equity Analysis for Tax Revision by Increasing All Truck Registration Fees

Vehicle Type	Vehicle Class	Existing Tax Rates	Revenue/Cost Ratio		
			Case 1 20% Increase	Case 2 35% Increase	Case 3 50% Increase
Passenger Car	1	2.743	0.725	0.712	0.700
	2	1.365	1.332	1.308	1.285
	5	1.171	1.142	1.121	1.102
	8	0.963 (1.235)	0.944 (1.205)	0.927 (1.184)	0.911 (1.163)
Bus	4	0.830	0.835	0.839	0.842
Single-Unit Trucks	3	1.185	1.284	1.354	1.423
	6	0.848	0.893	0.925	0.956
	9	1.490 (1.133)	1.638 (1.223)	1.742 (1.288)	1.842 (1.350)
Combination Trucks	7	0.554	0.547	0.542	0.538
	10	0.645	0.638	0.626	0.617
	11	0.480	0.474	0.470	0.466
	12	0.625	0.643	0.656	0.668
	13	0.981	1.027	1.060	1.093
	14	0.468 (0.621)	0.523 (0.638)	0.563 (0.651)	0.602 (0.664)

Note: Values in parentheses refer to revenue/cost ratios of vehicle types.

Table 8(b): Equity Analysis for Tax Revision by Increasing Combination Truck Registration Fees

Vehicle Type	Vehicle Class	Existing Tax Rates	Revenue/Cost Ratio		
			Case 1 20% Increase	Case 2 35% Increase	Case 3 50% Increase
Passenger Car	1	0.743	0.734	0.728	0.721
	2	1.365	1.349	1.336	1.324
	5	1.171	1.156	1.146	1.135
	8	0.963 (1.235)	0.956 (1.220)	0.947 (1.209)	0.939 (1.198)
Bus	4	0.830	0.846	0.857	0.868
Single-Unit Trucks	3	1.185	1.171	1.160	1.150
	6	0.848	0.838	0.831	0.823
	9	1.490 (1.133)	1.472 (1.119)	1.459 (1.109)	1.446 (1.099)
Combination Trucks	7	0.554	0.554	0.554	0.554
	10	0.645	0.645	0.645	0.635
	11	0.480	0.480	0.480	0.480
	12	0.625	0.651	0.670	0.689
	13	0.981	1.039	1.083	1.125
	14	0.468 (0.621)	0.531 (0.646)	0.576 (0.665)	0.620 (0.684)

Note: Values in parentheses refer to revenue/cost ratios of vehicle types.

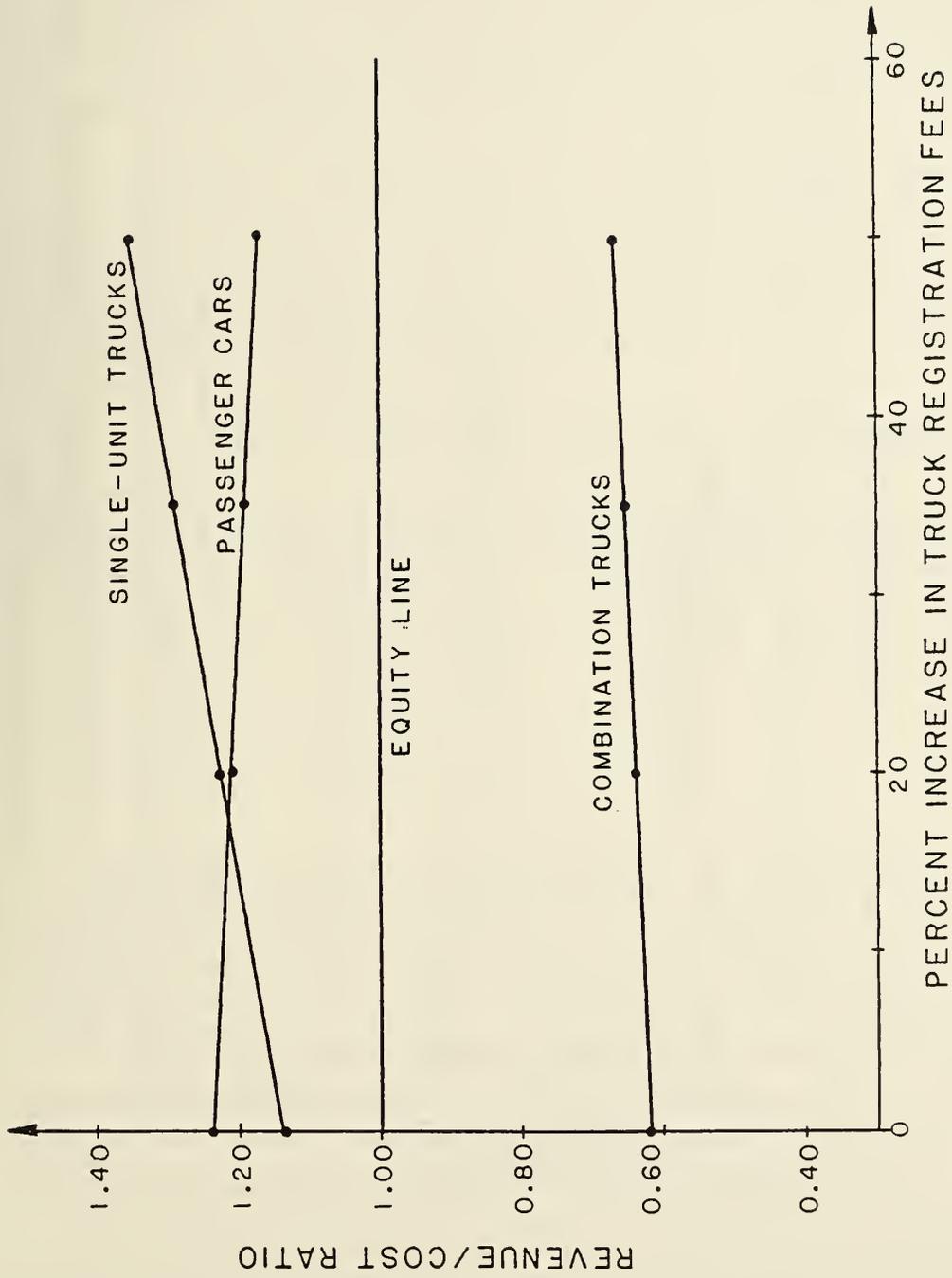


FIGURE 3 EFFECT OF INCREASING ALL TRUCK REGISTRATION FEES

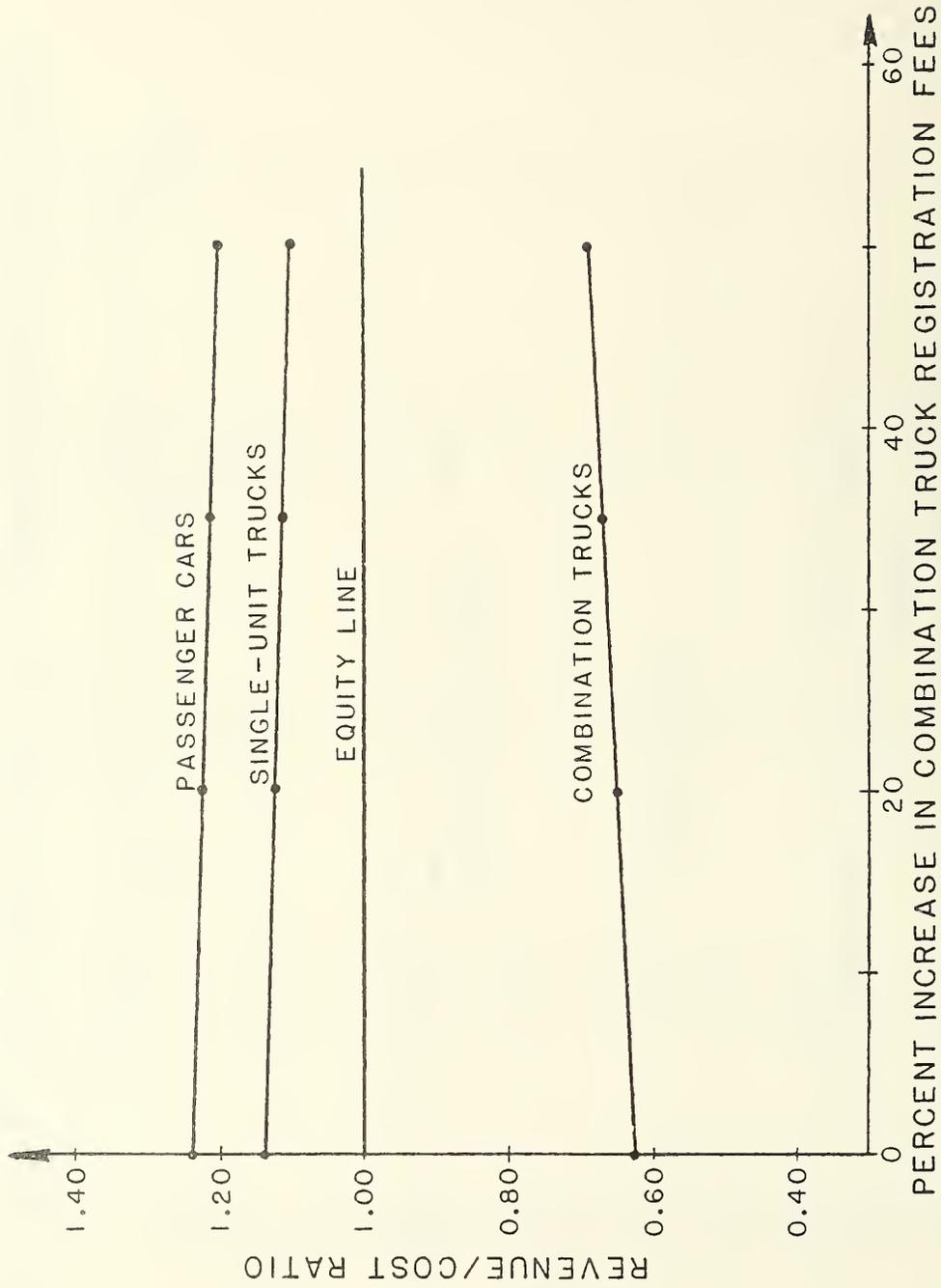


FIGURE 4 EFFECT OF INCREASING COMBINATION TRUCK REGISTRATION FEES

It is noted that this third structure tax was not recommended for single-unit trucks because, under the existing Indiana tax structure, these trucks were found to be overpaying their share of cost responsibility. This discrimination was proposed purely on the ground of achieving equity for all major vehicle classes. Such discrimination could be eliminated only if a total re-structuring of the existing tax system were carried out -- a change which was too drastic to be approved politically or implemented administratively.

The proposed weight-distance tax for each affected vehicle was calculated based upon its registered gross weight multiplied by the number of miles it traveled within Indiana. Using the 1983 Indiana data, the suggested tax schedule for different amounts of expected weight-distance tax revenues were computed and these are shown in Table 9.

Table 9. Third-Tier Weight-Distance Tax Schedule

Registered Weight (kip)	Revenue Yielded \$50 Million	Rate in Cents/Mile Revenue Yielded \$100 Million	Revenue Yielded \$150 Million
48 - 54	0.25	0.50	1.00
54 - 60	0.38	0.76	1.52
60 - 66	0.50	1.00	2.00
66 - 72	0.70	1.40	2.80
72 - 74	0.95	1.90	3.80
74 - 76	1.25	2.50	5.00
76 - 78	1.63	3.26	6.52
> 78	2.13	4.26	8.52

Revenue/cost ratios of vehicle classes for the different sets of tax schedules were computed in Table 10 and plotted in Figure 5. The plot shows that revenue/cost ratio lines converge toward the equity line up to about \$120 million revenue point. Thereafter the lines diverge away from the equity line. The most equitable rate schedule was the one that yielded approximately \$120 million in weight-distance tax revenue. This required revenue from equity consideration far exceeded the amount of \$50 million considered to be acceptable by decision makers and politicians.

The analysis above did not include the additional administrative costs, enforcement costs and the initial implementation costs for the imposition of the weight-distance tax. As it turned out, the third-tier weight-distance tax was not included as part of the Indiana tax revision effective in 1985. This was

Table 10. Equity Analysis for Tax Revision by Imposing Weight-Distance Tax

Vehicle Type	Vehicle Class	Existing Tax Rates	Revenue/Cost Ratio		
			Case 1 \$50 Million Revenue	Case 2 \$100 Million Revenue	Case 3 \$150 Million Revenue
Passenger Car	1	0.743	0.684	0.633	0.589
	2	1.365	1.256	1.163	1.082
	5	1.171	1.077	0.997	0.928
	8	0.963 (1.235)	0.890 (1.136)	0.824 (1.052)	0.767 (0.979)
Bus	4	0.830	0.762	0.705	0.657
Single-Unit Trucks	3	1.185	1.090	1.010	0.940
	6	0.848	0.781	0.723	0.673
	9	1.490 (1.133)	1.371 (1.042)	1.269 (0.965)	1.182 (0.898)
Combination Trucks	7	0.554	0.722	0.863	0.987
	10	0.645	1.000	1.290	1.546
	11	0.480	0.728	0.939	1.121
	12	0.625	0.797	0.943	1.070
	13	0.981	1.085	1.174	1.250
	14	0.468 (0.621)	0.505 (0.792)	0.537 (0.938)	0.565 (1.064)

Note: Values in parentheses refer to revenue/cost ratios of vehicle types.

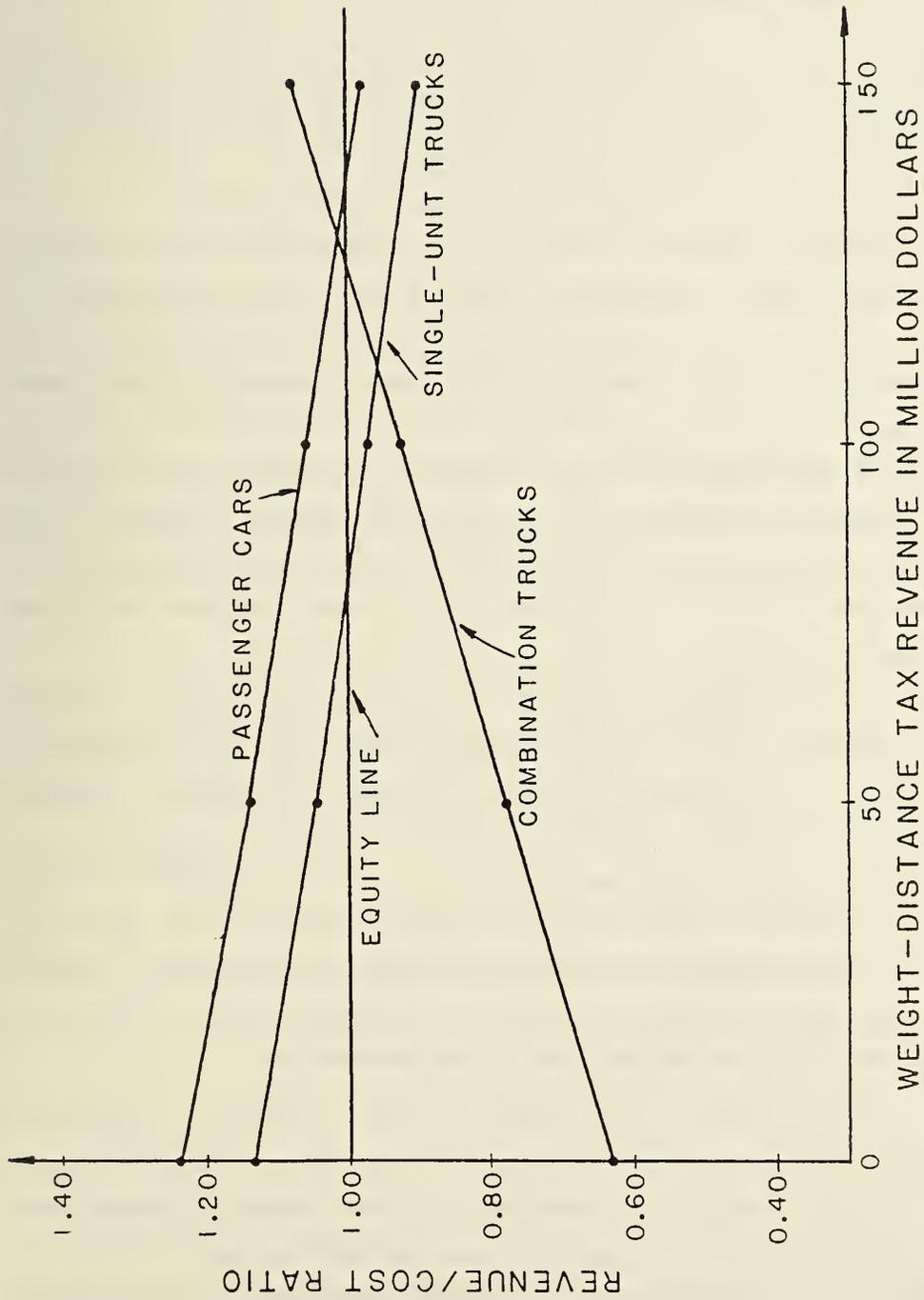


FIGURE 5 EFFECTS OF THIRD-STRUCTURE WEIGHT-DISTANCE TAX

based primarily on the reasoning that too much administrative and enforcement costs would be involved in such a scheme. However, experience in several other states (3,4,5) had indicated otherwise.

SUMMARY REMARKS OF EQUITY ANALYSES

The analyses carried out in the present case study of Indiana tax structure provide certain insights into the effects of various tax reforms on overall revenue contribution equity among different vehicle classes. The major findings pertaining to the Indiana study are summarized below.

1. Increasing gasoline fuel tax was not an equitable means of collecting a proportionate share of highway costs from various vehicle classes. Any such increase would put more tax burden onto passenger car owners, and widen the inequity gap between passenger cars and trucks.
2. Raising diesel fuel tax was found effective in bridging the inequity gap of revenue contribution by different vehicle classes. The amount of underpayment by combination trucks, and overpayment by both passenger cars and single-unit trucks were reduced as diesel fuel tax was increased.
3. The disparity of revenue contribution by different vehicle classes could be reduced by increasing registration fees for combination trucks. However, it was found that a substantial amount increase was needed to materialize a relatively small improvement in equity.
4. Weight-distance tax could be used as a third-structure taxing mechanism to obtain from various vehicle classes tax payments matching to their respective cost responsibilities. However, there is a strong resistance to such a tax due to expected high initial costs and administrative effort involved in its implementation.

In general, it may be said that diesel fuel tax increase, combination truck registration fees increase, and imposition of a third-tier weight-distance tax could all be used to reduce the inequity of the Indiana highway tax system. When adopted individually, each of these options appeared formidable due to the relatively large amount of rate changes required to reach equity among vehicle classes. However, a combination of these options could be adopted so that changes involved in each tax item would be within acceptable limits.

As an example, a tax revision of the 1983 Indiana tax structure could involve 10 cents per gallon increase in diesel fuel tax, 35% increase in combination truck registration fees, and a third-tier weight distance tax that would yield \$50 million in revenue. The resulted revenue/cost ratios for the three generalized vehicle types of passenger cars, single-unit trucks and combination trucks would be 1.029, 1.008 and 0.967 respectively. Other rate combinations would also be possible to give reasonably equitable tax system.

It should be noted that the equity analyses performed in this case study considered only equity among the major generalized vehicle types represented by passenger cars, single unit trucks and combination trucks. As can be seen from the results in Tables 6 through 8 and Table 10, the four options considered in this case study were not able to eliminate inequity among classes of single-unit trucks, or among classes of combination trucks. To attain equity among the classes of these generalized vehicle types, it would be necessary to re-structure the Indiana tax structure completely. For instance, this could be achieved with a tax system based upon axle weight and vehicle miles of travel (6).

It is also clear that the proposals discussed in this case study were not able to solve the problem of inequity between fuel-efficient vehicles and vehicles which were less fuel-efficient; neither did they address the inequity between vehicles with high and low travel mileages.

CONCLUSIONS

Many states today are still adopting the conventional highway user tax system that consists of a first structure, registration fees, and a second structure, fuel taxes. Cost allocation studies have found that the tax structures in many states are highly inequitable in that the tax payments of vehicles do not match their respective cost responsibilities.

Traditionally, one of the most commonly adopted means of securing additional highway funds at the state level have been to raise fuel taxes. The case study presented in this paper showed that this had the effect of increasing tax revenues primarily from passenger car owners. For many states where passenger cars are overpaying and combination trucks underpaying their respective share of cost responsibility, increasing gasoline fuel tax clearly does not provide an acceptable solution in terms of equity.

The case study concluded that reasonable equity among major groups of vehicle classes could be achieved by means of one or more of the following state taxing mechanisms: increasing diesel fuel tax, increasing combination truck registration fees, and imposing a third-tier weight-distance tax. A revenue/cost equity plot was found to be a useful and informative tool for examining the effectiveness of each tax revision scheme in reducing tax pavement inequity among vehicle classes. Although such plots were only used to analyze the equity among three generalized vehicle types, it could easily be applied in the same manner for equity analysis of vehicle classes within each generalized vehicle type.

The case study also revealed inherent weaknesses in a highway user tax system that relied primarily upon fuel taxes and vehicle registration fees. Fuel taxes cannot be used to correct inequity among vehicle classes of the generalized vehicle type. It also fails in getting the fair share of tax payment from fuel-efficient vehicles. On the other hand, while registration fees can be structured and scheduled to provide equity among vehicle classes, they are unable to provide equity between high and low annual-mileage vehicles.

To overcome these inequity problems, a tax structure has to be correlated in some form to vehicular operating characteristics that correspond to cost responsibilities. In this aspect, one of the most promising scheme appears to be a weight-distance tax with axle configuration and axle weight classification of vehicles.

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**PART III:
RECENT EXPERIENCES WITH BENEFIT ASSESSMENT FINANCING**

VIABILITY OF WIDE AREA ASSESSMENT DISTRICTS FOR FINANCING STREET, HIGHWAY, AND PARKING IMPROVEMENTS

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INTRODUCTION

Over the course of public works development in the United States, financing methods found acceptable by the public and private sectors alike have shifted in response to prevailing economic conditions, economic and social policy, and fashion. The precise definition of a public good, calculation of benefit received therefrom, and assessment of financing burden on those benefited has always been a rather loose science, with user fee financing on one hand and general taxation funding on the other setting the extremes of possible financial solutions to politically attractive or unattractive project needs.

It is apparent that the first 25 years following World War II were a period of unprecedented federal government involvement in funding of public works in the United States (now termed "infrastructure"), most visibly in the Interstate Highway System and several new mass transit systems. It is equally apparent that, beginning in the early 1970s, economic difficulties and changing social attitudes began to pull the government away from such a role. What has occurred since is a scrambling by state and local government to maintain service levels, repair and maintain existing infrastructure, and provide improvements or additions to that plant, all in the face of a voting public increasingly disillusioned with the lack of accountability in general taxation-based financing. Responding to pressure from the voters, as well as from a federal government administration exhorting the increased use of user fee financing methods and "privatization," local officials have turned with greater frequency to the use of special assessment districts for new infrastructure, particularly in developing or redeveloping areas.

This paper reports the progress and current status (as of October 1985) of two efforts to implement special assessment districts in the State of New Mexico. As presented in greater detail in the following section, these districts are unusual, even unique, in that state because of the attempt to

demonstrate the conference of benefit on a basis other than physical juxtaposition or mere proximity between improvement and benefited property. The projects for which assessment district financing is being sought are:

1. Freeway ramp and arterial improvements in a rapidly developing commercial activity center in Albuquerque; and
2. Three new off-street parking structures in downtown Santa Fe.

Both proposals indicate the growing desire of government to directly assess property owners and tenants either for special benefits received or for inadequate in-kind contributions mandated by other law (e.g., parking). The intent in New Mexico is to establish the legitimacy of areawide assessment methods. The results of these two efforts should give good indication of the likelihood of success in later efforts.

During the greater part of 1985, the author has been engaged as a consultant to the cities of Albuquerque and Santa Fe to assist in establishing a detailed economic and financial basis for implementing the two assessment districts. (Both efforts are independent and not related to one another.) Due to a variety of factors, greater progress has been made on parking assessment district in Santa Fe, though work continues on the Albuquerque project.

In this paper, key issues, concerns and uncertainties generically associated with the two projects are first discussed. Next, each project is described in more detail, including location and physical description, legal and financial background, analysis conducted and results, and current status and expectations. Finally, the principal findings and conclusions which can be drawn from the experience to date in Albuquerque and Santa Fe are presented and discussed.

LEGAL BASIS AND KEY ISSUES

The use of special assessment districts for such improvements as water and sewer improvements, local streets, and some drainage projects is not new in this country. Law dating to the early part of this century and before can be found in many states. In most cases, the key definition which has been the keystone for judicial support for the financing mechanism has been the concept of special benefit versus general benefit. A special benefit has been viewed as a demonstrable improvement to the value of specific properties in response to a specific action (e.g., construction of certain infrastructure),

something which is not universally nor equally shared by all properties within a given political jurisdiction. Imposition of financing burden for the improvement on this special set of properties is consistently termed an assessment. By contrast, any improvement or action which can be shown to more or less equally benefit all properties within a jurisdiction is termed a general benefit. Financing burden is therefore distributed among all property owners through a tax.

Historically, simple formulas have been used successfully for what are essentially linear systems such as water and sewer lines: frontage foot measurement, land area, and building area. In such cases it has been possible to demonstrate a physical tie-in between the new infrastructure and the benefited properties, and the length and/or area of the property has served as a surrogate for the relative prorated share of use derived from the improvement by any given property. The assessment, however, generally has been reduced to not much more than a straight proration of the total cost of the improvement.

New Mexico law now holds that the determination of the benefit of any improvement to any given property is independent of the cost of the improvement. Total benefit conferred on all affected properties can be, therefore, less or more than the actual cost of the improvement. The level of assessment, however, must be directly linked with the actual benefit conferred, and not on some method which merely prorates cost: "The governing body shall not assess the...parcel of land an amount greater than the actual benefit to the...parcel of land by reason of the enhanced value of the...parcel of land as a result of the improvement as ascertained at the (public) hearing..."⁹

The most critical concern in establishing a special assessment district, therefore, is making a good faith effort to establish a formula allowing measurement of benefit conferred to specific properties which is understandable, fair, and consistent. The front-foot method while of questionable validity for such improvement as water, sewer, and local streets, is totally without merit for such wide area facilities such as arterials, freeways, and parking

⁹Article 33, Chapter 3, Section 16.B of the New Mexico Statutes Annotated (1978).

garages. While the issue is still the same -- how much use (benefit) does an individual property obtain from the new facility -- the measurement of that use necessarily must be indirect.

Various court decisions have accepted the concept of change in market value of property as a clear indicator of the value conferred by an improvement. However, such a change can be difficult or impossible to measure directly, and other decisions have also accepted the validity of benefits which cannot be quantified monetarily. In general, review of contested assessments has dealt realistically with the inadequacy of the financial system in displaying all forms of benefit. To quote a City of Albuquerque report: "The question of determining the area benefited by a local improvement is generally held to be a legislative function, and not subject to judicial review unless shown to be arbitrary or unreasonable."¹⁰ They go on to state that the law leaves the method to be used up to the discretion of the governing authorities.

In addition to the basic concern of developing a legally and politically acceptable formula for determining benefit and calculating assessments associated therewith, numerous other issues cloud the process:

- Is the present use of a property the basis for determining whether (and how much) a property receives and special benefit from an improvement, or should potential future uses be considered? This is particularly important in an area where development activity is intense and many parcels are in transition.
- If improvements are made in redeveloping or intensifying areas, how is benefit (and assessment) to existing development measured and assigned when (presumably) the improvement has been "triggered" by new or additional development density?
- Is it valid to make a single determination of the benefit received at the time of implementation of the assessment district, with heavy reliance on present uses, or future uses? Can a jurisdiction determine a benefit (and assessment) on an annual basis, adjusting the

¹⁰City of Albuquerque, "Special Assessment District Policy (Draft), A Working Paper for Review and Comment by the City Council," January 1984.

formula to reflect new land uses and/or changes in district cash flow?

These points stress the uncertainties associated with creating fixed assessment districts; the two principal ones being: (1) changes in the relative use/benefit levels of the various assessed properties, rendering the initial formula outdated and unfair; and (2) changes in the financial performance of the district -- either income or expenses -- perhaps requiring changes in the formula in order to maintain solvency.

A review of case law by the City of Albuquerque and their counsel has indicated that future land uses should not be ignored in establishing benefit formulas, and the "future and indirect uses may be considered so long as such uses are not speculative, and that future benefits may be considered if such benefits are reasonably sure to be realized within a reasonable time."¹¹ An assessment can actually exceed the current value of the property if there is sufficient cause to believe that future benefits will be forthcoming.

The question of establishing a single benefit level for the duration of the special assessment district (whose time period is typically keyed to the term of revenue bonds supported by the assessments) is not well-covered by case law, and in any event is more of a political question. As will be described in the section addressing the Santa Fe parking district, secure knowledge of future assessment levels becomes a "must" in obtaining sufficient business support.

Other financial, administrative, and political issues and considerations which bear on the analysis of assessment districts include:

- The validity of applying assessment district proceeds to projects which have been constructed using other funding sources;
- The administration of the assessment program, often balancing equity and revenue potential with simplicity, enforcement, and cost; and
- The implementation process itself, which must allow for review and protest by affected property owners, but must also allow the district to become operational within a reasonable period of time.

¹¹Op cit., City of Albuquerque, 1984.

All of the issues presented in this section are present to a greater or lesser degree in the two projects which are the subject of this paper. The narrative in the following sections will highlight relevant issues where appropriate as the projects are described. The final section will take up each issue in turn and summarize what can be concluded based on experience to date.

UPTOWN SECTOR SPECIAL ASSESSMENT DISTRICT - ALBUQUERQUE, NEW MEXICO

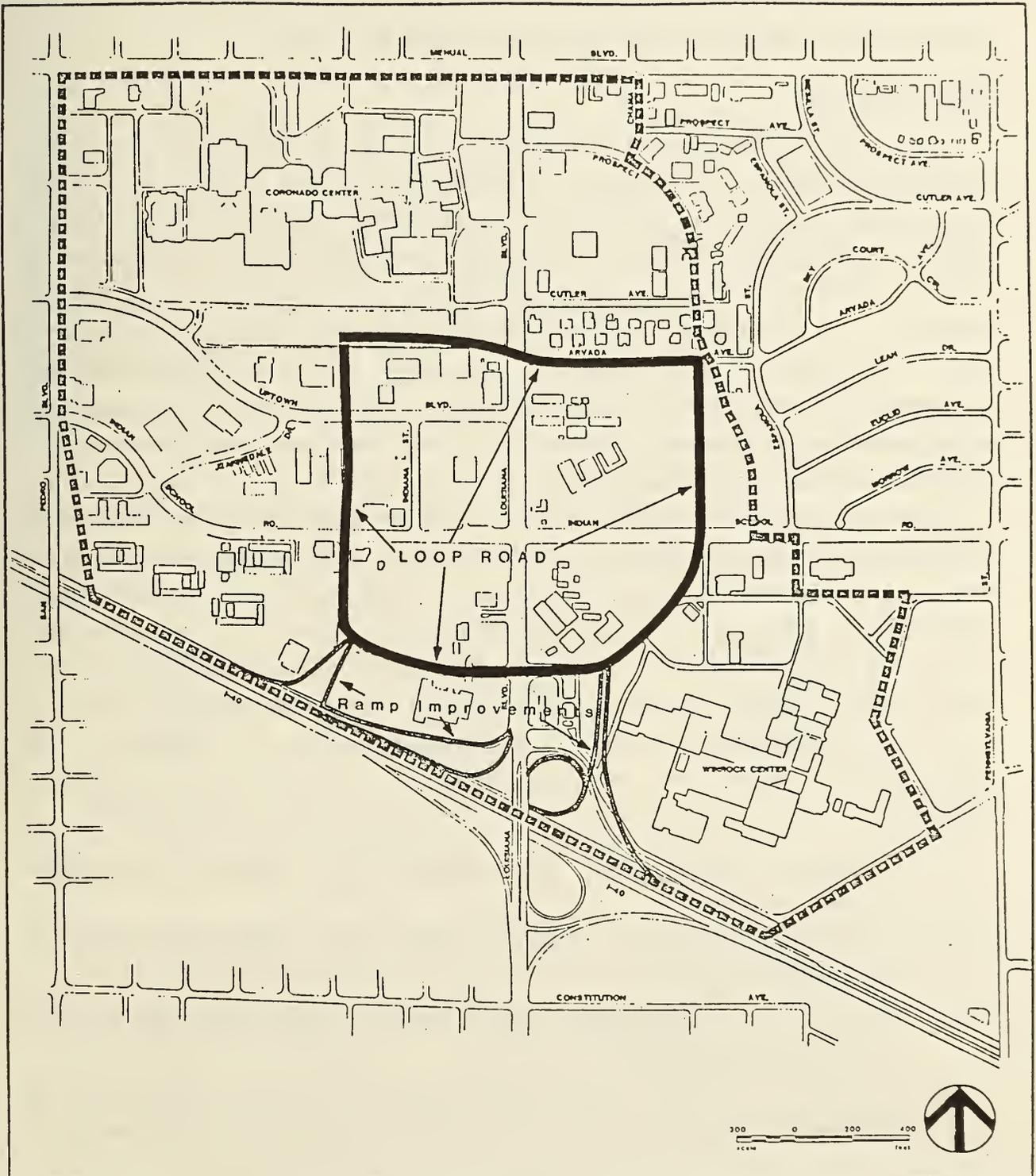
Study Area/Project Description

The Uptown Sector, located about five miles northeast of downtown Albuquerque at the intersection of I-40 with Louisiana Boulevard, is one of four Metropolitan Urban Centers specified in the Albuquerque/Bernalillo County Comprehensive Plan. The Urban Centers have been designated as areas for intensive development activity, designed to accommodate much of the projected commercial growth in the Albuquerque metropolitan area within fixed boundaries in order to avoid possible deleterious impacts on the city's many residential neighborhoods. Outside of the CBD, the Uptown Sector is one of the largest employment centers in the region.

The Uptown Sector (Figure 1) presently contains one of the largest concentrations of retail space in the western United States, with over 1.8 million square feet contained in two regional shopping malls and several smaller concentrations within the 0.25 square mile area. It is also presently the site of extensive office development activity and one first class hotel. Additional hotels, office, and retail expansion are planned.

To handle projected growth in the Uptown area, various circulation improvements have been proposed, including expansion and modifications to the existing surface street system and improvements to nearby I-40/Louisiana Boulevard ramps. Two of the proposed circulation improvements have been identified by the city as candidates for at least partial financing through the creation of a special assessment district (SAD) coterminous with the Uptown Sector itself. These improvements are:

1. Construction of an entirely new "loop road" to provide internal circulation; and



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UPTOWN AREA SPECIAL ASSESSMENT STUDY
Uptown Sector Core - Study Area

FIGURE

1

2. Construction of additional I-40 ramps and a collector/distributor road to improve traffic flow through the interchange.

The estimated costs for the two projects are \$2.3 million for the loop road and slightly less than \$2 million for the I-40 ramps and C/D road. Both of these figures do not include right-of-way and escalation.

Study Approach

The City of Albuquerque commissioned a study to investigate and evaluate the feasibility of creating an "areawide" assessment district for the Uptown Sector to cover the design and construction costs of the two projects listed. Right-of-way costs were explicitly excluded from consideration by statute. The concept of an areawide district, where many -- if not the majority -- of properties would not directly abut the proposed improvements, was at the time of study inception completely untested in the city (and probably the state). It remains so today. Virtually all SADs previously implemented have been on a benefit allocation measure using linear feet of property fronting on the improvement.

It was determined early in city investigations that the "front-foot" method would not be suitable for improvements providing a benefit to all commercial property owners in the sector, regardless of specific location. Accordingly, the study was designed to focus on identifying and evaluating alternative benefit allocation formulas. After an initial technical assessment of the viability of various measures, those most preferred by the consultant and city staff would be presented to the property owners for comments. The study would conclude with a final recommended approach to take to the City Council.

The primary considerations in undertaking the selection of a benefit allocation measure were:

- Selecting a measure or measures which were clearly understandable to property owners;
- Focusing on transportation-based measures due to the nature of the proposed improvements;
- Accounting for the general public benefit to traffic moving through the Uptown Sector but without an origin or destination there; and

- Accounting for the fact that the intensity of development varied tremendously throughout the sector, and that the land use of any given parcel was likely to change within the planning horizon.

After an initial review of alternative assessment measures, a decision was made to focus on direct, use-related approaches. Estimates of future levels were made based on known and presumed development plans and standard ITE trip generation rates for various land uses. The traffic volumes were then used to calculate travel distances and time both with and without the two improvement projects. Any reduction in the aggregate vehicle mileage and vehicle-hours of travel through the study area would be a definite, quantifiable benefit of the projects. In particular, values of time based on current wage rates could then be used to convert time to dollars.

Preliminary Results

Existing and future land use were compiled for each of the major quadrants of the study area in order to formulate a basis for estimating future traffic levels. A combination of future year employment estimates generated by the Middle Rio Grande Council of Governments and prototypical plans released by developers were used for 1995 and 2010 forecasts. Estimates by major land use category for the years 1980 and 1995 were as follows:

	<u>1980</u>		<u>1995</u>	
Office	896,936	s.f.	2,639,496	s.f.
Retail	1,883,198	s.f.	2,477,898	s.f.
Services	488,098	s.f.	488,098	s.f.
Other	125,908	s.f.	125,907	s.f.
	<u>3,394,140</u>	s.f.	<u>5,731,400</u>	s.f.

Total building area to be added in the Uptown Sector by 1995 came to over 2.3 square feet. An additional 1.0 million square feet was forecast by the year 2010, representing a virtual doubling over the 30-year period.

Due to the types of land uses forecast for the sector, total trip-making in the area was not forecast to double, but rather to increase by 70 percent. Through travel was forecast to increase by 18 percent over the same 30-year period. The average daily travel (trip) figures (ADT) are as follows:

	1980	1995	2010	Percent Change 1980 - 2010
Project Area	129,648	167,276	219,506	69.3%
Through Travel	120,460	131,200	142,200	18.0%

With these figures, it was then possible to calculate vehicle-miles travelled (VMT) and vehicle-hours travelled (VHT) for that portion of all trips passing through the study area. Further, the figures could be determined for "no build" and with-project conditions, and could be separated into study area and through travel categories. The results of these calculations are as follows (daily totals):

	1995				2010			
	No Project	With Project	Diff.	%	No Project	With Project	Diff.	%
Project VMT	139,854	140,816	*	-	184,498	183,946	552	-
Through VMT	187,462	188,399	*	-	203,632	204,542	*	-
Project VHT	9,172	6,595	2,577	71%	15,837	10,852	4,985	75%
Through VHT	10,056	8,991	1,065	29%	12,269	10,647	1,622	25%

Note: * denotes increase.

The analysis revealed actual distance benefits to be minimal or negative -- that is, the projects actually resulted in autos taking longer paths to achieve reduced travel times. Travel time benefits, on the other hand, were substantial. Over 2,500 vehicle hours would be saved on a daily basis by study area-generated traffic in the year 1995; this figure would increase to almost 5,000 daily vehicle hours by 2010. Project (study) area traffic would account for 71 percent of the total savings in 1995, and 75 percent in 2010.

Applying a nominal value of \$6.00 per hour of vehicle time saved, the resulting benefits to drivers on a daily and annual basis would be:

	1995		2010	
	Daily	Annual	Daily	Annual
Project	\$15,462	\$4,793,220	\$29,910	\$ 9,272,100
Through	6,390	1,980,900	9,732	3,016,920
TOTAL	\$21,852	\$6,774,120	\$39,642	\$12,289,020

These figures assume 310 "weekday equivalents" per year, and do not reflect the value of travel time savings to passengers.

Analysis

In a context where the benefits figures just presented would be used to allocate costs (rather than indicate actual benefits), between 25 and 30 percent of the cost would be assigned to the City's general budget to cover the benefits to through-travelers. The remaining 70 to 75 percent would be allocated to various property owners in the district.

Given the high value of the estimated benefit relative to the estimated construction cost, all of that cost could be assigned to the property owners and the city with considerable benefit left over. While some direct benefit to auto operators and passengers would be assigned to property owners in this manner, the true quantitative benefit -- financial return -- would accrue almost entirely to property owners and their tenants. Consequently, little or no distortion in the benefit/burden equity equation would result with this approach.

The assessment mechanism could be implemented in one of two ways, as described in the preceding discussion of key issues. First, a fixed formula could be established at the outset of the district which would remain unaltered until all associated revenue bonds were retired. Alternatively, provision could be made for periodic adjustment of the formula to reflect projected (or unexpected) changes in land use and development patterns.

The very definition of the Uptown Sector in Albuquerque suggests that the first approach could be used with a maximum of fairness and simplicity of administration. The area has strict boundaries and, subject to certain site and design characteristics, has been zoned for potentially unlimited density. The implication of this deliberate omission of density limits is that all parcels within the sector have theoretically similar market potential, subject to some variation in access characteristics. Thus, the view that properties should be assessed not merely on the basis of their current development characteristics but also on what they can become finds a compatible setting in the governing philosophy of the Uptown Sector plan. Surrounding residential areas are protected from redevelopment at higher densities, and are also not subject to special assessments for improvements they do not need.

The result of this approach in establishing an assessment formula is that assessments are made primarily on the basis of land area, subject to some

modifications to reflect differences of access and visibility for various parcels. The basic problem with this approach is that real differences exist in the trip generation characteristics of retail, office, and other miscellaneous uses. Merely having the potential to develop property in one of several possible uses avoids the reality that ultimately a given type of project will be chosen (e.g., midrise office) with specific traffic generation characteristics that differ from other parcels within the assessment district. Assessing all property owners only on the basis of land area introduces distortions in the benefit/burden relationship.

The alternative to the flat, initial assessment formula based primarily on land area in one that is based predominantly on building area. It is, of course, building area and the employment housed therein that determines trip generation and the amount of traffic added to adjacent streets and highways. Assessing on the basis of building area allows trip generation rates by type of use to be introduced, and also provides the most direct relationship between traffic put on the street (the benefit received by having that traffic carried more efficiently) and the financial burden assessed. Such a formula can also be modified on a periodic basis (e.g., annually) to reflect the addition or removal of building area to or from the sector pool, or "base." The practical effect of this flexibility in a redeveloping area is to lower assessment rates for existing properties as new projects are brought on line. It also allows the remote possibility of increases in rates for some owners in the event of major failures and abandonment of projects, something not requiring serious attention at this juncture.

Current and Near Term Activities

As of this writing, the Uptown special assessment study is somewhat delayed, though still underway. Acceptance of the basic formula approach using trip generation has occurred at the staff level, and an order-of-magnitude estimate of the benefit -- over \$6 million in 1995 -- has been reviewed. Subsequent steps include documenting the two alternate formulas described in this paper (above), calculating the financial implications of the formulas on various property owners, and presenting these concepts to City staff, the affected owners, and decision-makers. Albuquerque staff continue to seek implementation of the district and are eager to establish this precedent for use elsewhere in the city.

DOWNTOWN PARKING ASSESSMENT DISTRICT -- Santa Fe, New Mexico

Study Area/Project Description

The modern city of Santa Fe, New Mexico, is a growing center of government, commercial, and tourism-related activity operating in a compact downtown urban environment. As with most moderate-size cities serviced primarily through the private automobile, downtown Santa Fe is currently experiencing increasing demand for parking, a demand which is being only partly met through the construction of new private facilities. Many of the older buildings which generate parking demand provide limited or no onsite parking, a fact arising from their construction well before the present shortfall, or indeed before the invention of the automobile.

Through a series of investigations beginning in 1982, the City of Santa Fe has been studying the growing parking problem and evaluating ways of addressing it. Forecasts of future demand and private additions to supply have served as the basis for estimating a need for new public parking facilities. A review of available sites for new public facilities has led to identification of three existing public lots as those sites which would minimize both the cost and adverse impact of new structures.

A study of financing alternatives has considered traditional municipal sources and mechanisms as well as directed special taxes and user fees. In particular, the City has given considerable attention to the option of creating a special assessment district for parking activities to cover all or a portion of the City's Business Capital District (BCD). The assessment district would be for the purpose of directly tapping some of the benefits that downtown property owners and merchants would receive from the construction of additional off-street parking.

Study Approach

Development of three proposed new parking facilities and formulation of financing programs for their implementation reached the point in early 1985 where serious design activity was underway and action was required to secure necessary financing. Several related investigations were undertaken in May and June of 1985 to assist in preparing a final implementation plan for the BCD parking assessment district.

The investigations addressed the following issues and information requirements:

- Review of locations, sizing and staging of three proposed facilities: Water Street, Sandoval Ramp, and Sweeney Center;
- Estimation of construction costs, total capital costs, and resulting debt service requirements;
- Forecast of net parking revenues available for capital uses;
- Review of alternative capital funding sources and mechanisms; estimation of the revenue requirement from an assessment district;
- Study of alternative assessment formulas and evaluation based on considerations of revenue sufficiency, economic impact, and equity;
- Study of alternative assessment formulas based on assumed deferral of the Sweeney Center facility;
- Formulation of a pro forma financial (cash flow) statement covering a 20-year period; and
- Evaluation of the proposed assessment district with recommendations for additional investigation and refinement.

The analysis was based on earlier studies which established an accepted scenario of future parking needs and specific capital project solutions to those needs. The focus of this study was on the financial implications of implementing the recommended projects and, most importantly, the financial implications for downtown property owners and tenants potentially affected by the assessment district.

Related Findings

The demand forecasts and proposed implementation schedules for the three parking structures -- Water Street, Sandoval Ramp, and Sweeney Center -- were reviewed and generally confirmed. It was determined that each facility could be designed and constructed over a 14-month period, with essential completion occurring late in the years 1986, 1987, and 1988.

The capital costs of the facilities were estimated using recent construction experience. Total costs, including four percent annual inflation but excluding financing, were calculated as follows:

	<u>Direct Costs</u>	<u>Design and Other Costs</u>	<u>TOTAL</u>
Water Street	\$2,070,000	\$265,500	\$2,335,500
Sandoval Ramp	2,230,700	278,700	2,509,400
Sweeney Center	<u>3,355,100</u>	<u>415,600</u>	<u>3,770,700</u>
TOTAL	\$7,655,800	\$959,800	\$8,615,600

Debt service requirements for revenue bonds sufficient to cover these capital costs were estimated in conjunction with the City's financial advisor. Under a set of assumptions thought most likely to apply to the anticipated implementation period, total debt service requirements for three bond issues covering the three facilities came to approximately \$1.34 million annually (1.0 coverage).

A review of alternative funding sources addressed the following options: general funds, revenue sharing, parking fund operating surplus, capital improvement funds, lodgers' tax funds, and the BCD assessment district. The first two sources were eliminated from further consideration, while uncertainties surrounding the availability and applicability of capital improvement funds caused that mechanism to be classed as a secondary choice.

Projections of operating revenues and costs indicated that the parking program could generate an average annual surplus of more than \$300,000 over the period 1985 - 2005. Preliminary legal opinion indicated that a portion of the city lodgers' tax could be applied to offset expenses or support debt service payments for the Sweeney Center facility located adjacent to the Sweeney Convention Center. A conservative estimate of the amount available from this source was \$165,000 annually.

After deducting the revenue provided from operations and the lodgers' tax, the total amount of funding required from the BCD parking assessment district for the three proposed garages was estimated to equal approximately \$864 thousand annually. Based on uncertainties regarding capital costs and financing terms, this figure could vary by approximately 15 percent.

Assessment District Analysis

In creating an assessment district for parking improvements within the Santa Fe BCD, the following factors were considered:

- The amount of onsite parking currently provided by each property owner;
- Parking generation rates for various land uses;
- Distance from a given property to the nearest parking facility; and
- The ability to create separate districts for each of the three facilities, or one combined district for all three.

The primary consideration in establishing the basis for determining which properties would be assessed was the amount of onsite parking provided by the property owners. A recently-enacted city ordinance set onsite parking requirements as follows:

- Retail - one space/350 square feet
- Office - one space/500 square feet
- Hotel - one space/room

Properties meeting or exceeding these requirements would not be assessed; they would not be included in the assessment base. Properties not meeting these requirements would be assessed in direct proportion to their parking space deficit -- namely, by the number of spaces by which they fell short of the zoning requirements.

An inventory was made of existing land use and available private parking within the 60-block assessment district within the BCD (Figure 2). For each property, it was determined whether sufficient parking was provided to meet code or, if not, the size of the parking "deficit" was calculated. In this manner, the total parking deficit was calculated for the entire proposed district. This figure then served as the assessment base, or the factor by which the total financial requirement of the district was to be prorated over all property owners showing a parking deficit. The parking space deficit for each property was later reconverted to equivalent square footage (retail or office) in order to provide an assessment rate defined in familiar terms -- e.g., dollars/square foot.

There was strong agreement between city staff and the consultant team that the assessment formula should be sensitive to distance -- that is, the owner of a property some distance from a proposed facility should not be assessed at the same rate as one located adjacent to it. As a result, alternative formulas were created using various numbers of benefit zones, these

Santa Fe Parking Assessment District Study

Land Use Benefit Zones
Single District/Two-Zones
Alternative

- Zone 1 Retail
- Zone 1 Office
- Zone 2 Office/Retail

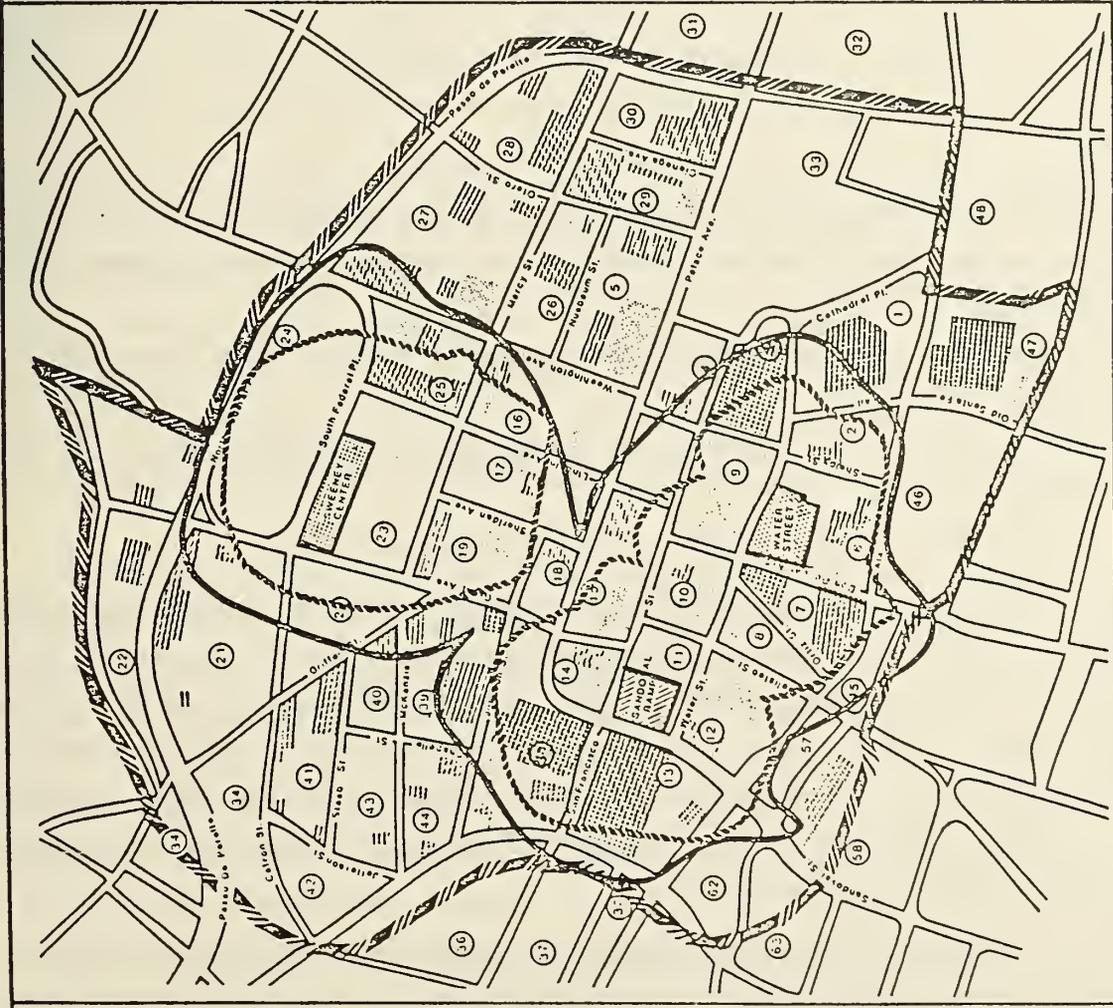


FIGURE 2



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based on standard industry factors showing "willingness" to walk for various activities:

	Zone 1 (Primary)	Zone 2 (Secondary)	Zone 3 (Tertiary)
Office	0 - 400 ft.	401 - 600 ft.	601+ ft.
Retail	0 - 280 ft.	281 - 420 ft.	421+ ft.
Hotel	0 - 150 ft.	None	None

An alternative using two benefit zones instead of three was also tested. In this instance, the primary and secondary zone definitions shown above were combined into a single primary zone, while the former tertiary zone became a secondary zone.

Factors, or "weights," were defined in advance to reflect perceived ratios in the level of benefit received by a property owner in one benefit zone versus another. In a three benefit zone case, these ratios were 6:3:1 (e.g., primary is six times tertiary). For a two-zone case, a ratio of 7:3 was used.

In order to test the final factor listed at the beginning of this section (single versus multiple districts), the following three alternatives were developed and tested:

- Alternative 1 - Three benefit zones/Each facility in a separate district
- Alternative 2 - Two benefit zones/One combined district for the three facilities
- Alternative 3 - One benefit zone/One combined district

The first alternative represented an attempt to match benefit and burden as closely as possible. Each parking facility would have its own set of three benefit zones, or a combined total of nine zones for the assessment district as a whole. Thus, any given property owner could fall into any combination of benefit zones -- e.g., Zone 3 for one facility, Zone 1 for a second, and Zone 2 for a third. The result of this attempt at maximizing equity would be considerable numerical complexity.

The third alternative was designed to be the direct opposite of the first. Establishing one benefit zone in a combined district would eliminate distance as a factor in the formula, but would be simple to calculate and explain.

Alternative 2 was conceived as a compromise between the first and third options. Using one combined district and two benefit zones would simplify calculations, but some measure of distance would remain. (This option is shown in Figure 2. The detailed analysis is shown in the following table.)

The assessment rates which resulted from these calculations are shown here on a parking-space and equivalent square-foot basis:

	Three-District/ Three-Zone		Two-Zone Areawide		One-Zone Areawide
	Minimum	Maximum	Minimum	Maximum	
<u>(Per Space)</u>					
Retail	\$175.00	\$602.00	\$171.00	\$399.00	\$320.00
Office	175.00	625.00	171.00	399.00	320.00
<u>(Per Square Foot)*</u>					
Retail	0.50	1.72	0.49	1.14	0.91
Office	0.35	1.25	0.34	0.80	0.64

*It should be carefully noted that these figures are for parking spaces reconverted to equivalent square footage using the zoning formulas: one space/350 s.f. retail and one space/500 s.f. office. When considering actual building square footage for a given property, the rates shown would apply only in the case when no onsite parking was provided. In that case, actual building floor area would have been converted to parking spaces and then simply back again. If some onsite parking was provided, the rates shown in this table would be reduced by the ratio of the parking provided to the parking required. Thus, in a building which provided exactly one-half of its required parking, the actual assessment rate per square foot of actual building floor area would be exactly one-half of the rate shown in the table.

As described, the three-zone/three-district alternative produced the most equitable relation between assessment and accessibility to parking. However, it also produced unacceptably high assessment rates for certain properties. The one-zone areawide district produced a uniformly lower rate, but did not relate assessment to accessibility. The two-zone/one-district option offered a possible compromise by providing some relation between assessment and access, while creating rates which were in general, not significantly higher than those for the one-zone option.

In no case did the resulting assessment exceed 10 percent of prevailing rental rates in the BCD. In most cases, the required assessments were approximately five percent of current rents. On a per space basis, none of

the required assessments exceeded the annualized capital cost of a new garage parking space (\$6,000/space equals \$753/year).

Evaluation and Refinement

Upon presentation of these findings in draft form, it was determined by city staff that an assessment rate of more than \$0.50/s.f. would be found unacceptable by downtown property owners, a politically unacceptable situation for the city council. As a result, two further alternatives were considered:

- Defer the Sweeney Center facility indefinitely; or
- Contribute citywide capital improvement funds (CIF).

In the end, the second option was accepted as the most viable in view of (1) the perceived real need for the Sweeney facility and (2) the correct observation that some benefit from the facilities would accrue to the general public and that they should contribute to the facilities through the CIF. A second, tentative breakdown of funding sources necessary for the annual debt service on the three facilities was established in order to maintain the \$0.50 cap on assessment rates:

Operating Surplus	-	\$ 312,494	(23%)
Lodgers' Tax Proceeds	-	165,000	(12%)
Capital Improvement Funds	-	400,000	(30%)
Assessment District Proceeds	-	<u>464,075</u>	(35%)
TOTAL		\$1,341,569	

Current Activities

As of this writing (October 1985) Santa Fe city staff are preparing the proposal for the downtown parking assessment district for action by the parking committee, finance committee, and the city council. In the event of adoption in the form presented here, the following activities will occur:

- Detailed and final inventory of land use within the district;
- Refinement of financial projections and calculations of assessment rates for each property;
- Review of proposed formula, process, and rates with property owners;
- Protest hearing;
- Adoption of district;

- Establishment of administrative procedures;
- Selling of bonds for first facility; and
- Beginning of the annual assessment process.

It is anticipated that the assessments will be phased in according to the proposed schedule of facility construction. It is estimated that approximately six months will be required after approval by city council to implement the basic machinery of the district and begin collection of assessments for the first garage. Full assessment levels will be reached in about three years.

SUMMARY AND CONCLUSIONS

At this time, the areawide assessment district is an administratively new and legally untested concept in the State of New Mexico. In the frequent case where an infrastructure improvement clearly provides benefit to an area larger than that which is physically adjacent or proximate to the new facility -- e.g., regional arterials/thoroughfares and parking structures -- an assessment formula based on indirect usage factors becomes compelling, if not essential. While it is still too early to foretell the ultimate success of their efforts, actions by the cities of Albuquerque and Santa Fe indicate both a willingness to proceed with concrete actions and a faith in the legal, political, and economic validity of the approach.

The principal conclusions to be drawn from the current experience in these two cities include the following:

1. The allocation of special benefit among possibly several beneficiary groups must be accomplished in an orderly, understandable manner, with maximum reliance on straightforward usage factors.
2. It is not necessary to be absolutely precise in these calculations, but rather to convincingly derive the order of magnitude of the benefit and show where the preponderance of the benefit falls. Case law is clear in overturning formulas only where there is obvious distortion or manipulation of figures in order to obtain predetermined results.
3. For roadway improvements, special districts can be created using traffic generation factors in areas where specific types of land uses can be segregated. The Uptown Sector in Albuquerque is an excellent example of these conditions. By contrast, mixed use areas which are presently built out and undergoing only modest levels of redevelopment are poor candidates for this method.

4. The issue of fixed assessment levels versus variable formulas remains open to legal challenge in New Mexico. The two methods are best applied in different circumstances -- the first where development is complete or a single large project is involved; the second where numerous development projects are separately controlled and phased over many years. As a generalization, the second method provides a better match of benefit and financial burden and also allows administrative flexibility to address unexpected situations. However, it is also subject to greater political and (potentially) legal resistance from affected property owners due to the inherent uncertainty in future rate levels.
5. Matching benefit with burden, while a fundamental requirement of special assessment districts, must be critically examined in light of political and administrative realities. The experience in Santa Fe indicates that highly complex formulas (three benefit zones/three assessment districts) can become too difficult to comprehend by lay people, and can result in values that are objectively "fair" but politically completely unacceptable to the majority of those involved. It appears that a certain level of crudeness in an assessment formula can be tolerated in exchange for clarity of principal and results which reflect a consensus of subjective opinion.

Use of special district financing is often preferred by policy makers in that it isolates potential opposition and addresses the current mania of laying the cost "where it belongs." The ultimate success of wide area districts in various parts of the country is highly dependent on specific legal, political, and economic conditions; general predictions, unfortunately, are not possible. The New Mexico experience indicates that implementation of these districts can be difficult, time consuming and relatively expensive. That experience also indicates, however, that reasonable, consistent formulas can be assembled, and that at least preliminary acceptance by affected parties can be achieved. In light of a continuing string of failed tax referenda, the wide area assessment district should continue to receive close attention from planners, engineers, and policy makers.

SANTA FE PARKING ASSESSMENT DISTRICT STUDY
SPECIAL DISTRICT ASSESSMENT ANALYSIS

SFAS22
7/8/85

TABLE

TWO ZONE AREAWIDE DISTRICT

	Land Use Basis				Parking Space Basis			
	Zone 1	Zone 2	Zone 3	Total	Zone 1	Zone 2	Zone 3	Total
Parking Deficit Thresholds:								
Office - 1 space per 500 square feet								
Retail - 1 space per 350 square feet								
Hotel - 1 space per room								
Debt Service Requirements	\$1,341,569							
Net Operating Revenue	\$312,494							
Other Income	\$165,000							
Assessment Requirements	\$864,075							
Parking Deficit								
Office (sq. ft.)	261,838	204,207	0	466,045	524	408	0	932
Retail (sq. ft.)	411,878	158,711	0	570,589	1,177	453	0	1,630
Hotel (no. of rms.)	63	74	0	137	63	74	0	137
Zonal Assessment Factor	0.70	0.30	0.00	1.00	0.70	0.30	0.00	1.00
Weighted Deficit Space								
Office (sq. ft.)	183,287	61,262	0	244,549	367	123	0	489
Retail (sq. ft.)	288,315	47,613	0	335,928	824	136	0	960
Hotel (no. of rms.)	44	22	0	66	44	22	0	66
Assessment Rate								
Office (\$/sq. ft.)	\$0.80	\$0.34	\$0.00		\$399.19	\$171.08	\$0.00	
Retail (\$/sq. ft.)	\$1.14	\$0.49	\$0.00		\$399.19	\$171.08	\$0.00	
Hotel (\$/rm.)	\$399.19	\$171.08	\$0.00		\$399.19	\$171.08	\$0.00	
Revenue								
Office	\$209,047	\$69,872	\$0	\$278,920	\$209,047	\$69,872	\$0	\$278,920
Retail	\$469,767	\$77,579	\$0	\$547,346	\$469,767	\$77,579	\$0	\$547,346
Hotel	\$25,149	\$12,660	\$0	\$37,809	\$25,149	\$12,660	\$0	\$37,809
Total	\$703,963	\$160,112	\$0	\$864,075	\$703,963	\$160,112	\$0	\$864,075
Land Use Equiv. Factors								
Office	1.0000							
Retail	1.4286							
Hotel	500.0000							
Tot. Equiv. Def. SF	757,596							
Deficit Recovery Factor	1.1405							

STRATEGIES TO IMPLEMENT BENEFIT-SHARING FOR TRANSIT FACILITIES

Jane Howard
SG Associates, Inc.

INTRODUCTION

Benefit-sharing for fixed transit facilities is the equitable distribution of public and private costs and benefits associated with transit facility construction, rehabilitation or operation. Its objective is to achieve the broadest benefits for all parties at a reasonable cost to each. The Transportation Research Board project described here was conceived with the thought that transit agencies, which to date have been less involved with public-private funding mechanisms than highway agencies, will be better able to take advantage of benefit-sharing if they are better acquainted with the range of opportunities which might exist, the techniques for realizing the opportunities, and conditions under which various types of opportunities might best be realized.

In carrying out this 1984 project, the study team, composed of SG Associates, Rivkin Associates, and Moore-Heder Architects, provided both a systematic review of strategies and techniques with commentary on transit applications and case studies on applications by transit agencies of varying sizes which are the focus of this paper. As shown in Figure 1, six case studies focused on individual transit agencies, and a seventh covered nine projects in small cities in Michigan. The cases illustrated a variety of benefit-sharing applications for various sizes of transit systems, types of facilities, and stages in the planning and operations of the facilities -- and with varying degrees of success and failure. Some of the most interesting examples of transit benefit-sharing applications from the cases are summarized here, along with some conclusions and recommendations for implementing transit-related benefit-sharing.

TRANSIT AGENCY EXPERIENCE

The cases summarized below range from the largest transit system in the U.S. to tiny paratransit services. While the type and size of transit system are important factors in determining the scale of benefit-sharing, other factors are also important, as shown in Figure 2.

Figure 1

COMPARISON OF CASE STUDY TRANSIT AGENCIES

<u>Location/ Transit Agency</u>	<u>Regional Population</u>	<u>Modes</u>	<u>Primary Benefit- Sharing Techniques</u>
New York City: MTA - Times Square/42nd St. - East Midtown Develop- ments	16 million	Rapid Transit Commuter Rail Bus	Incentive Zoning Joint Development System Interface Negotiated Investments Voluntary Contributions
Los Angeles: SCRFD - Proposed Metro Rail Stations	8 million	Commuter Rail Bus Rapid Transit (planned)	Station Area Masterplans Incentive Zoning Benefit Assessment Organizational Mechanisms
Boston: MBTA - Real Estate Manage- ment Program	2.6 million	Rapid Transit Commuter Rail Light Rail Bus	Real Estate Management Leases and Concessions Public Infrastructure Joint Development System Interface
Washington, D.C.: WMATA - New Carrollton Metro - Bethesda Metro Center	2.5 million	Rapid Transit Bus	System Interface Station Area Masterplans Joint Development Organizational Mechanisms
Portland, OR: Tri-Met - Banfield Transitway	825,000	Light Rail Bus	Construction Coordination Special Assessments Station Area Masterplans Organizational Mechanisms
Toledo, OH: TARTA - Downtown Transit Loop	490,000	Bus	Public Infrastructure Voluntary Private Contributions Cooperative Agreements Tax Increment Financing
Michigan Terminal Projects:			
Marquette: MTA	23,000	Local/Intercity Bus	
City of Cadillac	10,000	Intercity Bus Dial-a-Ride	
Bay City: Metro Transit	85,000	Local/Intercity Bus	Leases and Concessions
Flint: MTA	450,000	Local/Intercity Bus	Cooperative Agreements
City of Pontiac		Local/Intercity Bus	Cost Sharing with
Battle Creek Transit	114,000	Local/Intercity Bus Rail	Tenants, Intercity
City of Kalamazoo	80,000	Intercity Bus Rail	
City of Dowagiac	6,300	Rail Intercity Bus Dial-a-Ride	
Niles	21,000	Intercity Bus Dial-a-Ride	

Figure 2

FACTORS INFLUENCING TRANSIT-RELATED BENEFIT-SHARING

- Type of transit facility
- Type and size of transit system
- Type of development or investment
- Nature and goals of participants in the process
- Location of the facility
- Market conditions
- Distance of development from facility
- Stage of construction and operation:
 - initial planning, location and site selection
 - design
 - construction
 - operation
 - rehabilitation
 - surplus property disposition

The most important factor in bringing about benefit-sharing in all these different forms, however, is the incorporation of a benefit-sharing philosophy into the ongoing planning and implementation process of the transit agency.

The successful agencies we studied had all embraced the principle of benefit-sharing and were willing to cooperate with local planning and development agencies, elected officials, and the private sector to bring it about through many types of projects and financial arrangements. This point should be kept in mind as each case study is described.

New York Midtown Transit Stations - New York City Transit Authority

Joint efforts of New York City government and the New York City Transit Agency (TA) have succeeded in attracting significant private funding for renovations to the nation's largest and most complex transit system. Our study focused on two different approaches to incorporating private funds for rehabilitation of the Times Square/42nd Street Station and the East 53rd Street/Lexington Ave./51st Street Station.

For Times Square/42nd Street, a publicly-initiated development of three full city blocks and portions of two other blocks has built in mandatory developer contributions to subway renovations as an integral part of the program. The key mechanism used by the New York State Urban Development Corporation and the City of New York Public Development Corporation was a series of detailed Design Guidelines which set up specific requirements for use mix, density, height, bulk, urban design treatment and subway renovations. In return for the considerable benefits of 2 million square feet of extra density above zoning limits and public land assembly, among others, the developers agreed to contribute approximately \$39 million for new station mezzanines and entrances, as well as non-transit related contributions. The developer's offer of public return in each area was part of the development submission and was competitively evaluated among the candidates. The project is scheduled to start construction in 1986.

For the East 53rd/Lexington/51st Street Station, on the other hand, an incremental approach, based on the City's incentive zoning provisions, has been used. Three private developers have negotiated independently with the TA and the City for zoning bonuses in exchange for station improvements

related to their developments. Incentive zoning, which has over a 20 year history in Manhattan, has two provisions which affect transit:

1. Any new development adjacent to a transit station is required to rebuild the entrance stair according to the TA's guidelines within its own property line; and
2. At designated stations, density bonuses may be granted in return for more extensive capital improvements.

Our study looked at one completed development at 875 Third Avenue and two proposed developments at 885 Madison Avenue and 559 Lexington Avenue which involved together over \$10 million in private contributions to the station in return for density bonuses. In contrast to the Times Square project, which involved a major redesign of the station, these projects are contributing amenities and cosmetic improvements incrementally without changing the basic station.

Without dwelling on the intricate details of either approach, both were found to be successful in a high density, strong market downtown highly dependent on transit access. Notable in each case, and applicable elsewhere, was the close ongoing coordination of TA staff with city agencies and developers in bringing the projects about.

Metro Rail Stations - Southern California Rapid Transit District, Los Angeles

The SCRTD case study in Los Angeles illustrates an attempt of a transit agency to incorporate benefit-sharing into the initial planning for a new rail rapid transit line. With UMTA funding, SCRTD laid the groundwork for station area joint development and value capture in early planning reports, set a goal for private sector participation in system funding, and gained legislative authorization for a direct transit agency role in land acquisition, joint development and special benefit assessment district development. Although Metro Rail implementation has been slowed by UMTA funding uncertainties, the SCRTD experience to date is useful in several respects.

First, SCRTD acted early in Metro Rail planning to establish its own resources, within the transit agency, for development related planning. However, to prepare detailed station area development plans, develop incentive zoning provisions, prepare design guidelines, and establish special assessment district boundaries and procedures, SCRTD entered into

cooperative agreements with the three local government agencies involved - the City, County and Community Redevelopment Authority of Los Angeles. Through using these agreements, which spell out detailed work programs, and acting as the pass-through agency for the UMTA planning funds, SCRTD has insured a continuing role for the transit agency in all the development planning. Coordinating committees at several levels help to assure ongoing inter-agency cooperation.

Second, incorporating benefit-sharing at the early planning stages must focus on not precluding opportunities for system interface connections and joint development, rather than specifically promoting individual projects. In L.A., station designs have been carefully worked out to provide for direct connections to development parcels, in such ideas as the \$1.2 billion California Plaza project, for which the developer will contribute an easement for a station portal at the Hill Street station, and the Citicorp development at the Seventh Street station. At the same time, however, the L.A. study has shown that development commitments which may eventually produce system revenue cannot be rushed ahead of the marketplace. Developers are not willing to commit to funding connections unless they are sure the project will go ahead, and that the timing is right in terms of their own schedule. In many cases, the developments going in today will have to succeed financially long before Metro Rail may open.

Further, the idea of making transit the major beneficiary of innovative financing has met with some resistance from the other public agencies, which are counting on these funds, in tight times, to pursue their own goals and projects. CRA-LA, for example, depends on tax increment revenues, sought by SCRTD for Metro Rail, to fund subsidized housing programs. The City and County have acted both to downzone the Wilshire Boulevard Corridor and to exclude residential uses from benefit assessment districts, both of which reduce potential revenue to SCRTD.

Finally, the credibility of public agency funding and scheduling is critical to insuring private sector commitments. In L.A., the issue is particularly sensitive, due to the withdrawal of UMTA funds for its Downtown People Mover project after \$15 million in private funds was spent for easements within new buildings. Developers are reluctant to make commitments based on Metro Rail construction with the public funding so uncertain. This

situation understandably weakens SCRTD's bargaining position with the private sector.

Real Estate Development Program Massachusetts Bay Transportation Authority (MBTA), Boston

Recognizing that its property holdings, bonding authority, tax-exempt status, exemption from zoning, pension funds and bank deposits all represent powerful financial and negotiating resources, the MBTA in Boston has begun to pursue a new role in development, that of exploiting the development potential of its own extensive property holdings. Motivated by acquisition of many parcels from the Penn Central Railroad in 1973, by more recent tax cut legislation which limited local funding, and by active developer interest in MBTA property, the MBTA has become interested in generating lease revenue through joint development deals on many underutilized parcels in strong market areas. In the course of pursuing this final area, the MBTA has also begun to consolidate all of its development related functions.

The first effort of the MBTA in evaluating the potential value of its land holdings involved examining and updating the 1973 inventory of 300 properties supplied by Penn Central, which included estimates of income potential, as well as some 2,000 leases and agreements in force at the time of the sale. Many properties with the potential of producing high incomes (including joint development possibilities) were often rented to low-rent tenants under outmoded agreements. In 1980, however, property management functions within the MBTA were consolidated into a Department of Real Estate Management, which, with real estate consultant assistance, systematically produced a real estate parcel inventory and analyzed all MBTA leases in detail and provided recommendations on lease administration. In the course of this study, 27 properties were identified as suitable for joint development, primarily located in rapid transit station areas, but with some larger parcels at commuter rail stations.

In 1983, the MBTA initiated a development program to intensify the use of their property, capitalize on the opportunity for additional revenue, upgrade transportation facilities and allow for private management of MBTA property. As a first step in the program, MBTA General Manager James O'Leary hired professional development consultants to evaluate development potential at selected MBTA properties. Nine sites in four categories were

initially examined, including: obsolete power plants, under-utilized land in high market demand areas, parking facilities in commercial areas and town centers. From these, four sites were chosen for detailed analysis because they represented a range of issues of interest to MBTA, including: a commuter rail parking lot at Route 128 station, the Riverside light rail station, maintenance facility and parking lot at Route 128 in Newton, a surplus parcel in Dedham Square, and an obsolete power plant in East Boston. One major criterion in developing the program was that the development activity, since it was not related to the authority's mandate, could be justified as within the scope of the "public purpose" the Authority was set up to serve. It was also necessary to determine whether the MBTA could forego traditional bidding procedures and choose a developer based on economic, market, and design related criteria rather than sell or lease land to the highest bidder.

Other issues that arose early in the process involved the MBTA's tax exempt status and its exemption from zoning, both granted to the Authority, of course, as a public transportation provider and not as a developer. Clarifying the extent to which new developments might improve transportation service and ridership was also a concern. To address these issues, a set of formal Procedures for Joint Development of Property was developed, which provide the basis for dealing with development in a more coherent fashion within the MBTA.

The first test case of the development program has been the development of a six-acre MBTA commuter rail station and a 600 car parking lot at Route 128 in Westwood/Dedham. The approved development plan, in which the MBTA assumed the role of a redevelopment authority in terms of preparing design guidelines and selecting developers, consists of a 250-room hotel with 200,000 square feet of office space in three buildings and 1070 parking spaces, 320 to serve the development and 750 to serve MBTA commuters. Issues which have arisen in the environmental review and negotiation process include: questions as to the sufficiency of parking on the site to serve both the development, the MBTA commuters and intercity rail passengers, height and density of development, and impacts of the development on the quantity and quality of water supply, and impacts on municipal services. Financially, the MBTA will enter into ground leases in which the MBTA will participate in net income after a certain level of return to the investors and developers.

When the project is built in its entirety the payment in lieu of tax to the towns would be approximately \$600,000-\$700,000 and annual revenue to the MBTA would approach \$600,000. The revenue implications to the MBTA are apparent when compared to the ongoing gross revenue to the MBTA for parking of \$1.00-\$1.50 per space per day. The in-lieu payments to the towns are significant as an alternative to property taxes which are limited by state law to 2 1/2% of assessed value, and thus represent a valuable negotiating tool for the MBTA.

This project illustrates a new direction within the agency to consolidate development-related functions and maximize the revenue potential of its real estate holdings. Four areas will be pursued: completing joint development projects currently underway, identifying new sites with market interest and potential return for the MBTA, looking at development possibilities for core area stations where the station improvements would be a catalyst for area redevelopment, such as Broadway and Fields Corner Red Line station in Dorchester, Maverick Blue Line station in East Boston and Davis Square station in Somerville, and increasing revenue from leases and concessions in stations and station areas. In the latter area, the focus will be on new stations, such as those on the Southwest Corridor where every station has concession space ranging from 5,500 square feet to 12,000 square feet. Updating lease terms and preparing new leases could generate significant revenue increases, particularly in the areas of advertising and parking. Concession revenues were assigned a "medium" potential in revenue generation. In 1983, the MBTA initiated a new formula for setting concession lease fees which was tied to the volumes of passengers going through the station. As part of the Southwest Corridor project the MBTA is using its development consultants to refine the lease procedures and apply them to the Southwest Corridor stations. As other leases come up for renewal, they will also be looked at in terms of the new formula.

The new development activity at the MBTA is tied to some extent to favorable market conditions in the Boston metropolitan area, both downtown and in the suburbs. In the case of the privately initiated North Quincy station joint development for example, the MBTA owned site was the last parcel available for new development in the station area. On the other hand, in the Southwest Corridor, even though development was integrated into the

planning, actual interest has lagged until construction has proceeded to a point where completion seems certain. Now, developers are actively being pursued for certain parcels by the MBTA and the City. In other areas, however, such as Wellington station in Medford, air rights sold to the city for development in 1969 have still not been developed. The MBTA is preparing to keep track of its holdings and construction projects so that the Authority can respond in a timely fashion to developer requests and act on its own initiative when the time is right.

Bethesda Metro Center and New Carrollton Stations, WMATA, Washington, D.C.

WMATA, the Washington Area Metropolitan Transit Authority, has been an innovator in transit related benefit-sharing. Two early successes helped set the tone for future activity, including a 1975 air rights development agreement at Farragut North Station, and a \$250,000 system interface agreement with Woodward and Lothrop at the Metro Center Station in 1977.

In 1981, WMATA reorganized its development planning into a new Office of Planning and Development, charged with carrying out an ambitious station area development policy. Three elements are involved: joint development, system interface, and transit zone development (Figure 3). This development program is carefully fit into Metro's property acquisition and utilization program each year. Much has been written already about WMATA's successfully completed joint development and system interface projects. Projects are completed or underway at 11 stations, with feasibility studies in progress for at least 12 more. To supplement the substantial information already published on Metro downtown stations, our study focused on two benefit-sharing approaches at suburban stations.

At New Carrollton Station, WMATA has taken the lead in developing a large parcel of WMATA-owned land. At New Carrollton, WMATA owns 26.5 acres to the south of the Metro terminal/Amtrak Station, and other properties to the south and east. To guide development of its property, WMATA prepared a master plan calling for a 350-room hotel, a 300,000 square foot office building, and 45,000 square feet of retail space directly linked to the Metro and Amtrak stations, with shared use of parking among the various uses.

Figure 3

WMATA JOINT DEVELOPMENT DEFINITIONS

- "Joint Development" - development integrated with transit which occurs on property owned or controlled by WMATA. Until recently, such development has involved primarily air rights or small remainder parcels.
- "System Interface" - direct physical connection of transit to an individual property. Joint development projects generally include some system interface component.
- "Transit Zone Development" - any development or substantial rehabilitation within a 3,000 foot radius of a station entrance, other than joint development or system interface projects.

At Bethesda Metro Center, local government has taken the lead in maximizing the public benefits of integrating development on publicly and privately owned properties in a \$160 million project on WMATA's property, including 270,000 square feet of office space, a 355-room luxury hotel, and a 1,400 space parking garage. Planning for this project spanned 12 years of cooperative effort between WMATA, Montgomery County, and the private sector to develop the station area plan, assemble the site, and negotiate staging, infrastructure development and cost sharing.

Banfield Light Rail Transitway, Tri-Met, Portland, Oregon

This case illustrates benefit-sharing approaches employed by a medium-sized system in the planning stages of the Banfield Light Rail Transitway. Joint development interest in this lower density situation has not approached the levels seen in larger metropolitan areas such as Washington or New York. Nevertheless, through cooperative efforts with local, county, and state governments in a Transit Station Area Program (TSAP), Tri-Met has used market analysis to determine the type and level of development appropriate to each station. This analysis was used as the basis for zoning ordinance changes which establish special zoning categories in station areas. To date, however, development demand in the corridor has not caught up with the plans.

Direct cost sharing in the transit project was negotiated with downtown property owners for two aspects of the LRT project: street amenities on Morrison and Yamhill Streets and the addition of four vintage trolleys to be restored and operated on the LRT rails between the downtown and Lloyd Center during mid-day and weekend off-peak hours. Both of these programs were added to the plans after the initial Tri-Met proposal of a "bare-bones" transitway design was rejected by the downtown business interests. Both programs are funded with UMTA grants with the local share of the costs being raised from the property owners through a Local Improvement District (LID).

The LID is governed by Oregon State law and enables the district to levy a special assessment for shared benefits upon approval of the owners of at least 40% of the affected property (by square footage of land). The ODPM

was instrumental in organizing the LID's and continually works with the private sector on these projects.

- The Morrison/Yamhill LID was generated to provide funding for better quality paving, more street improvements and amenities along these two transitways. Of the total of \$5.5 million excess cost, \$1.5 million was raised by the LID, and \$4.0 million is funded by UMTA. The UMTA grant has been approved and the LID assessment has been voted in with near unanimity. The assessment formula was generated as a combination of frontage of the property on the transitway and the assessed valuation of the property back to 100 feet of depth. The capital contributions were financed by city through a bond issue which the LID members are paying off over 20 years, which makes the yearly burden on the property owners quite small.

The \$1.5 million is 0.4 million higher than the usual 20% local match and this helped persuade UMTA to approve the addition to the project. At the same time the owners received almost \$4 dollars worth of improvements at their doorstep for each dollar contributed to the LID and this, according to businessman Bill Naito who helped sell the LID to fellow property owners, made the task of convincing owners to participate quite easy.

- The Vintage Trolley LID involves all of the owners along the line from Lloyd Center through Downtown in raising \$800,000 in local funds to match a \$1,000,000 UMTA grant. The funds will cover the purchase and restoration of four antique trolley cars which Tri-Met will operate 11 AM through 3 PM weekdays and on Saturdays and Sundays. The property owners and merchants will benefit from the promotional attraction of these trolleys. Similar cars already operate successfully in retail areas of Detroit, New Orleans and Seattle. UMTA was persuaded to grant funds for the project with the argument that the impact of the new trains traversing two historic districts needed to be mitigated by the use of the vintage trolleys. Bill Naito who conceived this concept and persuaded local businessmen and UMTA to fund it has actually acquired and stored four Portuguese trolley cars with his own funds to be used in this

project. He felt that having the vehicles on hand was necessary in order to persuade all the parties of the realistic possibility of making the project work, so he took the risk. When negotiations for the project are completed, Tri-Met will acquire and restore the cars and reimburse Naito.

Downtown Transit Loop, TARTA, Toledo, Ohio

As part of a downtown revitalization plan initiated in 1976, TARTA has rerouted all its bus service into a 1.1 mile downtown bus loop with five stations integrated into adjacent structures. The loop case illustrates a high degree of cooperation between the city, major employers (including Owens Illinois, Toledo Trust and Toledo Edison), and the transit agency in project design and implementation. The loop plan, funded with a 1979 Urban Initiatives grant, was carefully integrated into development plans and combined with a pedestrian concourse system which helped sell the project to the private sector, as well as tie the stations into a weather protected internal circulation system. The five stations illustrate a variety of public/private financing techniques covering design, construction and operation, as follows:

- Seagate Station was the first station built. The land for the station was purchased by TARTA from the City for \$24,648. In anticipation of future development, the city reserved an aerial easement above the station to allow the future developer (Webstrand) to incorporate the station into the development. The building, now nearing completion, was built after the Seagate Station was standing. The station is connected directly to the corporate headquarters of the Owens Illinois Corporation by an enclosed pedestrian concourse. This concourse was paid for by TARTA through the Urban Initiatives grant, but was built by the City so that its construction could be coordinated with two other concourses being constructed at the same time by the City. Owens Illinois provided the 20% local share, and is now responsible for providing ongoing maintenance and utility costs for all three concourses, with the exception of the elevator required in the TARTA concourse. The City of Toledo is responsible for security. Currently, the concourse is being extended by private construction to link a new Hotel Sofitel being constructed by the Galbreath interests and the recently opened

Portside Market. The extension is being funded through tax increment financing.

- Promenade Transit Station is linked directly to the Toledo Trust, Toledo Edison Company and the older Toledo Trust Tower by a second level pedestrian concourse. The station was built in the right-of-way made available by the closing of Madison Street for a pedestrian mall (funded by the UMTA Urban Initiatives grant). The station and the second level concourse were added onto the existing Toledo Edison building. The Toledo Trust Company and the Toledo Edison Company each paid one-half the 20% local share for concourse construction. The maintenance and security responsibilities are shared among the participants. Toledo Edison and Toledo Trust each pay approximately \$1,800/month for maintenance and utilities for the concourses. In addition Toledo Trust is responsible for maintaining the escalator connecting the station to the second level concourses. TARTA maintains the station, and the City maintains the pedestrian mall. A new concourse, the Levi's Square concourse will link the Fiberglas Tower, the corporate headquarters of the Owens Corning Fiberglas Corporation and the Riverview One commercial parking structure with the station. The 20% local funding for the proposed Levi's Square Concourse will be provided by the Toledo Trust Company, the Owens-Corning Fiberglas Corporation, and John W. Galbreath and Company, with each party providing one-third the costs. The 80% share will come from the UMTA Urban Initiatives grant.
- Perry Station is incorporated into the street level of a city parking garage structure. It is linked by a third city-financed concourse to the Ohio Citizen's Bank and office building. When built, Toledo's new convention center is expected to be linked to Perry Station. While Perry Station was financed by TARTA, its construction was delayed until the new garage structure was under construction. TARTA let its construction contract through the City so that the same contractor could be utilized.
- Park Station is not directly linked to any development project. In this case, it was necessary for TARTA to acquire an existing building on the site, which was demolished to make room for the station,

and an adjacent small park. The park, which is leased to the City for \$1/year by TARTA, is maintained by the City. This station is the only one with perceived problems related to loitering, and teenagers "hanging out." It is also the only one where merchants complained about the station location. A lawsuit was brought by one merchant against TARTA for loss of business when the station was moved; however, the case was dismissed from court.

- Government Station was originally intended to be connected to Government Center by a pedestrian concourse under Jackson Street. This concourse was eliminated because the construction of the Government Center was not underway in time. This station is attached to an existing two-story parking garage; the owner paid the 20% local share for station construction because it improved his facade. Surplus land on the site was used for a small park, which is maintained by the City. TARTA leases the land for this station from the City for \$1/year.

A unique aspect of this case is the lead role taken by the transit agency in integrating its service with redevelopment objectives. Further, the General Manager, Charles Whitten, took an active role in meeting directly with corporate executives and city leaders to bring the plan about. The city's and the transit agency's perseverance and commitment to the project greatly improved the public agency image in the eyes of the private sector. It must be noted, however, that private sector contributions were used in each case to reduce the required local share of the funds in a time when the City was under severe financial constraints. The fact that the relatively small amounts would be used to attract the substantial federal share was a strong selling point to the private employers involved.

Michigan Passenger Terminal Projects -- Nine Cities

Nine small cities in Michigan, ranging in size from 6,300 to 450,000 were the focus of this case study of the Michigan Passenger Terminal Program. The program, which exists to assist localities in constructing intermodal terminals, has as an ancillary goal making the facilities self-supporting in terms of operations through benefit-sharing techniques.

The nine terminal projects, ranging in cost from \$50,000 to \$3,000,000, achieved this with varying degrees of success through various mechanisms,

primarily leases of office and concession space within the buildings, and cost-sharing agreements with intercity carrier and other tenants, as discussed below.

- Marquette Transportation Center, Marquette, MI. The Marquette Transportation Center opened in April, 1983, in a renovated A & P supermarket building to the east of the Central Business District. The facility includes a local and intercity bus terminal, a maintenance and storage area, and 10-12,000 square feet of leasable office space on the second floor. Total project cost was \$1.4 million, of which \$652,000 was UMTA funds for the maintenance facility and \$750,000 was state terminal program funds. The facility is owned by the City of Marquette and operated by the Marquette Transit Authority. Rents from Greyhound, the Alger-Marquette Intermediate School District (which leases storage/maintenance space for its vehicles and office space for dispatching), and the three second-floor office tenants cover operating expenses, with a small surplus. Rental revenues are expected to increase when some vacant second-floor space is rented to a pending tenant. While the public transit authority also leases its space, it is able to do so at a much lower rate due to the higher rents charged the other tenants.
- Cadillac Transportation Center, Cadillac, MI. Opening in 1980, in a former auto dealership and garage, the Cadillac Transportation Center serves the local county-wide dial-a-ride system, and the intercity Shortway/Northstar Bus Lines (formerly sharing space with a flower shop). The facility, which is owned and operated by the city, just breaks even financially. The main source of income is rent paid by the dial-a-ride service; the intercity bus company pays no rent, only a commission on tickets sold and packages handled. A small shoe store on the site which was operating before the center was built pays a monthly rent; also several parking spaces are rented to nearby lounges. Initially, some small offices in the terminal were rented to non-transportation tenants; now these offices are occupied by the transportation carriers and the Shortway/Northstar package operation. Office space upstairs is unusable for rental purposes due to handicapped accessibility regulation in the State of

Michigan which require ramp or elevator access. The City created a small park on land not used for parking; however, some problems have occurred with regard to loitering and vandalism. To help keep up with utility costs, the center, with the help of a MDOT demonstration grant, has installed a \$10,000 waste-oil heating system. Heating oil is recycled into the system from the transit vehicles, several state highway offices, and the general public. The program has led to a significant reduction in utility costs, with a total annual heat bill for the entire terminal of only \$1,100.

- Metro Center, Bay Metro Transit, Bay City, MI. The application of Bay Metro Transit to construct a downtown transportation center combined with a mixed use development project is currently pending with MDOT. The proposed site, city owned, is adjacent to a parcel currently used by a bank for a drive-through facility. When the bank learned that the transit authority was considering the abutting site for a transportation center, bank officials offered to deed their site to the city in exchange for space in the new building. The proposed facility will house Bay Metro and intercity bus operations on the ground level. Building on the basic Bay Metro passenger market group of elderly retirees and farmers, and the interest of the bank in the terminal location, the General Manager has planned a service-oriented commercial center to include the bank facilities, a fast food restaurant, a city bill-payment center, and a Secretary of State office to share the ground level terminal facility. As the manager puts it, "Lots of people come downtown to pay bills and taxes. Now they have to walk upstairs in City Hall...With the terminal, and the restaurant (there is now no fast food restaurant in Bay City), the trip downtown to the bus terminal could be their biggie for the week." In addition, Bay Metro has interested a private syndicate in financing 60,000 square feet of upper-level office space which would also be rented to help cover operating costs. A UDAG grant and tax increment finance bonds issued by the city would also be used to finance a 300-vehicle parking garage. Total funds required are \$8.5 million, of which only \$56,000 are requested from UMTA (Section 9) in support of the local bus transfer facility portion of the terminal.

- Flint Transportation Center, Flint, MI. The Flint Transportation Center is in the final design stage. The proposed facility, to be located on a large site on the outskirts of downtown which currently houses the authority's offices and maintenance/storage facility, will serve Amtrak, Indian Trails, Michigan Trailways, Greyhound, and the Flint Transit Authority. The site is well located near I-69, a major interstate, the north-south track providing rail service to Detroit and the east-west track providing service to Chicago and Toronto. The transit authority is counting on substantial rail tour traffic to a new theme park attraction, Auto World, opened in Summer, 1984. The lower level of the futuristically-designed terminal will provide the transportation facilities plus 1,200 square feet for carefully controlled retail concessions. A second floor will provide 8,500 square feet for which a 200-250 seat "Class A" restaurant is being sought as a tenant, based on market studies identifying this as the most feasible use. The General Manager will hold construction bids open until a commitment from a restaurant tenant is secured. Operating costs are estimated at \$150,000 per year, which will be covered by the restaurant lease; i.e., the restaurant is expected to generate enough revenue to run the entire facility. Concession rentals will be used to establish a contingency fund. The transit authority goal for this facility is to make it a first class transportation center, and to overcome the negative image of bus and train stations.
- Pontiac Transportation Center, Pontiac, MI. Opened in Spring, 1983, the Pontiac Transportation Center is a new three-level facility, with a heliport on the roof. An underground level serves as the terminal for Greyhound, Tower Bus, and SEMTA bus operations. The street level serves as a waiting room and ticket office and contains rental space housing a travel agency and a Detroit Convention Bureau information booth. Another area currently used for vending machine food service is intended for a convenience-type store/food service operation catering to passengers and office workers in the building. The third level contains 7,200 square feet of leasable office space, which is connected by a pedestrian bridge (under construction in June, 1983) to Phoenix Center, a General

Motors office building and parking garage across the street. The City of Pontiac, which contributed the land as its share of the \$2.8 million project, operates the center. The City is currently negotiating with GM to lease the second floor office space. Since the space requires substantial interior finishing to meet GM's needs, the amortized costs of the necessary improvements will be accounted for in the lease agreement. Partially because the rental spaces on the ground and second floor are not rented, operating costs of \$127,000 last year were not met by the rental revenues. The deficit for the first year was \$50,000. Within 2-3 years, however, the City hopes to rent out all vacant space and to show a profit.

- Battle Creek Transportation Center, Battle Creek, MI. Another new facility, the Battle Creek Transportation Center was built to the south of the downtown when a rail consolidation program eliminated service from the north tracks, the site of the existing downtown Amtrak station. The current site was assembled from the former site of the old Greyhound station, which was acquired by the city, and adjacent city-owned parcels. The City donated the land as its share of the project costs. The transportation center serves Amtrak, Greyhound, Indian Trails, Shortway and Battle Creek Transit buses. This center does not contain any concession space beyond a small newsstand leased at no charge to the State Association for the Blind. Operating expenses of \$43,469 per year are funded through rental revenues from the carriers. Each of the carriers pays for the exclusive use of its own offices and crew rooms, plus its share of common area space, and maintenance/utility costs for the facility. Rents are based on year to year leases which are negotiated based on total estimated costs for each year.
- Kalamazoo Transportation Center, Kalamazoo, MI. The Kalamazoo Transportation Center, in a remodeled historic train station, was the first of the terminal facilities to be implemented. The land and building, located on the fringes of the CBD, were acquired in 1976, the first year of the program, and the center opened in 1977. Owned and operated by the City of Kalamazoo, the facility serves Amtrak, Indian Trails and Greyhound. Although the local transit authority has a large maintenance facility across the tracks from the

terminal, its bus stop, on the street, is not directly incorporated into the facility. Rental space in the terminal includes a vacant 2,700 square foot restaurant, and a vacant 880 square foot office at the opposite ends of the terminal. Within the waiting room is a 160 square foot newsstand and a 100 square foot video arcade, which together generate \$5,000/year in revenue. The transportation carriers in this center pay only their share of utility costs, on a 20 year lease, offered as an inducement to locate in the center. The City is thus responsible for all maintenance costs. Last year, the center operated at a \$32,300 loss.

- Dowagiac Intermodal Terminal, Dowagiac, MI. Located in a town of only 6,300 population, the Dowagiac Intermodal Terminal serves Amtrak, Greyhound, Indian Trails, and the local dial-a-ride system. The center opened in December, 1977, in a renovated train station which was acquired by the City. Operating expenses run approximately \$11,000 per year and are basically paid for by rental of part of the terminal to the Secretary of State's office, which runs a busy public service office at the center. This office had been on a five-year lease which was recently reviewed to include cost escalation provisions to cover higher utility costs. The City has a second grant application pending with MDOT for site work and building improvements to improve energy efficiency and reduce utility costs.
- Niles Transportation Center, Niles, MI. Still under construction, the Niles Transportation Center has been serving a ten-vehicle local dial-a-ride operation and a county-wide demand responsive service since May, 1983. The facility, located in a renovated auto body shop, will upon completion house maintenance and cleaning facilities. Originally, the City had looked to acquire the Amtrak depot for the center, but sought another site when Amtrak refused to sell the station and lease space in the new center from the City. The size and layout of the building made no space available for commercial leases; however, Indian Trails and Indiana Motor Coach buses started operating as tenants in the building in July, 1984. The intercity operators will lease space to help defray operating costs. The transit operator, which runs the facility and the transit system

under contract to the city, will have to make up any operating deficits from his operating budget for the system. The manager noted, however, that bus maintenance costs will be greatly reduced in the new facility since many items now have to be shipped out. "I hope the utilities will not kill us," he observed.

Several lessons became clear from the Michigan examples.

- First, the negative image of a transit station or terminal must be overcome through design and maintenance in order to attract private tenants. Market research must be done to identify tenants which can benefit from the transit-related location.
- Transit investment must be supported by planning and related renewal activity in order to achieve revitalization goals, especially in smaller cities. New transit terminals, in themselves, are not sufficient catalysts for areawide redevelopment in smaller downtowns.
- Michigan DOT played a key role in bringing the projects about. The program, funded through a dedicated fuel and weight tax, was designed to provide flexibility precluded by some federal funding programs. The state staff also provided valuable technical assistance to the smaller cities which was essential to implementing the projects.
- Finally, contracts and leases must be designed with cost escalator provisions and appropriate terms to insure ongoing support for utility and maintenance costs.

RECOMMENDATIONS

The recommendations arising from our study are based on the two qualities shared by all the successful cases -- a willingness of transit agency management to look beyond strict operations considerations for development related opportunities, and a cooperative spirit between the transit agency, local government, and the private sector. The recommendations included:

- Initiating a systemwide review of opportunities for benefit-sharing as a first step;
- Establishing a continuing structure appropriate to the size of the transit agency for pursuing benefit-sharing;
- Incorporating a benefit-sharing "philosophy" into ongoing planning and implementation processes;

- Approaching the private sector in a businesslike fashion; i.e., understanding private financial needs and timing and maintaining agency credibility in terms of schedules and funding commitments;
- Paying careful attention to market analysis, design details, phasing, and construction coordination;
- Using legal agreements to expedite, not delay implementation; and
- Being both realistic and flexible in evaluating transit agency costs and benefits. Actual returns to the transit agency vary with each situation, and are not always immediate, nor always financial. In particular, we found that the private sector is more likely to fund enhancements to the system which generate direct benefits to property owners than contribute to systemwide construction or operating costs.

In sum, benefit-sharing, while certainly worthy of pursuit, cannot be expected to replace the traditional public sources of funds. The contributions to be gained are often modest in terms of overall cost, are unlikely to be available at the early stages of transit planning and development, are often required just to make up the 20% local share for many local governments, and are most commonly applied to elements other than basic transit service. Further, the private sector has been motivated in the past to contribute to transit projects largely because of local government requirements, reductions in their upfront costs, and the availability of healthy portion of non-private funding in conjunction with their relatively small contribution. While localities differ in terms of private sector relationships with government and the extent of private financial commitment to public improvements, the experience documented here suggests that benefit-sharing cannot be expected to make up for decreased federal involvement in transit and urban revitalization projects in most urban areas. In fact, far from imposing penalties on those agencies which do not pursue benefit-sharing, federal policy should more appropriately be directed toward rewarding those agencies which experiment with new, flexible approaches.

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CHARGING DOWNTOWN SAN FRANCISCO FOR TRANSIT SERVICE

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ABSTRACT

San Franciscans have long been aware of the critical relationship between transit service and the economic health of their central business district. Financing the Municipal Railway has always been an important issue which Proposition 13 and the proposed elimination of federal operating subsidies pushed to the forefront. In the face of a budget crisis and a downtown building boom certain to exacerbate the problem in the future, the City and County government responded with two proposals to directly recapture some of the benefits transit service affords downtown land owners. The first, a one-time fee on new downtown office space was readily enacted and immediately challenged by a class-action suit. Costly studies to support an annual special benefit assessment on all downtown commercial space were subsequently prepared and hotly debated. This second proposal was eventually tabled after a lengthy hearing process due to the Mayor's opposition, the fading of the budget crisis and the emergence of other alternatives. San Francisco's experience demonstrates some of the political, legal and administrative complexities of fees for service and special benefit assessments, two important tools in tailoring transit financing to meet specific system environments.

INTRODUCTION

The federal and many state governments are exerting pressure on transit districts and local governments to assume more responsibility for financing transit service, particularly its operating costs. The pressure takes many forms, ranging from reductions in Section 9 funds for operations to rhetoric encouraging more private participation in transit. The pressure appears to be one element of a general movement to reduce the role of the public sector and its resulting revenue requirements. However, this is contrary to the trend in the transit industry, which has become primarily a public sector enterprise, and has experienced increasing demand in recent years, adding to its revenue needs.

Pressure in the form of a Proposition 13-induced budget crisis and the threatened elimination of federal operating subsidies descended on the San

Francisco Municipal Railway (MUNI) in 1980. This crisis combined with ongoing clamor for downtown to pay its fair share of MUNI's costs resulted in a rare opportunity to restructure the financing of transit in San Francisco. The following sections offer a more detailed background, descriptions of the changes proposed and their respective fates as of this writing, and a few tentative conclusions.

BACKGROUND

San Francisco has a long history of political and financial support for transit. In 1972, the City formed the Municipal Railway, one of the first publicly-owned transit systems in the United States. MUNI proceeded to gird the City with streetcar lines with the generous capital support of the City. Not satisfied with just competing with the private transit operators, the City completed purchases of all private operators by 1956.

In addition to its capital contributions to MUNI, the City has generously supported the operation of MUNI throughout the years. This support has allowed MUNI to maintain relatively low fares to encourage transit ridership. For example, the fare was only 15¢ until 1969 and 25¢ as late as 1980.

DEPENDENCE ON TRANSIT

Both the geography and the economy of San Francisco and the surrounding Bay Area encouraged relatively heavy dependence on transit, especially for work trips. The CBD developed on the east side, near the tip of a hilly peninsula. Because there are few passes through the hills to the west or south, the City developed a dense land use pattern which required transit service to function. Two freeways were developed to provide auto access from the south, but the voracious appetite of the freeways for precious land, combined with the thousands of automobiles requiring more land for parking, led to a widely publicized freeway revolt. Ferries, which once brought many workers to the City, were replaced by bridges which long ago reached vehicular capacity during peak periods. There is no support for new bridges and their connecting freeways, therefore downtown employment growth depends on increasing the passenger capacity of the existing facilities by encouraging greater use of buses, van pools and car pools on the bridges and the existing rail commute service to the south and on the creation of new transit facilities such as the BART tube and Golden Gate ferries.

San Francisco's economy has long depended on effective transit service. Transportation, shipping and railroads, was the foundation of the City's economy, but, unlike Los Angeles, little manufacturing activity ever developed. Services, particularly financial services, has been the driving sector of the City's economy, supplemented by a rapidly growing headquarters sector. The only substantial manufacturing activity in the region is the electronics industry centered in "Silicon Valley," about 40 miles south of San Francisco. It is no longer able to attract blue collar workers at a competitive price. Electronics manufacturing is expected to increasingly be located in other regions, though the more white collar-oriented research functions which originally gave rise to the industry will remain. The City's and the region's economy is thus very strongly oriented to white collar office employment. Financial services and headquarters functions demand central, prestigious locations, thus there is a strong demand for CBD office space.

The continued growth of the region, given its geography and economy, appears likely to increasingly depend on transit's ability to increase the accessibility of downtown San Francisco. To a great extent, the areas needing increased access to the CBD will be the suburbs served by other transit operators. But the City itself is also sending more workers downtown each year, requiring additional MUNI service. Each year more families are replaced by singles or childless couples who occupy more space per capita than the families, but also manage to muster more workers per square foot of housing. It is difficult to estimate how long this trend will continue, but there are areas in the southeast quadrant of the City whose development for housing could add many thousand of workers wishing to commute downtown on MUNI. Thus, while the population of the City has been falling, demand for MUNI service to downtown has been growing and appears likely to continue growing.

THE FUNDING CRISIS

The City's 1980/81 budget projections signaled a crisis which in turn created the political impetus to seek greater downtown participation in funding MUNI. Understanding the crisis and the action it triggered requires a brief review of transit financing San Francisco style.

Prior to the 1970s MUNI's capital needs were generally met through bond or lease-purchase financing. Operating deficits, including servicing its capital obligations, were 50-60% covered by fare revenues and the remainder by general fund revenues (primarily property tax revenue).

During the 1970s, the institution of both state and federal operating subsidies allowed San Francisco to lead the national trend in keeping fares low, maintaining a 25¢ adult cash fare throughout the decade. Additionally, costs rose at a greater rate than inflation because:

1. Wages followed national trends at 1% to 2% over inflation, but there were few offsetting productivity improvements;
2. Downtown growth increased demand throughout the decade, interrupted only by the 1974/75 recession; and
3. A program to improve crosstown service, implemented late in the decade, resulted in some additional service increases.

By 1979, fare revenue covered only 27% of operating costs.

The decade presented an anomaly to transit financial analysts and planners in the City and surrounding areas. At no time could it be said that the financial future of the industry was secure. In fact, there were numerous conferences to attempt to arrive at some consensus on long-term financing of the large operating deficits which were projected. Yet the large deficits were never realized; they always receded to the second or third year of each new projection.

One reason was that the volumes of service projected were not put on the street as rapidly as they were needed, but the most significant reason was the incredible growth of state and local assistance to transit. State operating assistance to MUNI, for example, grew from zero to \$20 million or from zero to 16% of operating costs by the end of the decade. The City's share of operating costs remained about 40-50% but grew from \$19 million in 1970/71 to \$54 million in 1979/80, an annual growth rate of 12%. While it seemed obvious that state and local legislators could not continue developing new sources of revenue and increasing transit's share of existing sources indefinitely, it was not clear what was going to stop them from doing so.

What finally stopped them in California was Proposition 13.

Proposition 13 was a state initiative which was passed in 1977 despite substantial opposition in most northern California counties including San Francisco. The measure limited property taxation to 1% of market value. It also limited appreciation in assessed values for taxation to 2% per year except when the title to the property changes. Proposition 13 was alternately viewed as a gut-level reaction to a complex problem certain to ruin the State, or as the only voice of reason against a growing trend of fiscal irresponsibility.

While the effect of Proposition 13 on property tax revenues was immediate and dramatic, no one had reckoned on the State's response to the panicked cries of the cities and counties. The State had developed an embarrassingly large surplus prior to the passage of Proposition 13, which the Democratic governor and legislative majority were only too happy to use to blunt the impact of the measure. The State quickly assumed full financial responsibility for welfare and substantially increased its contribution to schools. A system of cash grants in proportion to revenues lost, immediately nicknamed the "state bailout," was established. The State was able to very effectively mitigate the impact of Proposition 13 the first two years, 1978/79 and 1979/80. But by mid-1979, the State's ability to support local governments through a third year to the same degree which they had maintained thus far was in considerable doubt.

In keeping with the increasing uncertainty in state support, San Francisco's initial revenue forecast that fall for the 1980/81 fiscal year's budget was conservative and alarming. The Mayor responded to the alarm by forming a task force of city officials and business and neighborhood representatives to develop solutions. The task force quickly arrived at a general consensus that an increase in the business tax was necessary to maintain vital services which could not generate revenues on their own. Transit was cited as an enterprise with ability to produce revenue. Two measures were proposed to meet this end:

- the first fare increase in a decade; and
- a fee proposed to be levied on new office space to recoup the cost of future increases in transit services.

FEES CONSIDERED

Three specific proposals were considered. They are briefly described in this section. The sequence of legislative action is described in the following section.

The first proposal considered, and the only one enacted, was the Transit Impact Development Fee (TIDF). The TIDF is a one-time charge on office space payable at the time permanent financing is taken out in the case of new construction, or at the time the space is ready for occupancy in the case of space converted from another use. The fee is calculated to recover the projected incremental MUNI capital and operating costs to be incurred as a result of the increase in office space over the life of that space.

A second proposal was for an annual transit fee. The intent of this proposed fee was to assess all downtown land uses except residences for transit capital and operating costs incurred each year to provide service. This fee for service was to be enacted pursuant to the general police powers of the City and County, as was the TIDF.

The third proposal was for a special benefit assessment district. The State has prescribed procedures for counties to establish districts for either capital or operating purposes. Since San Francisco is a charter city and had not made extensive use of assessment districts in the past, it first had to incorporate into the City's charter a new set of procedures consistent with the State's procedures. Since the vast majority of the City's transit burden is operating costs, and creation of a capital district might have required approval of 4/5 of the Board of Supervisors, creation of a district to recover only operating costs was proposed. Operating and replacement capital costs for service provided to the downtown area above and beyond that provided elsewhere in the City were to be recovered from the downtown land uses found to benefit from this higher level of service.

LEGISLATIVE ACTION

The Mayor initiated action in response to the previously discussed budget crisis. As we will see later in this section, the Mayor also was instrumental in terminating legislative action. But to the City and County's legislative body, the Board of Supervisors, fell the task of hammering out specific legislation.

The Board was preoccupied with shorter range solution to the budget crisis following the meetings of December 1979, including the MUNI fare increase which was implemented April 1, 1980. It was not until that spring that the City Attorney was requested to draft the TIDF ordinance. By early fall, a draft was completed. The sponsoring Supervisor circulated the draft to interested parties including the Chamber of Commerce, which distributed it to its members. Its developer members quickly registered a strong protest, to which the Chamber responded by indicating to the City the draft ordinance was not acceptable.

Meetings were called to see if there was a consensus among Chamber members for any specific transit fee. It quickly became evident there was no consensus. The sponsoring Supervisor then agreed to withhold the legislation for 60 days to allow the Chamber to develop consensus among its diverse constituents. During this period, the alternative of a special benefit assessment district was suggested by numerous parties. After some discussion, a small group of developers came forward offering to attempt to recruit sufficient support for an assessment district. Since a voluntary approach was clearly desirable, a further extension of about 60 days was allowed. By late March 1981, well over 60 days later, this group of developers finally conceded their inability to gain sufficient support for an assessment district among downtown land owners.

Just prior to the developers' concession of failure, another Supervisor submitted an ordinance to impose an annual fee to recover all costs of transit service to and from downtown. This proposal was heard first by the Board's Finance Committee; however, the City Attorney advised that this would be the most difficult to defend legally. Based on this advice, the Finance committee tabled the annual fee proposal at its first hearing.

Thus the stage was set for the TIDF to finally be heard by the Finance Committee. By this time, the concept of a special benefit assessment district had gained wide interest. An assessment district was considered by some as a substitute for the TIDF, by others as a supplement. Due to the legal complexity of establishing assessment districts under California law, a specialist was employed by the City Attorney. A quick review of the City's Charter and State law indicated establishing a district would be a lengthy project. Expediency thus dictated that the TIDF be enacted before formation of an

assessment district. However, an amendment to the City Charter to enact a procedure for establishing assessment districts did become companion legislation to the TIDF.

So in March 1981, the TIDF ordinance was finally heard by the Finance Committee. Large contingents of both downtown interests and anti-growth interests presented about eight hours of testimony. After considerable debate, the Finance Committee passed the ordinance to the full Board without recommendation. Finance then had to hear testimony on the cost of providing transit service to downtown and establish an initial rate for the TIDF. The author presented the primary testimony and was followed only by individuals opposed to the limit on the rate imposed by the ordinance, which turned out to be substantially lower than the initial cost finding. Those concerns aside, the rate was expeditiously determined and both matters referred to the full Board for its consideration.

The hearing before the full Board was a nearly exact replay of the Finance Committee hearing. The TIDF was enacted by a vote of eight ayes, three nos. The rate-setting was, if anything, briefer than it had been at Finance and was accepted by the same vote as was the ordinance. The ordinance again was approved by the same majority on its second reading the following week. The Mayor had reiterated her support for the ordinance as the quid pro quo for the fare increase during the debate. She followed through by signing the ordinance May 5, 1981, and it became law June 4, 1981.

Work began immediately on a proposal to create an assessment district. The remainder of 1981 was occupied by work with economic and financial consultants to prepare the necessary evidence. Under California law, it is necessary to prove that the benefit conferred by the service exceeds the costs to be assessed. The PUC's economic consultant prepared an extensive analysis of the level of access MUNI provides to downtown and the benefits this access provides to downtown commercial land users (1). The PUC's financial consultant developed a methodology to calculate the cost of the service which the economic consultant found provided a special benefit and prepared the first rate calculation (2). Briefly, these procedures involved measuring access provided to each of nearly 350 grid squares to identify the contiguous area receiving an extraordinary level of service. Costs were

allocated first to the extraordinary service, then to the area receiving the special benefit of this service. Needless to say, these studies were complex, required development of data that did not exist previously, and were accordingly costly.

While PUC staff and its consultants were busy with the assessment district studies, two prominent downtown land owners filed a class action suit challenging the TIDF. The premise of the action was that the fee was not based on costs, thus it was a tax which was prohibited by Proposition 13 unless approved by 2/3 of the electorate. Thereafter, staff's and consultants' attentions were divided between the development of the assessment district and the defense of the TIDF. More legal talent was engaged to defend the City.

In late January 1982, the Finance Committee took the first public step towards the creation of a transit assessment district. Finance approved a Resolution of Intention to create what became known as the Core Area Transit Maintenance District (CATMD). The full Board of Supervisors passed the resolution February 1, 1982. This resolution triggered a substantial legally-required notification process consisting of:

1. information packets mailed to every property owner;
2. notices posted throughout the proposed district; and
3. extensive newspaper advertising.

Every effort was made to meet both the letter and spirit of the law. Nevertheless, the entire process was completed less than 15 days after passage of the Resolution of Intent.

Thirty days after the notices were distributed, the Board commenced the second step, the Protest Hearing. During this step, every property owner (read opponent) was provided an opportunity to testify. After five days, or about 20 hours of testimony, interested citizens (read proponents) were allowed five minutes each to comment. April 25, 1982 saw the conclusion of testimony in the Protest Hearing.

A brief debate among Board members made it clear that the Board wished to amend the original CATMD proposal. To do so, it was necessary to continue the Protest Hearing and publish notice of another hearing called a Change and Modification Hearing. Following extensive advertising, this hearing was convened May 10, 1982. Five amendments were offered, the most

significant of which exempted hotels from assessments, the only non-residential land use to be so honored. This was somewhat related to an earlier decision to exclude cable car service from the cost to be assessed because of a charter provision mandating the level of such service to be provided. Certainly, cable car service is a strong magnet for hotel visitors, if not for their staffs. All five amendments were passed with minimal discussion and the Change and Modification Hearing closed.

Here it is necessary to break the narrative to examine the Mayor's role in this process. After initiating the fee concept in early 1980, as well as the fare increase and business tax increase, her only involvement had been to sign the TIDF ordinance. The development of CATMD implementation and administration procedures was kept just ahead of the progress of the legislation, thus the CATMD rate-setting process was only now coming into clear focus. And the Mayor did not like what she saw, a process in which she could only recommend a rate which could be increased or (less likely) reduced by the more liberal Board. Having balanced the 1980/81, 1981/82 and proposed 1982/83 budgets without revenue from the TIDF or the CATMD (or even the business tax increase), having heard the lengthy testimony of her downtown supporters in opposition to the CATMD and concerned that a zealous Board would jeopardize her bid for re-election the following year by imposing the full assessment allowed (then estimated at about 30¢ per square foot), and being advised that a court was shortly likely to rule that the business tax increase was legal (the June 1980 vote was challenged since a majority, but not the 2/3 seemingly required by Proposition 13, approved the increase), the Mayor decided that the TIDF was sufficient mitigation of the fare increase and requested that the Board continue consideration of the CATMD until the business tax increase decision was received.

While assessment district law was not clear, the City Attorney was prepared to rule that the Mayor had signature (thus veto) authority over the CATMD ordinance just as she had with the TIDF. Under these circumstances, the Board reluctantly continued the Change and Modification Hearing from July 12, 1982 to January 3, 1983. As the Mayor had hoped, the business tax increase was upheld about three months later. On January 3, 1983, the CATMD hearings were quietly tabled indefinitely by the Board of Supervisors.

The TIDF lives on. Stipulations allowing the City to collect the fee and deposit the proceeds in an escrow account were agreed to in court. Discovery and pre-trial motions occupied the last quarter of 1981 and the first three quarters of 1982. A trial date was set for August 1983, delayed to November 1983 and finally fixed in February 1984. The Superior Court's decision rendered in September 1984 after a lengthy trial was a clear victory for the City. Nevertheless, it is under appeal at the State Appellate Court and appears likely to continue to California's Supreme Court. It is thus likely to be another year or two before the City is allowed to use the proceeds of the TIDF, assuming the final verdict is favorable.

SUMMARY AND CONCLUSIONS

San Francisco's economy has always been heavily dependent on transit and its continued growth is even more so due to the opposition to and tremendous cost of further investment in the road system. Accordingly, the City has supported transit generously and continues to do so even in the wake of Proposition 13. The growth of downtown during the 1960s and 70s and heightened awareness of the transportation and fiscal impacts of this growth causes the equity of the distribution of this financial burden between residents and businesses to become an important issue. Finally, Proposition 13 induced a budget crisis which pushed the City to undertake the establishment of new forms of private financing through fees (or assessments) for service.

How can San Francisco's experience guide the transit industry? First, it is very difficult to generalize on the legal status of fees or assessments beyond the state level. Even within California charter cities have somewhat greater flexibility with respect to assessment districts than do general law cities and special districts must specifically be granted authority to levy fees or assessments by the State legislature.

Second, implementation of any fee for service concept requires a strong political consensus among all decision makers. In San Francisco, a long-standing concern about the equity of financing the transit system's cost had not been sufficient to spur action. A budget crisis and Proposition 13's limitations on alternatives was necessary to meld the consensus resulting in the TIDF. By the time the CATMD vote was approaching, the urgency had

worn off and alternatives were visible on the horizon. The long term equity concerns have, however, resulted in the failure of efforts by two Supervisors to repeal the TIDF.

Third, administrative and legal staff should research alternative mechanisms thoroughly. Most transit agencies are not accustomed to cost-based fee setting procedures. New cost-accounting principles and operating data collection systems may need to be adopted. Some fees may require data from other departments or agencies; for example, the TIDF requires building permit data.

Finally, if San Francisco's experiences have taught the industry anything, it is that we have not clearly identified the role fees or assessments should play in financing transit. Considerably more research and experimentation is needed before this role is well defined. State and federal encouragement of such research and experimentation is thus welcome and encouraged. Policies which reward transit agencies for the use of fees or assessments would be a positive step, but should be constructed quite flexibly to account for differences in conditions between agencies and between projects. Finally, policies which penalize an agency for failure to use such financing measures are clearly inappropriate at this time.

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LOS ANGELES METRO RAIL BENEFIT ASSESSMENT:
Analyzing Impacts on Real Estate Economics

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ABSTRACT

The City of Los Angeles recently approved the formation of two benefit assessment districts for the Metro Rail subway system. This approval followed an extensive research and consensus building effort. This paper reports on the identification of the impact of assessment rates upon the operating economics of land uses in downtown Los Angeles.

The paper reviews existing research techniques for examining benefits associated with rail transit, and proposes a supplemental methodology. The methodology analyzes the impact of a range of assessment rates on the operating economics of real estate, under a "worst case" scenario of no recovery of assessment fees from tenants. This analysis is used as a screening method to determine those real estate uses that are potentially sensitive to the assessment rates, is their ability to recover the fees from their tenants is delayed or reduced. Uses identified as potentially sensitive were then examined to determine appeal or exemption provisions that could address potentially significant impacts.

The benefit assessment studies recently completed for downtown Los Angeles revealed that the majority of new or renovated office uses were not sensitive to assessment rates of up to 50 cents per square foot of building area per year, but that certain other uses (e.g., warehouse, historic, or underutilized spaces) could be severely impacted. This led to the development of recommendations concerning appeal mechanisms for those sensitive uses.

The transferability of the findings of the study depend on an area's market conditions. However, the methodology has direct application to cities in which decision makers are contemplating benefit assessment financing techniques for major public improvements.

INTRODUCTION

Benefit assessment has many strengths as a financing technique for transportation improvements. It provides a measure of equity between new

and existing development and can be a funding source for area-wide transportation improvements. Furthermore, establishing a benefit assessment district requires an extensive private and public sector consensus building process which can have long-term benefits by focusing private sector concern on transportation objectives and transportation tradeoffs. The City of Los Angeles recently approved the formation of two benefit assessment districts to finance a portion of Los Angeles' proposed Metro Rail subway project. This paper reports on an analysis technique used in developing one of the Los Angeles Metro Rail Benefit Assessment Districts, focusing on an evaluation of potential rate structures and their impact on the real estate economics of land uses in downtown Los Angeles.

The paper is based upon work commissioned by the Community Redevelopment Agency of the City of Los Angeles (CRA), and provided as input to the study process of the Southern California Rapid Transit District (SCRTD) (1). SCRTD will build and operate Metro Rail, and will administer the benefit assessment districts (2). CRA is charged with the responsibility of revitalizing certain areas of the City through redevelopment, rehabilitation and economic development. The Metro Rail subway passes through redevelopment areas in downtown Los Angeles and North Hollywood, and a proposed redevelopment area in Hollywood. In these areas, CRA participates in Metro Rail joint development activities and has prepared Station Area Master Plans for SCRTD.

The benefit assessment studies commissioned by CRA provided an independent analysis of previously unaddressed issues that are relevant to redevelopment activities. The analysis provided the basis for CRA recommending that SCRTD revise their preliminary assessment rate structure and introduce certain appeal mechanisms.

Reviewed in this paper are methodological issues associated with identifying the benefits of the provision of rail transit and the premise for the analysis commissioned by CRA. The analysis of the impact of potential rates on the real estate economics of various land uses is presented. Conclusions are drawn regarding the merits of this approach and its applicability to other projects.

METRO RAIL BENEFIT ASSESSMENT DISTRICTS

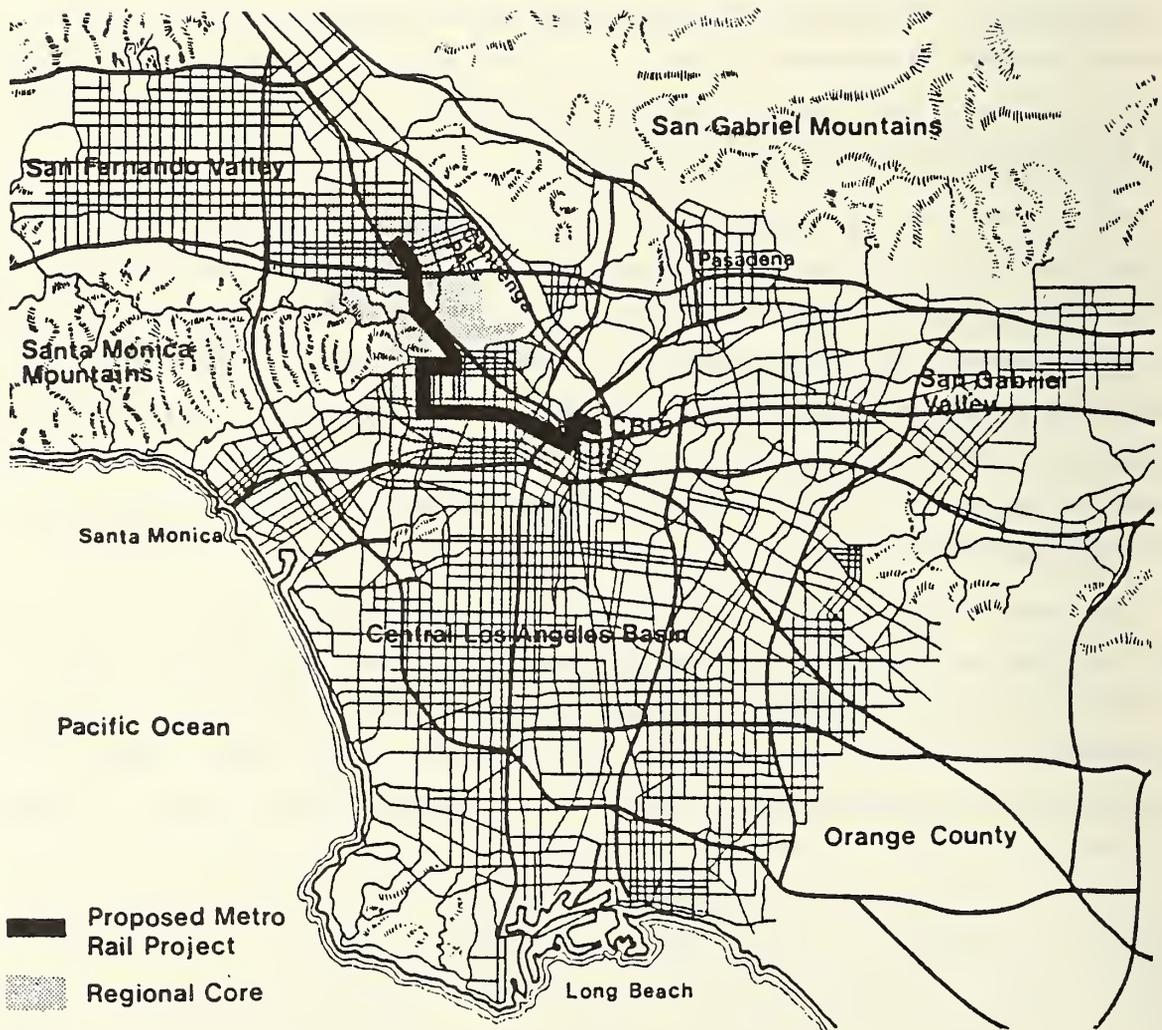
Metro Rail is a \$3.2 billion, 18.6-mile subway project being implemented by the Southern California Rapid Transit District (SCRTD). The project will link downtown Los Angeles with the San Fernando Valley via Hollywood (see Figure 1). A critical aspect of the project is a private sector funding commitment that will be provided through benefit assessment and transit/land use joint development.

The target amount for the benefit assessment contribution is \$170 million in capital costs. State legislation has been passed giving SCRTD authority to establish benefit assessment districts, subject to Los Angeles City Council approval. The private sector funding commitment will be matched by local, state and pending federal funding sources.

Metro Rail will be constructed in phases, the first segment being a 4.4-mile central city line from Union Station to the Alvarado Station. In 1985, the Los Angeles City Council and SCRTD Board of Directors approved the establishment of two benefit assessment districts, subject to federal government commitment to fund its portion of the system. These first two districts will generate annual revenues to repay a \$130.3 million bond issue for capital costs. Figure 2 shows the alignment of Metro Rail through downtown Los Angeles and the boundaries of the downtown assessment district.

The benefit assessment rate for the first two assessment districts is 30 cents per square foot of gross building area per year, which can vary to a maximum of forty-two cents per square foot per year, depending on the bond repayment schedule and the level of real estate growth that occurs. The districts cover an approximately one-half mile radius of the stations. Assessment rates for office, commercial, retail stores, hotels and motels are based on the square footage of the improvement or the square footage of the parcel, whichever is greater. If the parcel is vacant or contains a warehouse or industrial use, only the land area is assessed. Residential uses are exempt from all assessments. An appeals process has been established for certain defined uses (e.g., buildings with low rental efficiency), and uses which can demonstrate that they do not substantially benefit from Metro Rail (2).

The approval of the benefit assessment districts followed considerable public involvement and consensus building, both for the design of the Metro Rail project and for the use of benefit assessment financing mechanisms. To



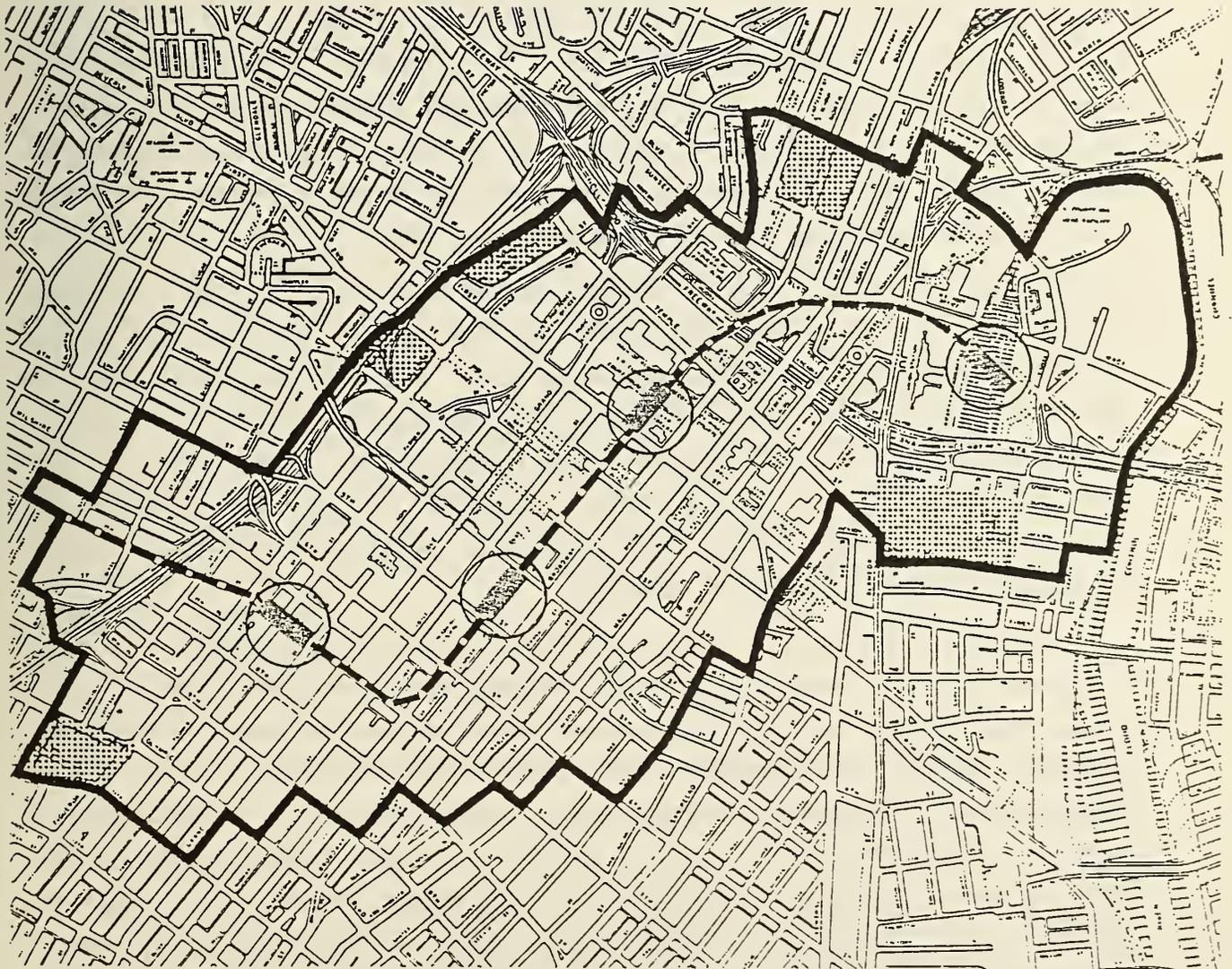
METRO RAIL REGIONAL SETTING

Source: SCRTD

Proposed
Benefit
Assessment
District
Boundary

FIGURE 2

Benefit Assessment District No. A1 of the
Southern California Rapid Transit District
(CBD District)



Map Source: SCRTD

--- Metro Rail Alignment
— Benefit Assessment District Boundary

○ Metro Rail Stations
▣ Areas Affected by SCRTD Boundary Revision

facilitate a public review process and to inform key community leaders of the benefit assessment proposal, SCRTD established a Benefit Assessment Policy Task Force (BAPTF), composed of key private and public sector representatives, and held a series of meetings with that advisory group. SCRTD also established a number of interagency committees to provide technical input and advice concerning the proposed districts. The following section discusses the theoretical basis for the measurement of rail transit benefits.

TECHNIQUES FOR MEASURING BENEFIT

Benefits of Fixed Rail Transit

The concept of a benefit assessment district is that a fee on properties in a specified area is levied to pay for part or all of the cost of an improvement specifically benefitting that area. The approach is commonly used for infrastructure projects, and has been increasingly applied to the financing of transportation improvements. The issue of benefit is key to establishing the district, and fixed rail transit projects generally require extensive research on the benefits resulting from transportation projects.

Although the benefits of fixed rail transit can accrue to both residential and commercial land uses, the discussion that follows concentrates on the impact of fixed rail transit on commercial uses. This approach was taken in the first phase of the Los Angeles benefit assessment analysis because: (1) the areas covered by the districts were predominantly commercial uses; and (2) a Los Angeles City Council policy prevented the levying of benefit assessment on residential uses. The question of benefits to residential uses is an appropriate topic for further research.

Benefits to commercial uses can accrue to both the revenues and costs associated with a commercial activity. Examples of revenue benefits include increases in sales to those retail uses dependent on customer traffic, and increases in rent, development potential and land value to property owners located nearby station entrances. Cost benefits can be realized because employee wage rates reflect to some degree employees' transportation costs in the journey-to-work trip. Proximity to rail transit stations can reduce the monetary and time costs of employees' commute trips, thereby decreasing employer costs of providing wage rates and/or benefits sufficient to attract workers.

Cost benefits can vary substantially among land uses. For example, the importance of labor pool access and transportation convenience differs among categories of the same use, e.g., for office uses, differences exist between professional services offices, corporate headquarters and financial institutions. Within a potential benefit assessment district, these variations among uses may be more significant than proximity to a fixed rail transit station.

The question of overall benefit is complex in the higher density areas where rail transit is usually constructed. High levels of access usually exist in the form of other transportation modes. Accordingly, the realization of improved access relies on how much of an access advantage is represented by the improvement. Issues such as pricing, travel time and levels of congestion in other competing transportation modes become important.

Discussions of benefits often focus on the impact of rail transit on lease revenues and development potential, as reflected in land value, largely because recent transit impact studies have focused on such variables. However, this measure should be carefully structured because access benefits interact with a large number of other variables that influence land value. Whitelaw has identified the following variables in his work on the measurement of land values: (a) legal and institutional constraints; (b) public expenditure levels associated with the parcel; (c) municipal taxes; (d) site characteristics and amenities; and (e) externalities (3). To this list one might add trends in foreign investment and changes to federal tax law. Questions relating to measuring or predicting the benefit of a rail transit project, therefore, invariably become tied to the issue of controlling for other variables that influence land value.

Research Approaches For Transit Projects

As discussed previously, most transit benefit assessment research has focused on the measurement or prediction of changes in land values, assuming that these land values capture the various types of benefit that can accrue to land uses.

One approach to measurement is to compare before and after land values, using regression analysis to hold other significant variables constant. Following the calibration of such a model, it can be used in a predictive fashion by altering the access variable. An example of a before and after model is

Dewes (1976) study of the impacts of the Bloor Street Subway in Toronto, Canada (4). The study involved detailed simulations of door-to-door access costs before and after construction of the subway, and was calibrated for changes in residential property values.

An alternative approach involves the use of control corridors for comparison to corridors in which the transit improvement occurred. This approach was used by Boyce et al. (1972) in estimating the impact of the Lindenwold high speed line in Philadelphia (5).

Judgemental prediction is another technique used in attempting to forecast benefits of rail transit projects. One variation of this approach was used in predicting the impacts of BART in Oakland, California, where individual real estate submarkets were analyzed, growth levels were forecast, and local real estate and other experts were asked to make judgemental predictions regarding changes in rent levels associated with the transportation improvement (6).

A final research technique for determining benefit is simulation modeling. However, numerous methodological problems exist in this approach. Alcala (1976) has summarized key problems as follows: (a) estimating the elasticity of demand for land and travel; (b) dealing with the competing network of cities; and (c) solving causality questions in the modeling of public policy decisions. Land value simulation models are not commonly used in addressing rail transit benefit questions.

SCRTD ANALYSIS OF METRO RAIL BENEFIT

SCRTD undertook an extensive study process in establishing the benefit assessment districts. These efforts included research on benefits associated with rail transit projects in other North American cities, and examinations of the transferability of those findings to Los Angeles. The methodology rested largely upon case study comparison and judgemental prediction.

Case studies focused on benefits evident in Washington, D.C., Atlanta, San Francisco, and Toronto and Montreal, Canada. Potential benefits for the Los Angeles Metro Rail system were grouped into seven categories:

1. Land appreciation;
2. Increased premium lease rates;
3. Increased development densities;

4. Retail sales gains;
5. Higher occupancy levels;
6. Reduced parking costs; and
7. Urban growth pattern cost efficiencies.

The monetary target for benefit assessment funds was determined prior to the initiation of the benefit assessment studies, as part of assembling the funding package for the first segment of Metro Rail. SCRTD required a revenue stream that would enable them to sell bonds for 130.3 million dollars. Subsequent study efforts focused upon whether predicted monetary benefits of the proposed project met or exceeded the needed capital and financing amount.

Estimation efforts identified the value of benefits to office, hotel and retail uses. Estimations were based upon a review of case studies from other North American cities, economic forecasts for the Los Angeles CBD and judgmental estimates of the comparability and application of case study findings to Los Angeles. SCRTD's consultants estimated a cumulative year 2000 benefit, in 1984 dollars, of between 725 million dollars and 1.4 billion dollars (8). These findings were used to demonstrate that the benefit of Metro Rail exceeded the amount SCRTD was requesting that the private sector raise.

The Benefit Assessment Policy Task Force raised many questions concerning the comparability of case study data from other cities to the Los Angeles CBD. Key questions included the nature of existing travel patterns, transit system comparisons, and variations in benefit among uses and different locations vis a vis transit stations. SCRTD addressed these concerns, gained the endorsement of the Task Force and proceeded to design an appropriate rate structure.

CRA ANALYSIS OF BENEFIT ASSESSMENT RATES

CRA commissioned a parallel analysis of certain benefit assessment issues in order to focus on previously unaddressed issues that were important to redevelopment activities. That focus was determining the economic sensitivity of prototypical CBD buildings to the proposed benefit assessment rate structure. From that analysis, further work concerning potential appeal mechanisms for sensitive uses was undertaken. A report entitled "Economic Analysis of Metro Rail Benefit Assessment in Downtown Los Angeles" was produced,

with technical assistance by the Los Angeles real estate consultant firm of Kotin, Regan & Mouchly, Inc. (KRM) (1).

The analysis undertaken considered the full impact of benefit assessment on the property owner or operator, assuming no recovery of costs through tenants. This represents a "worst case" scenario of potential maximum impacts. The larger question of quantifying benefits to tenants was beyond the scope of the CRA work effort. Instead, the modeling was deliberately intended to be used as a screening method in which potentially sensitive uses would be identified for further examination. The reasoning behind this approach was that reaching a conclusion that a land use, regardless of its ability to recover cost from a tenant, would not be significantly impacted by benefit assessment satisfied CRA concerns about impacts on redevelopment activities. Analysis of the incidence of benefit to those uses was not a significant issue at that time, although it is an appropriate question for proponents of benefit assessment. This screening technique enabled CRA to address key policy issues without undertaking extensive analysis and research.

In order to analyze the impact of benefit assessment, KRM prepared a computer model in which eighteen prototypical properties were tested, representing alternative land uses, rent structures and building ages. Measures of sensitivity were developed to screen uses for further analysis.

A primary finding of the analysis was that the final rate structure proposed by SCRTD would not have a material impact on new or recently renovated office buildings whose rents exceed twenty dollars per square foot, regardless of their ability to recover the assessment from tenants. In fact, many of these buildings have pass-through clauses in their leases that would allow them to pass such changes on to tenants. The analogy made by KRM was that SCRTD's assessment fees, at their initial or maximum rate, would get "lost in the noise" of the real estate operating economics of those new or renovated office space uses. This aspect was not explored in further detail because of the apparent ability of these uses to pay the proposed rates.

The analysis did reveal that certain other uses had the potential of being seriously impacted by the proposed rate structure, again with the assumption of no cost recovery from tenants. The key variable in determining sensitivity was the rent structure of the use. The impact of assessment

rates at any level is inversely proportional to the net rent achieved. Uses that achieve a net rent of less than fifteen dollars a square foot generally fell into the higher sensitivity categories. It is important to note that the net rent achieved is not only a function of prevailing lease rates, but of building efficiency and occupancy rates as well.

Summarized below are uses which were identified in the model as being potentially sensitive to the proposed assessment rates:

1. **Older Office Buildings:** Downtown has two distinct office space submarkets -- the newer Class A projects (post-1960s) located on Bunker Hill and the west portion of the CBD; and pre-1960s space that exists on the east side of the CBD. The divergence in lease rates, occupancy rates, building efficiency and tenant composition is dramatic. The wide disparity of operating economics within a single use category, such as office use, is frequently not examined as closely as variations among uses, but is nonetheless important.
2. **Industrial/Warehouse Buildings:** The overall lower intensity and lower lease rates of these uses make recovery from benefit assessment rates difficult. Downtown Los Angeles has a large concentration of industrial/warehouse buildings on the edges of the office core. Examples of sensitive uses include the garment industry and warehousing.
3. **Historic Retail Buildings:** Downtown Los Angeles has a class of buildings that function with active retail uses on the ground floor and largely vacant upper story space. Many of these structures are located in an historic district in the Broadway shopping area. Assessment of rates upon vacant space will present a major burden on property owners who have now revenue from that space, let alone a possibility of recovering the assessment.

Table 1 summarizes the impact of a structure of assessment fees on major CBD uses. The indices used to screen for sensitivity are the percentage loss in annual income and the inflationary period required for recovery from the assessment. The first measure represents the increase in gross revenue of the building required to compensate for the increased operating cost reflected by the assessment fee. The second measure, inflationary recovery period, indicates the amount of time (in years) that it would take for the

TABLE 1

SUMMARY COMPARISON OF REVENUE/VALUE IMPACTS

<u>Land Use</u>	<u>Code</u>	<u>Initial Land/Building Rates For Uniform Area*</u>	<u>Maximum Land/Building Rates For Uniform Area*</u>
		<u>\$0.14-\$0.28/Sq.Ft.</u>	<u>\$0.20-\$0.40/Sq.Ft.</u>
New or Renovated High-rise Office Buildings	Sensitivity Loss in Annual Income Inflationary Recovery Period	Not material 1.3%-2.4% 0.3-0.4 years	Not material 1.9%-3.4% 0.4-0.6 years
Older Office Buildings	Sensitivity Loss in Annual Income Inflationary Recovery Period	Moderate 2.8%-8.2 0.5-1.3 years	Moderate 4.0%-11.7% 0.7-1.9 years
Industrial/Warehouse Buildings	Sensitivity Loss in Annual Income Inflationary Recovery Period	Moderate 5.8%-6.7% 1.4-1.7 years	Significant 8.3%-9.5% 2.1-2.4 years
Historic Retail Buildings	Sensitivity Loss in Annual Income Inflationary Recovery Period	Significant 9.3%-12.4% 2.1-3.1 years	Significant 13.2%-17.8% 2.9-4.4 years
Parking Lots	Sensitivity Loss in Annual Income Inflationary Recovery Period	Not material 4.5% 0.3 years	Not material 6.4% 0.4 years

*Rates of \$0.14 per square foot of land area and \$0.28 per square foot of gross building are with assessable uses and \$0.28 per square foot of land area without assessable uses.

Source: Kotin, Regan & Mouchly, Inc.

building to recover from normal inflation its original revenue levels, all other costs being constant. It was KRM's judgement that any fee structure that took over one-and-one-half years of inflationary rent increase to recover represented a significant hardship for that property type under the "worst case" assumptions outlined earlier. Figure 3 summarizes in a bar graph format the potential building area revenue loss attributable to the assessments.

The assessment fee structure indicated in this analysis is somewhat different than the current SCRTD proposal, although the overall impact is comparable. At the time this analysis was completed, SCRTD contemplated two assessment fees -- one on land and one on building area. This structure has been changed to a blended rate, where the assessment is levied on the greater of building area or land area. These changes do not substantially alter the findings of this analysis. However, two implications of the use of a blended rate should be noted. First, not separating land and building area fees creates an incentive for under-utilization of property, in that a relatively better fee structure is realized by lower intensity commercial uses. Second, the blended rate does not permit the isolation of physical or market restrictions on building use which may limit an owner's opportunity to benefit, but do not affect the benefit to the underlying property value.

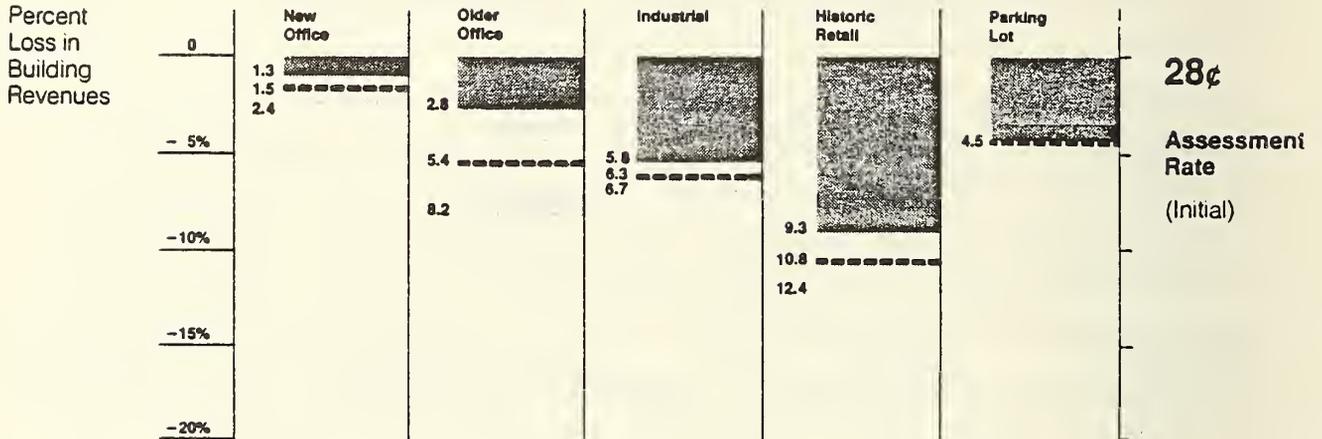
One additional difference in the analysis presented here is that SCRTD's blended rate proposal eliminated any assessment of the building area of warehouse/industrial uses, which reduced total assessments for such uses having a floor area ratio of 1:1 or more.

Table 2 identifies the methodology of the impact assessment model. The numbers shown in the model represent a prototypical new office space building in downtown Los Angeles. CRA's Real Estate department worked with KRM in identifying the appropriate assumptions for prototypical projects. The full range of eighteen prototypical projects are listed in Appendix A, for the initial and maximum rates.

The model has a column marked "Input Value," in which assumptions regarding the baseline income and operating characteristics are entered. The "Current Pro Forma" and "Adjusted Pro Forma" columns represent the net operating income before and after the benefit assessment charges are applied. From these net operating income calculations, a recalculated project value is

Potential
Building
Area
Revenue Loss
Attributable
To Assessment
By Building Type

FIGURE 3



■ Minimum Impact
□ Maximum Impact
-- Median Impact

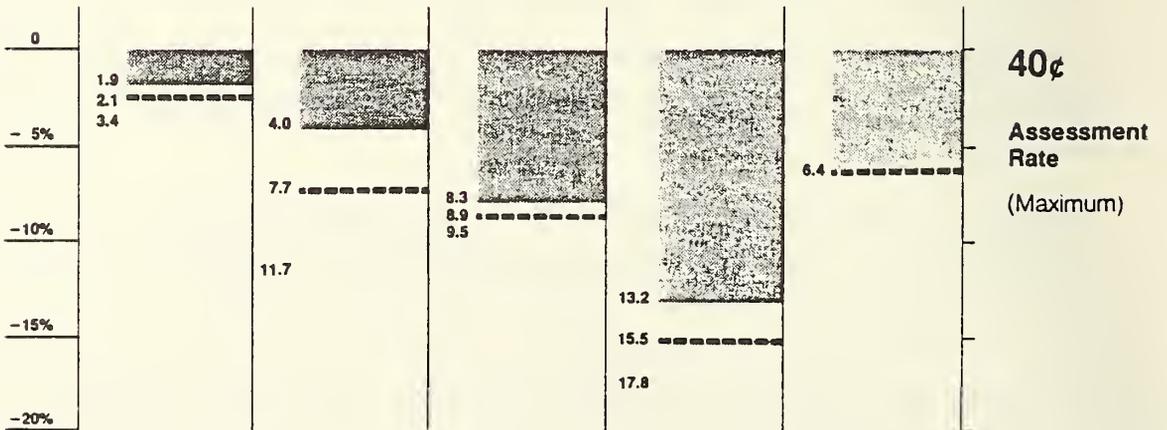


TABLE 2

SCRTD BENEFIT ASSESSMENT IMPACT VALUATION
PROTOTYPICAL NEW OFFICE BUILDING

	<u>INPUT VALUE</u>	<u>CURRENT PRO FORMA</u>	<u>ADJUSTED PRO FORMA</u>
LAND VALUE	\$67,000,000		
LAND AREA (SQ. FT.)	312,000		
GROSS BUILDING AREA (SQ. FT.)	3,500,000		
NET RENTABLE AREA (SQ. FT.)	2,972,000		
CAPITALIZATION RATE	9.5%		
INFLATION RATE	4.0%		
ASSESSMENT FEE-LAND AREA (\$ PER SF)	\$ 0.14		
ASSESSMENT FEE-BLDG. AREA (\$ PER SF)	\$ 0.28		

AFFECT ON EXISTING BUILDINGS

GROSS RENTAL INCOME	\$ 30.00	\$89,160,000	\$89,160,000
TOTAL OPERATING EXPENSES	\$ 6.50	\$19,318,000	\$19,318,000
ASSESSMENT FEE-BLD.			\$ 980,000
ASSESSMENT FEE-LAND			<u>\$ 43,680</u>
NET OPERATING INCOME		\$69,842,000	\$68,818,300
PROJECT VALUE		<u>\$735,179,000</u>	<u>\$724,403,000</u>
PROJECT VALUE REDUCTION		<u><u> </u></u>	<u><u>\$10,775,600</u></u>
% REDUCTION IN VALUE-BLDG. FEE ONLY	1.4%		
% REDUCTION IN VALUE-TOTAL	1.5%		

AFFECT ON FUTURE DEVELOPMENT LAND VALUES

ORIGINAL LAND VALUE		<u>\$67,000,000</u>	\$67,000,000
PROJECT VALUE REDUCTION			<u>-10,775,600</u>
REDUCED LAND VALUE		<u><u> </u></u>	<u>\$56,224,500</u>
REDUCTION PER SQUARE FOOT		<u><u> </u></u>	<u>\$ 35</u>
% REDUCTION IN LAND VALUE-LAND FEE ONLY	0.7%		
% REDUCTION IN LAND VALUE-TOTAL FEE	16.1%		

RECOVERY OF ASSESSMENT

OFFSETTING REVENUE INCREASE (%)	1.1%
YEARS TO PRIOR CASH FLOW LEVEL	0.29

Source: KRM

established, based on the input capitalization rate. A reduced per square foot land value is then calculated, based on the assumptions outlined below.

1. The reduction in operating income is translated directly into a reduction in property value through the use of the capitalization rate.
2. Since neither rents nor construction costs change as a function of crossing an assessment boundary, the reduction in property value for an improved property is directly translatable into a dollar-for-dollar reduction in land value.
3. Capitalization rates used for particular uses give the maximum value to the property in the current market and hence show the maximum negative impact from a reduction in operating income. This is consistent with the "worst case" screening approach.

The methodology described above enabled CRA to respond to SCRTD proposal in a short period of time. It is appropriate for use by entities seeking to determine the economic sensitivity of uses to benefit assessment rates. Based on existing downtown land use data, KRM made preliminary estimates that eight-and-one-half million square feet of office space is two-and-one-half million square feet of industrial use could be moderately or significantly impacted by the proposed rates. The next section summarizes the way in which CRA recommended that SCRTD address those uses that were identified as being potentially sensitive to the assessment rates.

CRA'S RECOMMENDATIONS CONCERNING AN APPEAL PROGRAM

The impact model exercised for prototypical projects identified that while new or renovated office uses are largely unaffected, a number of other uses would be potentially significantly impacted. These impacts would occur under circumstances where a property owner's ability to recover an assessment fee from tenants is reduced, delayed or non-existent. Rather than develop a detailed methodology to predict the flow of benefits to tenants, or make judgemental predictions about benefits to tenants, emphasis was placed on identifying appeal mechanisms that could address circumstances under which a property owner is not able to recover the assessment fee. The former task, predicting the flow of benefits to tenants, is an area where further research is warranted.

In general, uses identified as being potentially sensitive were those that may be in the least likely position to recover assessment charges from

tenants. They are uses that are operating in a submarket in which occupancy rates are commonly low and tenants are sensitive to small changes in lease rates. In other cases, many older uses have relatively inefficient floor plans, and would be penalized by assessments on gross floor area.

Uses having patterns of high vacancy rates, especially uses for which the reason for the vacancy is not primarily market related, cannot recover rates from vacant space, and are therefore especially sensitive. An example of such a use is in the Broadway retail area, where office space on upper floors is largely vacant. A major reason for this vacancy is a land use incompatibility between the intensive retail activity on the ground floor and office tenants' preference for a building entrance that reflects an office use. Even though rail transit may induce some market benefits, these benefits may not be sufficient to overcome other stronger factors.

Based on findings of potential economic sensitivity and the factors responsible for them, a number of uses of particular concern were identified. They include:

1. Buildings with low economic building efficiency, i.e., low ratios of net rentable area to gross building area;
2. Buildings subject to safety limitations on use;
3. Certified historical buildings;
4. Broadway commercial uses with low economic (rental) efficiency;
5. Non-profit uses that are not covered by an SCRTD exemption for owner/operator non-profit uses.

Although the uses described above represent a minority of the floor space in downtown Los Angeles, many represent essential components of downtown. CRA redevelopment goals regarding the revitalization of historic structures, the enhancement of downtown's retail districts, and the provision of a twenty-four hour community would be hampered if the assessment district negatively impacted the uses outlined above.

Based on these findings, CRA proposed a series of appeal categories for sensitive uses, on the basis that there may be certain instances in which sensitive uses may not benefit from proximity to a rail transit station. The specific appeal mechanisms proposed were based on a number of overall principles, including: (1) the burden of proof should be on the appellant; (2) processing requirements and judgemental input from SCRTD should be

minimized; and (3) third party certification of key representations should be used to minimize the need for independent research or validation by SCRTD. An additional element of the CRA recommendation is that an appealed exemption may not need to be permanent for those uses in which there may be a delay in realizing the benefits of Metro Rail. In such cases, annual recertification is appropriate. Finally, options were investigated for deferrals, whereby fees would be assessed, but payment of fees could be deferred until benefits were realized by the property owner.

Table 3 is an excerpt from the CRA benefit assessment report, summarizing the rationale, procedure, formula and estimated revenue impact of the appeal program recommended by CRA.

Revenue impacts of the appeal program were estimated using ranges of potentially applicable floor space. Resources were not available to extensively inventory affected uses, and the estimates were provided as illustrative examples of revenue impacts. The cumulative revenue impacts of the exemption categories is less than the individual impacts listed on Table 3, because some uses fall under more than one exemption category. The total maximum revenue impact of the exemption program recommended by CRA was estimated at 1.5 million dollars per year at SCRTD's initial rates, and 2.2 million dollars per year at the maximum rates. The impact of such a revenue loss would be compensated for by an adjustment in the overall assessment rates of between two and four cents per square foot.

CRA provided these recommendations to SCRTD for incorporation into their appeal procedures. Many recommendations were reflected in the final assessment mechanism approved by SCRTD. The major difference in approach was the proposed exemption program for Broadway retail space. SCRTD did not incorporate this appeal category into their program although an individual property owner has the right to appeal based on evidence of not receiving benefit from Metro Rail.

CONCLUSIONS

The SCRTD benefit assessment district proposal was approved by the SCRTD Board of Directors (July 11, 1985) and the Los Angeles City Council (May 31, 1985) without significant public opposition or challenge. Numerous explanations for the approval of the assessment districts are possible, but the

SUMMARY OF RECOMMENDED APPEALS PROGRAM

TABLE 3

	RATIONALE	PROCEDURE	EXEMPTION/DEFERRAL	FORMULA	TERM	REVENUE IMPACT
INEFFICIENT BUILDINGS	<ul style="list-style-type: none"> - ARCHITECTURALLY INTERESTING - NON PRODUCTIVE SPACE SHOULD NOT BE TAXED - FEE WOULD CREATE ECONOMIC HARDSHIP 	<ul style="list-style-type: none"> - CERTIFIED BUILDING PLANS - STANDARDS FOR RENTABLE AREA - THIRD PARTY CERTIFICATION - EFFICIENCY MUST BE LESS THAN 80% 	ALL NON-RENTABLE AREA	INDEFINITE	<ul style="list-style-type: none"> INITIAL RATE \$105,000-\$140,000 MAXIMUM RATE \$150,000-\$200,000 	
UNINHABITABLE - SAFETY CODE	<ul style="list-style-type: none"> - NO BENEFITS TO UNUSABLE SPACE - FEE WOULD CREATE ECONOMIC HARDSHIP UNTIL REHABILITATION OCCURS 	<ul style="list-style-type: none"> - CERTIFIED BY PUBLIC AGENCY - SPECIFIED BUILDING AREA AFFECTED - CURRENT & FUTURE RESTRICTIONS - THIRD PARTY CERTIFICATION 	ALL NON-USEABLE AREA	INDEFINITE	<ul style="list-style-type: none"> INITIAL RATE \$420,000-\$532,000 MAXIMUM RATE \$600,000-\$760,000 	
HISTORIC BUILDINGS	<ul style="list-style-type: none"> - DESIRE TO RETAIN ARCHITECTURAL STYLE - FEE WOULD CREATE ECONOMIC HARDSHIP UNTIL REHABILITATION OCCURS 	<ul style="list-style-type: none"> - CERTIFIED HISTORICAL STATUS - TEMPORARY EXEMPTION OR DEFERRAL - HD EXEMPTION IF RECENTLY REMOVED 	ENTIRE BUILDING	3-5 YEARS	<ul style="list-style-type: none"> INITIAL RATE \$280,000-\$840,000 MAXIMUM RATE \$400,000-\$1,200,000 	
BROADWAY RETAIL	<ul style="list-style-type: none"> - DESIRE TO RETAIN VIABLE RETAIL USES - VACANT UPPER FLOORS ARE UNUSEO - FEE WOULD CREATE ECONOMIC HARDSHIP UNTIL REHABILITATION OCCURS - MARKET BARRIERS TO OCCUPANCY 	<ul style="list-style-type: none"> - CERTIFIED BUILDING PLANS - STANDARDS FOR RENTABLE AREA - THIRO PARTY CERTIFICATION - ANNUAL REVIEW OF AUOITEO STATEMENT - DEFERRAL OR EXEMPTION 	ALL NON-RENTEO ABOVE 2ND FLOOR	3-5 YEARS	<ul style="list-style-type: none"> INITIAL RATE \$756,000-\$924,000 MAXIMUM RATE \$1,080,000-1,320,000 	
NON-PROFIT	<ul style="list-style-type: none"> - GENERAL PRINCIPLE OF NON-TAXATION OF NON-PROFIT ENTITIES 	<ul style="list-style-type: none"> - 95% OCCUPANCY BY NON-PROFIT USERS - ANNUAL RENEWAL PROCESS 	ENTIRE BUILDING	ANNUAL REVIEW	NO ESTIMATE	

NOTE: Cumulative revenue impact of all programs is less than the sum of each incremental impact

Source: KRM

analysis undertaken by CRA suggests there are at least two significant factors. First, the overall structure of rates was such that the dominant land use, office space, was not significantly impacted by rates proposed. In all likelihood, assessment rates of one dollar per square foot would have received a different response from property owners. Second, a serious examination of potentially impacted uses was made, and mechanisms were established to address those issues through appeal mechanisms.

The research undertaken suggests that although it remains difficult to prove in detail that benefit will occur because of planned fixed rail transit projects, accessible methodologies are available to examine in detail the potential economic impacts of assessment fees on the range of land uses found in activity centers. This policy relevant screening analysis is critical to public acceptance of benefit assessment proposals and the avoidance of unanticipated negative land use and real estate impacts. Further, the establishment of mechanisms to address and resolve potentially adverse impacts lessens the need to prove that every use will receive benefit. Assessment district proponents can point to mechanisms that will address negative impacts, if they occur, rather than having to address all cases at the outset.

The methodology presented in this paper focuses on the impact of fee structures, rather than incidence of benefit, and can therefore be applied to the analysis of other types of transportation fees. For example, the initial screening analysis could be applied to fees for roadway and Transportation System Management (TSM) improvements, or local area circulation/distribution services. Further analysis would be required to identify benefit and to determine the ability of property owners to recover fees from tenants, for each type of transportation improvement.

A conclusion relating to the presentation of a benefit assessment proposal is that benefits and potential impacts are more easily addressed when they are put in terms that decision-makers, community leaders and property owners can readily understand. For example, the use of a time period for recovery (under an assumed inflation rate) is an effective way to present the differences in impacts among various uses. CAR's finding that impacts can vary greatly across a single land use category, such as office space, highlights the need to examine characteristics within use categories.

The methodology described in this paper provides a needed approach to benefit assessment analysis. However, further research is needed on the establishment of benefit to uses, techniques for properly controlling for non-transportation variables, linkages between tenant benefits and the capture of those benefits through lease rates, and techniques for assessing the applicability of case study findings to various urban settings.

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NOTE: The appendices to this article were omitted in publication.

A LOCAL SHARE FINANCING STRATEGY FOR THE DOWNTOWN SEATTLE TRANSPORTATION PROJECT

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SUMMARY

The Municipality of Metropolitan Seattle (Seattle Metro) has been working with the City of Seattle and surrounding jurisdictions to develop a procedure for determining the value created for the private sector by major improvements to the regional bus system. Proposed improvements, in addition to a major bus transit center in the suburban city of Bellevue, include a 1.3-mile underground transit tunnel through the Central Business District of Seattle. As advisors to Seattle Metro, RPR Economic Consultants has prepared a market-based evaluation process to determine change in value to the private sector resulting from the proposed transit improvements. This procedure has already been applied in Bellevue as the basis for land acquisition settlements prior to construction of the Bellevue Transit Center. That Center is now complete.

The work reported on in this study is an expansion and application of the same methodology to the area surrounding entrances to the five underground transit stations along the transit tunnel. This procedure evaluates current market conditions affecting office, retail and residential development and, based on that evaluation, estimates potential changes that will occur in vacancy, rental, and absorption rates once the transit tunnel is substantially complete. Changes in these market factors affect the economic value of new development in the CBD. Where these values increase, the private sector realizes a net benefit from transit facility development. The municipality proposes to recapture a percentage of that net benefit through application of a Local Improvement District (LID).

This study presents a description of the market-based evaluation process, including a description of the computer models used. Application of the process demonstrates that the total value created for both existing and potential development is on the order of \$130 million, expressed in current dollars. Potential exists to recapture over \$40 million as a local share contribution to financing the downtown transit improvements through implementation of the Local Improvement District assessment process.

THE BENEFIT EVALUATION PROCESS

Introduction

This study reviews an on-going effort in Seattle, Washington, to identify and measure the economic impacts on private development resulting from implementation of the Downtown Seattle Transportation Project. The process described involves both developing and applying market-based financial analysis techniques to a large-scale public transit system improvement.

The question of special benefits generated by proximity to transit facilities is an easy question to ask, but often a very difficult one to answer. Each project has its own peculiarities and complexities, combining market, political and legal issues -- and the DSTP is no exception. The process of analyzing those issues, however, is a straightforward one which combines detailed market analysis procedures with logical analysis of financial implications of the "changes" in the market imposed by significant transit system improvements.

The concept of special benefit analysis has been an important part of transit system development planning in major cities for many years. Major efforts began as part of the joint development planning process in Washington, D.C., where special costs associated with development in close proximity to transit stations were compared with enhanced value of new development to determine net benefits to the private sector. Where a net increase in value was identified, that increase served as a basis for proposed access and development rights fees payable to the transit authority for the right to build on authority-owned land. These fees took the form of one-time payments or as a component of lease payments over specified periods of time.

Studies of commercial development in the Washington, D.C., Metropolitan area have indicated that construction of the Metrorail system has significantly affected development patterns in the region. Two-thirds of all commercial development in the region between 1979 and 1982 was located in 60 development centers, of which 46 were near existing or future rail stations. Almost one-half of all commercial floor space constructed in the region between those same years was located near existing or future Metrorail stations, representing an investment of \$2.0 billion. Further, most of the new regional space in mixed use, hotel/motel, and office projects built during the same period was

built near Metrorail stations; and all the station areas except one in Downtown D.C. are among the leading station development locations.

Other major urban areas have also accepted the concept that transportation system investments create value for the private sector. In Los Angeles, Atlanta, Denver and Miami, transit agencies have formulated programs to identify special benefits created and to help capture some of those benefits for the public sector as a means of off-setting major costs during a time when federal subsidies are diminishing.

The level of benefits created is a function of the market conditions under which private development occurs. The market for new office or retail space, and for new hotels, is always highly competitive. Every new development strives for a certain unique quality to make it stand out from the rest, to be more desirable and, therefore, more easily marketed. That marketability translates directly into greater cash flow and higher returns on investment.

In a highly congested downtown central business district, accessibility is one factor that contributes to uniqueness. Commercial buildings with high accessibility to transit facilities offer special opportunities to office and retail space users. As a result, if demand for new space exists, buildings with transit access are more marketable than comparable buildings without such access. This enhanced marketability creates special benefits for the private sector developer. The benefit evaluation process applied and documented in this study is an effective tool in measuring that enhanced marketability.

Project Background

Significant population and employment growth has occurred in the Puget Sound region during the past decade. Since 1970, the total population in the four-county Puget Sound region (King, Kitsap, Pierce and Snohomish Counties) grew from 1.94 million in 1970 to 2.24 million in 1980. Estimates for 1985 bring the regional population to 2.38 million. During the same period, total employment grew from 809,500 in 1970 to 1,119,800 by 1980. Estimates for 1985 are approximately 1,150,600 (Source: Puget Sound Council of Governments). Estimates are that both population and employment will continue to grow through the next ten years. Regional population in 1995 is estimated at 2.750 million; and regional employment in 1995 is estimated at

1.440 million. Population in the City of Seattle is expected to remain virtually constant at approximately 481,000, but employment is projected to grow from 403,350 in 1980 to 441,000 by 1990, with the major growth in the services sector.

Downtown Seattle's ability to continue as the pre-eminent activity center in the region is at least partially dependent on accessibility to and circulation within the downtown. Public transit has played a critical role in serving a growing number of downtown commuters on a limited and topographically restricted downtown street system. During the past five to seven years, however, the high volume of vehicles, including buses, traveling through downtown during the peak hours has created heavy congestion in the area. That congestion is growing.

As a result, downtown and regional transit service has become increasingly inefficient and unreliable. Buses now travel through downtown at an average speed of five m.p.h. during peak hours, and this speed is expected to drop further during the next five years unless significant improvements are made (Final Environmental Impact Statement for the Downtown Seattle Transit Project, U.S. Department of Transportation Urban Mass Transportation Administration et al., June 14, 1985). Downtown congestion has reduced the reliability of schedules and added unnecessary time to commuter trips throughout the region. According to the Final EIS (p. 1-1), public transportation's ability to maintain its share of commuter trips and downtown's ability to accommodate and control anticipated growth during the next ten years will depend on resolving downtown congestion and developing efficient transit service in downtown.

Downtown Seattle is a dense core encompassing approximately 1.4 square miles. Six major streets run north-south, generally parallel to the north-south Interstate, I-5, located on the eastern edge of the downtown. Numerous streets connect the downtown central business district to the freeway, facilitating east-west movement. Many streets are constrained by steep grades. Pedestrian travel is also affected by the grades and also by narrow sidewalks that are often inadequate to handle the volume of passers-by and those waiting at bus stops simultaneously.

As pointed out in the Final EIS (p. 1.4), bus congestion in the CBD is a critical problem because of the central role the CBD plays in the regional

transit network. The transit network consists of express and local routes, with local routes serving downtown and most areas within the city limits as well as major suburban areas. The CBD, however, is also a transfer point for regional travel. Express routes operate principally on the freeways and arterials with direct access to downtown.

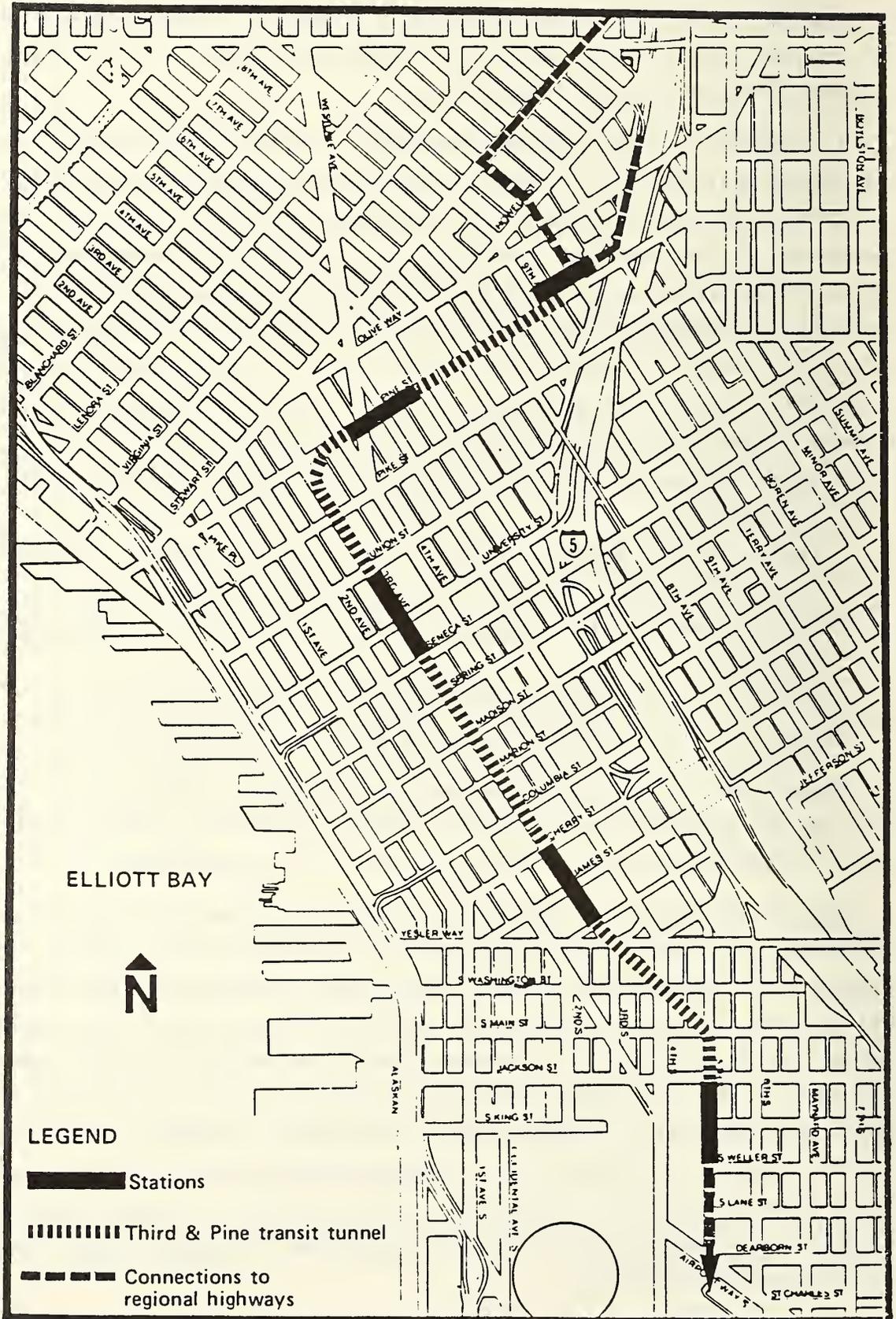
To respond to the growing need for increased transit service to and from downtown, the City of Seattle, Seattle Metro and others joined in planning major improvements to the regional transportation network. A major component of the resulting program is a 1.3-mile "L"-shaped transit tunnel under Third Avenue and Pine Street through the downtown (Figure 1). Metro proposes to operate electric buses through the tunnel to improve service and relieve the traffic congestion on CBD streets. This tunnel, known as the "Downtown Seattle Transportation Project" (DSTP), includes five transit stations -- one at each end of the tunnel and three in between:

- Union Station -- along 5th Avenue South between Weller and S. Jackson Streets;
- Third Avenue South -- along Third Avenue between Jefferson and Cherry Streets;
- Third Avenue North -- along Third Avenue between Seneca and Union Streets;
- Westlake -- along Pine Street between 4th and 6th Avenues; and
- Ninth and Pine -- along Pine Street between 9th Avenue and I-5.

Construction of the tunnel project and the five stations is to begin in time for an operating start in early-1990. Preliminary station designs as shown in Figures 2 through 7 (Final EIS, pp. 2-9 through 2-14).

One of the major purposes of the DSTP is to maintain and improve the ability of the Central Business District to capture future office growth. Without such transit improvements, that ability will decline. Private markets will continue to shift to peripheral centers in the region. The continued concentration of growth in downtown reinforces existing capital investments and expands opportunities for future investments. The central thesis of this study is that the implementation of the DSTP facilitates the continued economic growth of the downtown, creating value to the private sector. This value creation can help finance the transit system, a concept which makes greater and greater sense as financial resources for transit system improvements become more limited.

Third and Pine Transit Tunnel Alignment



260
FIGURE 1

4th AVENUE

(lid)

UNION STATION

JACKSON

WELLER

POTENTIAL STATION ENTRANCE

5th AVENUE

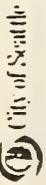


FIGURE 2

Union Station plan view
Source: Parsons/Brinckerhoff

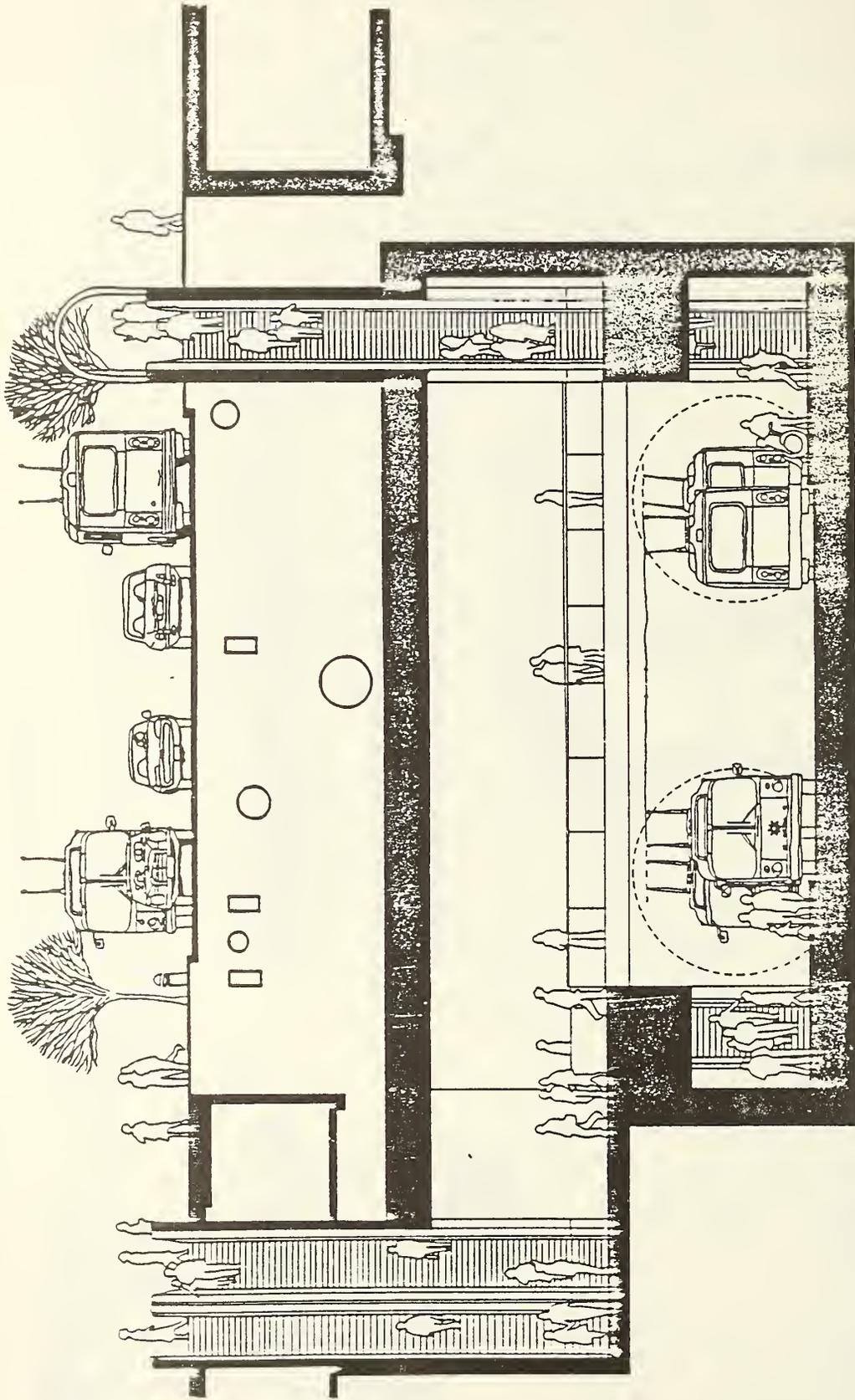


FIGURE 3
Third Avenue prototype station

**DOWNTOWN
SEATTLE TRANSIT
PROJECT**



METRO City of Seattle

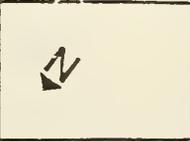
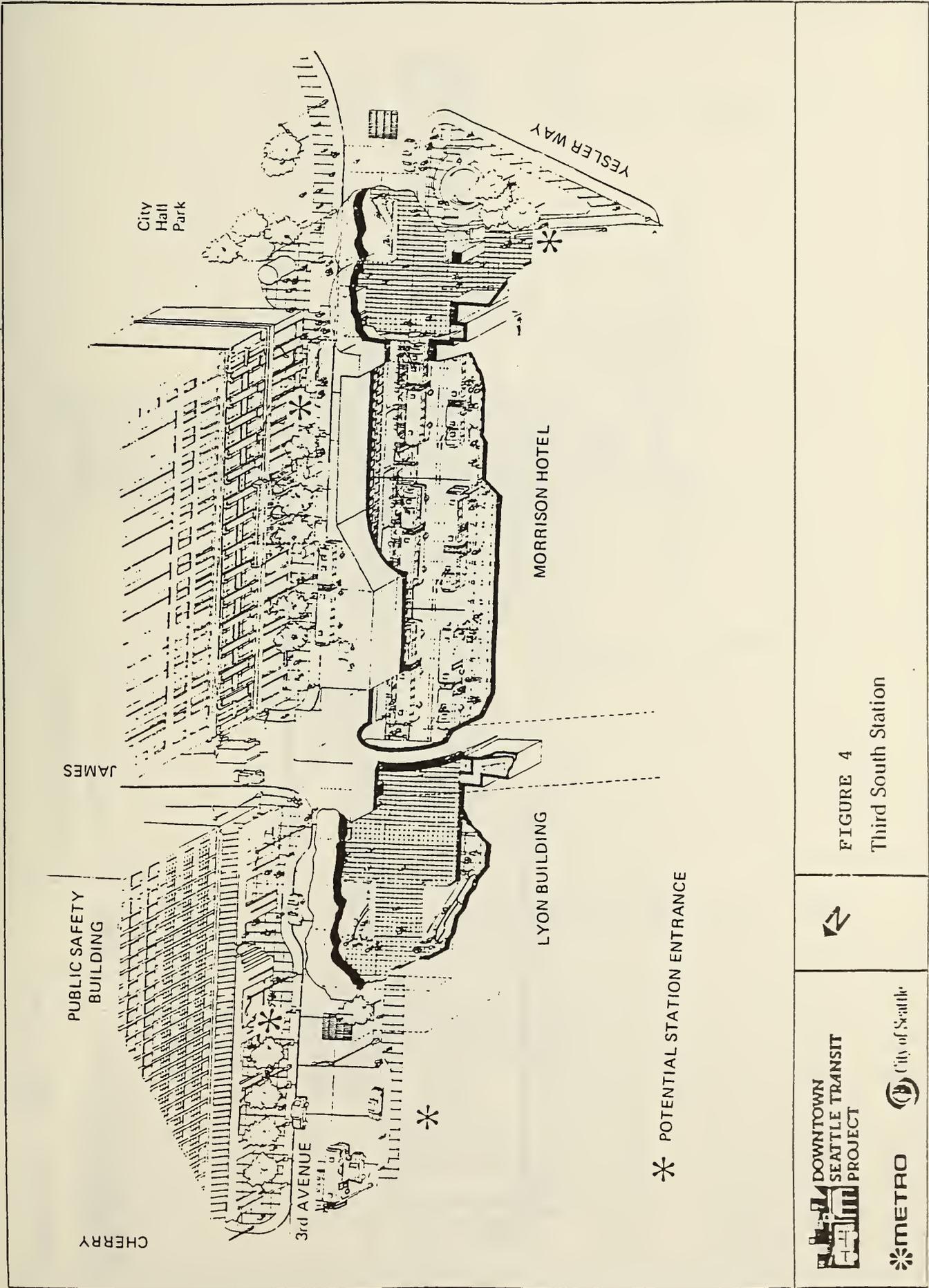


FIGURE 4
 Third South Station

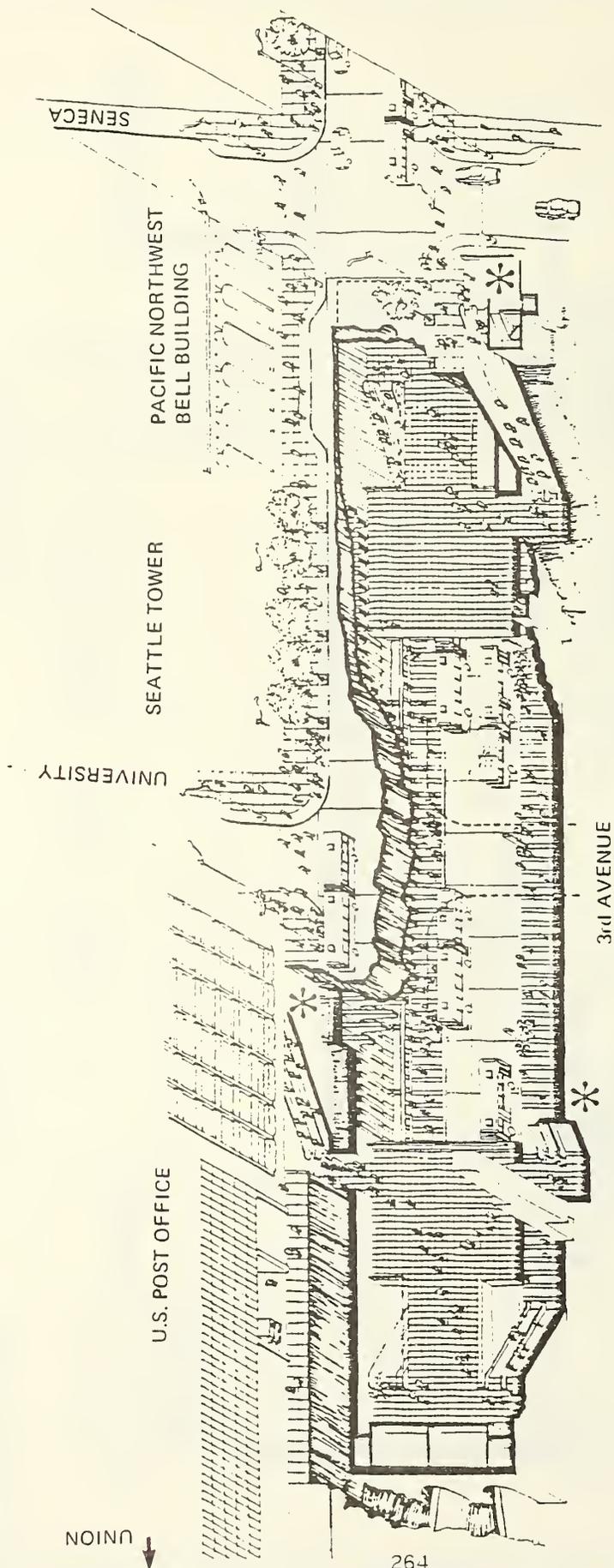


FIGURE 5
Third North Station

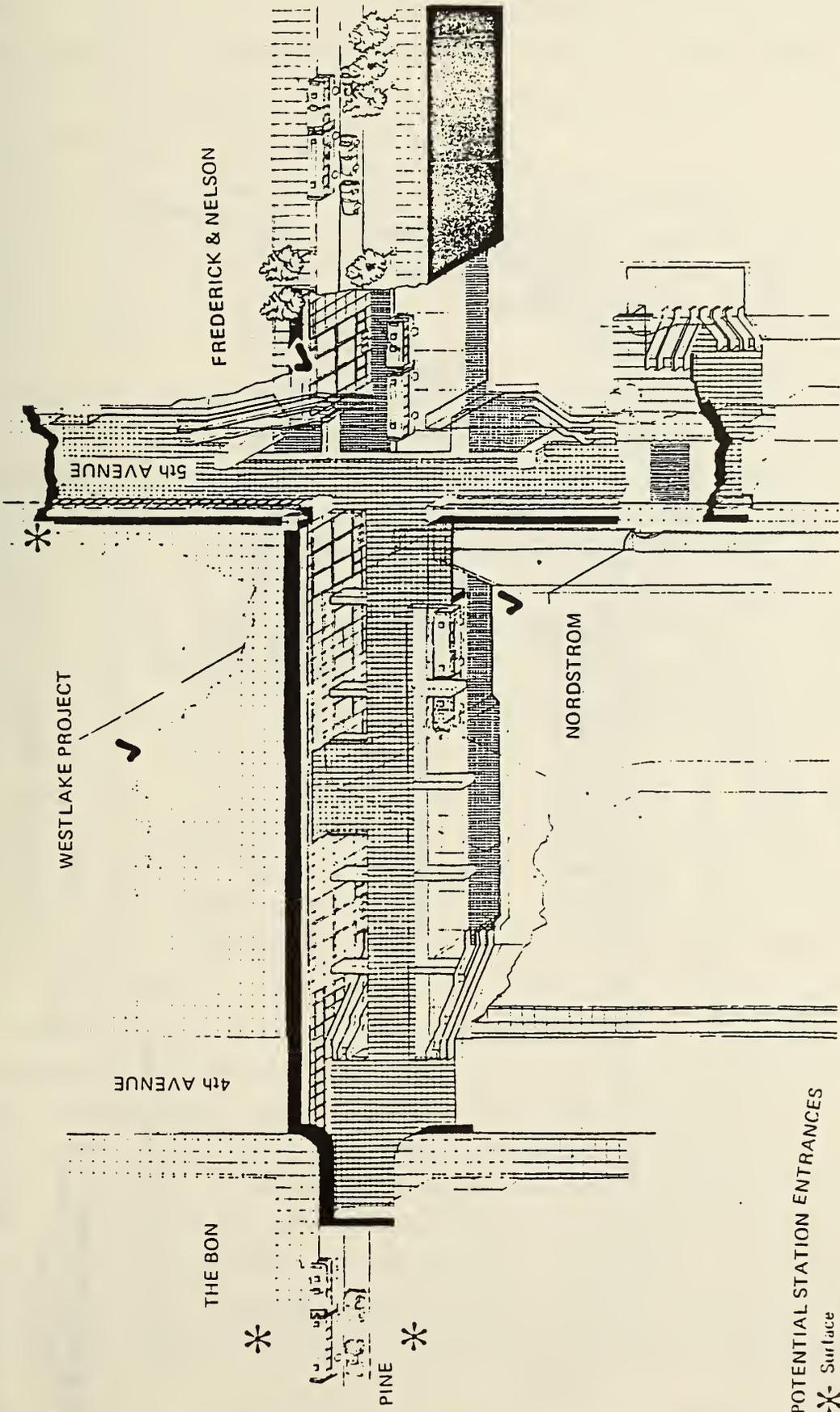
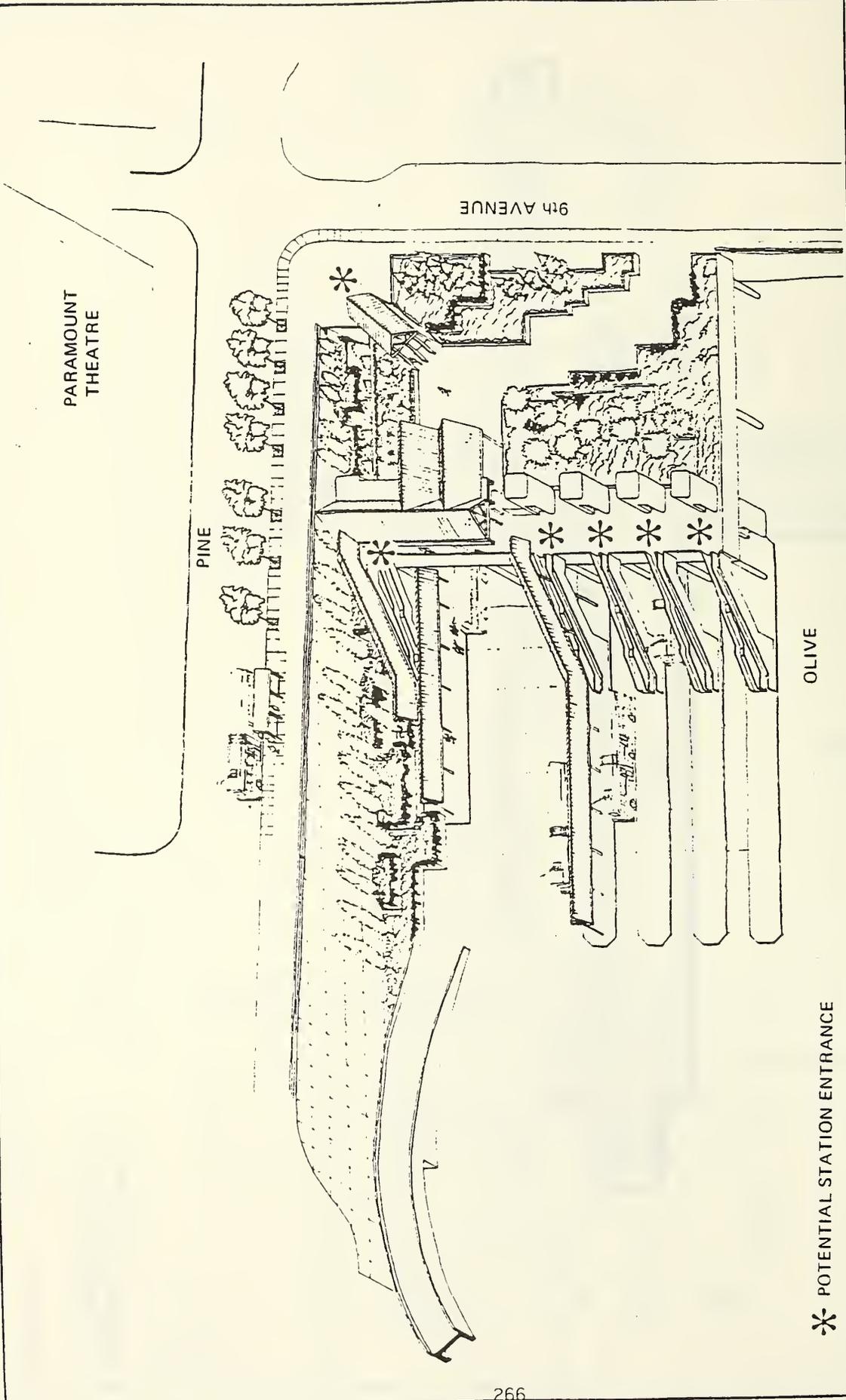


FIGURE 6
Westlake Station



City of Seattle





PARAMOUNT
THEATRE

PINE

9th AVENUE

OLIVE

* POTENTIAL STATION ENTRANCE



FIGURE 7
Ninth and Pine Station

The first step in estimating the level of value created is to examine local market conditions and identify how implementation of the DSTP will affect those conditions. The next section of this study discusses those conditions as a basis for subsequent analysis.

Market Conditions - Downtown Seattle

Office space growth in Downtown Seattle has been substantial since 1970. From just under 6.0 million square feet in 1970, the office space inventory increased to nearly 17.5 million square feet by the middle of 1985. Century Square, which will open in early-1986, will add another 0.5 million square feet. An additional 7.0 million square feet are in various stages of planning.

Although Central Business District employment has been growing steadily since 1981 and 1982, that growth has not entirely kept pace with new office development. Vacancy rates throughout the downtown have grown from 8.66 percent in December, 1982, to 14.3 percent by December, 1983. Vacancy rates by the end of 1984 were nearly 15 percent overall. These rates are somewhat deceptive, however, since they include Class "B" and "C" buildings as well as Class "A." The majority of vacant space is in older Class "B" buildings, with actual Class "A" vacancy rates on the order of 12 to 13 percent. Newer, more technologically advanced buildings are drawing the best tenants from older, more obsolete offices.

Employment in the CBD is projected to continue to grow, with non-manufacturing employment expected to increase from approximately 99,000 in 1985 to 134,600 by 1990 -- a growth rate of just over 6.3 percent annually (Puget Sound Council of Governments). This growth should translate to approximately 9.5 million square feet of new office space within the next seven to ten years.

Office space absorption in the downtown has also exhibited growth. Average annual downtown office absorption from 1978 to 1983 was approximately 780,000 square feet. During 1983, nearly 900,000 square feet were leased; and during 1984, just over 1.0 million square feet were absorbed (Coldwell Banker, Cushman & Wakefield, and RPR Economic Consultants). This area includes the CBD, Denny/Regrade, lower Queen Anne, and Pioneer Square, with the majority of space located in the CBD. If current trends continue, annual absorption over the next five to ten years should average between 900,000 and 1.2 million square feet. In general, therefore, market

conditions for office development in the Central Business District remain strong given current growth trends.

Comparable and competitive growth is also occurring in outlying areas, such as Bellevue. If the downtown Seattle area traffic congestion increases to the point of adversely affecting accessibility to new space, inventories in the competing areas could decrease absorption rates in Seattle. Higher vacancy rates and lower rents for new buildings would result. These conditions are well-recognized by the Seattle metropolitan area, and this recognition has led to the development of the Downtown Seattle Transportation Project (DSTP) and the citywide Land Use and Transportation Plan (LUTP).

BENEFIT EVALUATION

Methodology

The approach used to test the potential economic impacts on private development in the downtown area affected by implementation of the DSTP is a two-step process. The first step uses the market and construction cost data, gathered from both public and private sector resources, to determine the potential baseline value for projected new construction in downtown over the next ten years. Rental rates, construction costs, secondary costs, land costs, financing costs, and operating expenses are determined and used to generate a total development cost for projected development over the next ten years for both a "with" and "without" case -- "with" and "without" the DSTP in place. The total development cost numbers are estimates only, and they are used for comparisons not as absolutes. The differences between the "with" and "without" cases are the primary concern. Table 1 illustrates the static pro forma for the "without" case; Table 2 for the "with" case.

The second step in the model process uses a ten-year cash flow analysis to determine net profits and returns over the ten-year projection period for both the "with" and "without" cases. The basic inputs calculated in step 1 are used in the cash-flow model and changed from a static to a dynamic situation. As input into this cash-flow model, market research has identified appropriate rental, operating, and capital cost escalation rates. Escalation rates have consistently been set at the lower end of identified ranges to maintain a conservative approach throughout the analysis. Tables 1, 3, and 5 are the static pro formas; Tables 2, 4, 6 and 7 are the dynamic pro formas. Step 1, application of the static pro forma, determines primary and

secondary construction costs, financing costs, debt and debt service requirements, and required equity. Step 2, application of the dynamic pro forma, uses that information to show changing net income per year given the amount of costs required to operate and maintain the office space. The dynamic analysis uses nearly 50 input variables to determine the projected cash flows. This process is repeated to model both existing development and new development through the ten-year study period.

Once the net cash flows have been calculated for each alternative, they can be discounted back to year one to determine a net present value of the initial investment or equity investment in the office construction. To determine a real value in current dollars, we have assumed a residual value to the total office development at the end of ten years equal to the economic value represented by the capitalized income stream for that year.

In terms of the model, this capitalized income is used to retire the existing debt, and the net value is then discounted to year one as the final increment in the net present value analysis. For both the "with" and "without" cases, the net present value is determined, net of equity investment. Therefore, the NPV represents a net value of the projected cash flow in current dollars. The difference between that value for the "with" and "without" cases is the benefit (or cost) accruing to private developers as a result of implementation of the DSTP.

Tables 1 through 7 all illustrate the variables used to determine the net cash flows. For the static pro forma, Table 1 is an example, the following are input variables:

- amount of office space
- amount of retail space
- number of parking spaces
- construction cost
- secondary costs
- land value
- rents
- real estate taxes
- capitalization rate
- long- and short-term financing rates

Using these variables, the model calculates total development costs, debt service costs, equity requirements, and net profits. Net profits, in turn,

determine the projected return on equity.

The multi-year cash flow model (Table 2 is an example) uses the same space data as the static model, but adds inflationary costs to the cash flow calculations. These costs are based on estimates of the consumer price index, as well as other factors. Rental rates and projected expenses in the initial year correspond to those used in the static model, as do mortgage interest rates and amortization periods. The desired internal rate of return (IRR) shown in line 70 of the dynamic model (Tables 2, 4, 6 and 7) is an input representing the minimum return on investment expected by a developer. In a sense, this number is "guess" at what the cash flow will generate. Lines 109 and 114 (Tables 2, 4, 6 and 7) are direct outputs of the static model. These values are used to calculate the remaining outputs in the cash flow model.

The major results of the cash flow model (Tables 2, 4, 6 and 7) are shown in lines 100, 103 and 108 (see Table 2 as an example). Line 108 is the after tax net present value of the projected cash flow which takes into account the tax benefits, under current laws, of the losses and depreciation incurred throughout the life of a given project. Line 103 shows the calculated internal rate of return after taxes, which is an indication of the return on equity after tax benefits have been taken into account. Line 100 shows the yearly return on equity as a ratio (as a percentage) of developer/investor cash flow (line 96) to equity (line 115). The after tax return on investment again takes into account the tax benefits of losses and depreciation experienced during that year. Line 132 calculates a ratio of net income (line 90) to debt service (line 117). This value should approach and exceed 1.20 as soon as possible if the cash flow of a given development project represents a strong financial investment. Given the cumulative nature of the dynamic model, the debt coverage ratio reflects only the combined picture and not individual buildings. In this case, that ratio exceeds 1.2 for individual buildings but not for the cumulative totals until well into the ten-year analysis period.

The next section illustrates the application of both the static and the dynamic models to the DSTP situation. The calculations are carried out for both the "with" and "without" cases, over a ten-year period.

Calculation of Benefits - New Development

Based on our study of market conditions and coordination with recent studies prepared by the City for the LUTP, we established projected absorption rates for new office space for both the "with" and "without" cases. A significant market factor impacting the "without" case is the potential for growing traffic congestion in the center city. It is apparent that without major improvements to the regional transit network aimed at improving access to the CBD, traffic congestion will eventually increase to the point whereby development of new office space will be adversely affected. New space would be forced out of the central area to other developing urban centers such as Bellevue, decreasing the overall rate of absorption within the downtown. With the development of the DSTP, downtown circulation and accessibility will improve, both in image as well as in reality. This improvement will allow downtown to capture the potential which the market analysis indicates is present.

Using this approach, we have prepared two development scenarios reflecting the potential office space growth patterns under both the "without" and "with" cases. For each of these scenarios, the model assumptions are as follows:

Scenario 1 - "Without" Case

- Absorption pace: beginning at the current average absorption pace of approximately 900,000 square feet per year, and declining slowly to 700,000 square feet per year by the tenth year as traffic congestion and competition from other areas increases. Total absorption over the ten-year period is projected to be 8.325 million square feet of commercial office space and just over 0.5 million square feet of retail space. Of the total retail space projected, 110,000 square feet are projected for the Westlake development. The remainder is envisioned as first floor space in new office buildings. Under this scenario, the average office absorption pace over the ten years would be 832,500 square feet annually, which is only slightly above the average experienced in downtown since 1978.
- Estimated floor area ratio (FAR) for new development is 15 for the "without" case. With bonuses, this average represents an upper limit for the average development potential for the downtown without implementation of the DSTP. Using an upper limit in the analysis represents a conservative assumption.

- Overall development costs in 1985 dollars, excluding land, average \$116 per square foot. Initial land costs are estimated at \$350 per square foot.
- Office rents per net square foot begin at 26.00 (or \$24.00 per gross square foot -- the current average for new space in prime buildings in the CBD) and rise to nearly \$34.00 per net square foot over the ten-year period. Retail rents per net square foot begin at \$20.00 and also rise at 3.0 percent over the ten years. Year five retail rents reflect a weighted average for the new Westlake development which should generate per-square-foot rents at a level significantly higher than ground floor space in other areas of downtown.
- Parking spaces have been assumed at a ratio equivalent to the "moderate access" schedule established in the new LUTP. We have used 0.75 spaces per 1,000 gross square feet for long-term spaces plus an additional 0.1 space per 1,000 square feet for short-term parking. Total parking provision over the ten-year development period is 7,630 spaces.

Scenario 2 - "With" Case

- Absorption rates for the "with" case also begin at 900,000 square feet annually, but gradually rise to 1.15 million square feet by year ten. Total development over the ten-year period is estimated at 10.1 million square feet -- an average comparable to the 1984 absorption rate and 23 percent greater than the average absorption over the 1978-1984 period. Average FAR is assumed to be 17, only slightly but significantly higher than that estimated for the "without" case. Total retail development over the ten-year period, including Westlake, is estimated at 615,000 square feet.
- Development costs are the same as those assumed for the "without" case; however, the parking requirements are decreased to reflect the high accessibility guidelines presented in the LUTP. Total number of spaces estimated under this development program are 6,964.
- Office rents begin at the same level as in the "without" case, but after the fifth year, they escalate at 4.0 percent annually instead of 3.0 percent. This change represents a higher level of competition for space in the central area following full operation of the DSTP. Retail rates begin at a rate 10.0 percent higher than in the "without" case, but escalation over the ten-year period is maintained at 3.0 percent annually.

The "without" case (Table 2) generates an after tax internal rate of return on investment of 33.5 percent (line 103, Table 2), with an after tax net present value of approximately \$200 million (line 108, Table 2). Both of these values represent strong market conditions.

The "with" case (Table 4) generates an after tax internal rate of return on investment of nearly 40 percent (line 103, Table 4), with an after tax net present value of approximately \$250 million (line 108, Table 4). The \$50 million difference represents the value of the benefits to the private sector attributable to new development occurring with the DSTP in place.

Calculation of Benefits - Existing Development

Inventories of existing office space indicate that a total of approximately 17.4 million square feet exist in buildings available for lease (Coldwell Banker, Cushman & Wakefield, RPR Economic Consultants). This total excludes owner-occupied buildings, smaller buildings under 100,000 square feet, and government space. The total does include the recently completed Columbia Center with approximately 1.4 million square feet. The January, 1983, inventories prepared by the City as part of the LUTP showed a total of 26.3 million square feet of office space. Therefore, the space available for lease represents approximately 60 to 65 percent of the total office space inventory located in downtown. As indicated in the market section above, "downtown" includes the Denny/Regrade area, lower Queen Anne, Pioneer Square as well as the CBD.

The LUTP inventory also indicates that approximately 7.857 million square feet of retail space exists in downtown. Of this total, 1.9 million square feet are contained in four stores: The Bon, Friedrich & Nelson, Nordstrom and I. Magnin. In addition, the total number of spaces in downtown is approximately 14,180, located in 5.53 million square feet of space.

The three totals for rentable office space, retail space, and parking spaces are used as the basis for estimating total value of existing development in the downtown and changes attributable to the implementation of the DSTP.

Table 5 illustrates the calculation of estimated value of existing development in the downtown. Since this study ultimately deals with changes in value for income generated over the next ten years, the actual value of existing development is only important as an order-of-magnitude estimate. As long as both the "with" and "without" cases begin at the same point, the

changes in value resulting from cash flow over time will be an accurate reflection of the impact of the DSTP. More important are the assumptions used to illustrate those changes over time.

As shown in Tables 6 (without the DSTP) and 7 (with the DSTP), the only changes used to illustrate differences in cash flow over time are the potential rental escalation rates for office space. For the "without" case, that escalator is set at a 2.5 percent per year average over the ten years. Normal growth is assumed at approximately 3.0 percent for new space. Greater congestion in the downtown, and more desirable locations in satellite centers as a result, will depress growth rate potentials for rent in existing space as they will absorption rates for new space. Therefore, the analysis uses a slight decrease in rental rate escalation over time to reflect those conditions. For the "with" case, the analysis uses the normal rental escalation rate of 3.0 percent per year.

For retail space, escalation rates for the "without" case are set at 3.0 percent per year, and at 4.0 percent for the "with" case. Both of these rates are below normal growth rates which are closer to 5.0 percent per year. These changes reflect the increasing congestion and development of competing space in outlying areas as well as competition from new space proposed for the downtown.

As a conservative estimate of the potential economic impacts, no other changes are made between the "with" and "without" cases. All other initial parameters and growth rates are kept the same.

With these estimated changes resulting from implementation of the DSTP, the difference between the after tax net present values for the "with" and "without" cases is approximately \$83.0 million. The after tax net present value for the "without" case (line 104, Table 6) is estimated at \$255 million, generating an after tax internal rate of return on equity of 18.2 percent (line 99, Table 6). The \$83 million difference for existing development represents the estimated benefits to the private sector from implementation of the DSTP.

Conclusions

The total of benefits attributable to the implementation of the DSTP is a combination of those generated for the existing and for potential development. Based on this analysis, that total is on the order of \$133 million, expressed in current dollars. This value does not include possible impact on downtown

hotel and residential uses, which should also prove positive although at a significantly lower order of magnitude. Improved accessibility through and within downtown will improve the marketability of both hotel and residential space. The downtown hotel market, however, is severely overbuilt at the present time. Improved accessibility by itself is not sufficient to change hotel market conditions. Therefore, calculated benefits will exist but will not compare with those associated with office development.

The same is basically true for residential development. High cost condominiums are also significantly overbuilt for the downtown market. Improved accessibility is designed primarily to improve rush hour circulation into the downtown. Therefore, although decreasing congestion will generally benefit residential development, the overall economic impacts will also not be on the same scale as those for office development.

Impacts on marketability of lower cost housing will also be positive, but the economics of constructing lower-to-moderate cost housing in the downtown are so difficult that potential returns on investment are only marginal at best, with or without implementation of the DSTP. All downtown programs that improve the marketability of housing may be necessary to facilitate any new housing development.

From the analysis of impacts on office development, it is clear that implementation of the DSTP will create significant enhanced value for private developers in the downtown. This conclusion is based on relatively small changes in market conditions, primarily in the ability of the downtown market to continue to capture a fair share of regional office-using employment. Improved accessibility to and from downtown during peak hours resulting from major public sector capital improvements will reinforce the concentration of development in the CBD and areas immediately on the periphery. Based on the analysis performed, it is apparent that this impact translates into significant economic value to the private development community.

LOCAL IMPROVEMENT DISTRICT FINANCING

The economic analysis demonstrates that the implementation of the Downtown Seattle Transit Project has the potential of generating increased value for private development on the order of \$133 million. Based on recent legislation passed by the State of Washington, the public sector has an expanded capacity to capture a portion of this created value as a contribution to the cost of system development. This section of the study analyzes the capability

of private development, both existing and proposed, to contribute to that cost using the Local Improvement District (LID) mechanism.

Methodology

The first step in the creation of a Local Improvement District is the designation of an appropriate assessment area. Based on the background of this study effort, the initial boundary zone chosen for testing the economic requirements of a potential LID was the City's Land Use and Transportation Plan (LUTP) area. This area, with its numerous subzones, stretches from South Dearborn Street on the south to Denny Way on the north, and from I-5 on the east to the waterfront on the west. Recognizing that this area includes portions of the downtown impacted to a lesser degree by the DSTP than others, the analysis tested various combinations of subzones to determine the minimum level of assessments necessary to support a potential overall LID value of approximately \$40 million.

The analysis procedure involved collecting information on all taxable property by subzone. Information required included the following:

- Land area by subzone; and
- Square feet of improvements by office, retail and hotel.

Nine different subzone sets were chosen in order to test the assessment values required. These subzone sets, drawn from the subzones illustrated in the LUTP Classifications map, shown in Figure 8, include the following:

1. Baseline Zones
 - DOC 1
 - DOC 2
 - DRC
 - PSM
 - DMC 240
 - DMC 160 (Western Avenue, waterfront zone only)
 - DMC 125 (area near PMM only)
2. Baseline Zones plus IDR/IDM, PMM, DMR, DMC 65, DMC 85, DH2, DMC 160 (remainder), DMC 125 (remainder)
3. Baseline Zones plus IDR/IDM
4. Baseline Zones plus PMM
5. Baseline Zones Plus DMR, DMC 65, DMC 85, and DH2
6. Baseline Zones plus DMC 160 and DMC 125

7. Scenario #2 minus IDM/IDR
8. Scenario #2 minus IDM/IDM and DMC 65 and DMC 85
9. Scenario #2 minus DMC 65 and DMC 85

The most restrictive scenario is the Baseline Zones by themselves, and the largest area designated is that of Scenario #2. Analysis of these two as potential LID assessment areas demonstrates the range of income available under this process.

The model was set up to allow variation in tax rates for office, retail and hotel space, with or without land. Tax rates were established that generated assessments financially supportable by the included economic uses.

Assumptions

1. The assessment process used in this analysis is that of a flat tax per square foot of land and improvements. This approach is straightforward and is typical of benefit assessment district practices in other cities financing local share contributions to transit. The major consideration in executing this approach is that tax assessments would be collected annually and used to amortize revenue bonds. This total amount used as a basis for this analysis was \$40 million. Over a ten-year amortization period at a bond interest rate of 10.75 percent, annual tax income would have to be \$6.7 million. Assuming a debt coverage ratio of 1.25, the minimum annual income required would have to be on the order of \$8.38 million.
2. New projects would enter the tax district as they are developed, adding continuously to the taxable base. For primary uses in downtown, the estimated tax rates are not sufficient to cause a delay in development by themselves. Markets are sufficiently strong, and/or the projected rates sufficiently low, so as to be able to absorb the tax by passing it through to tenants. In addition, the potential always exists to renew the LID following completion of the initial period. This potential for renewal decreases the possibility that development would be delayed in order to avoid participation in the LID.
3. For this analysis, residential improvements were not taxed, but all land, including exclusive residential land, was included. The primary rationale for this assumption was twofold. First, public policy

is to stimulate residential development in downtown. Given the difficulties of building and marketing housing in the central business district area, the concept of imposing a new assessment on residential development is contradictory. Second, land was included both because of the difficulty of separating out exclusively residential parcels at this level of analysis, and because residential development will benefit to some degree from the implementation of the DSTP. Including the small land assessment reflects that condition.

4. Retail development, both ground-floor and freestanding, was included in the baseline assessment district at a rate representing between 0.06 percent and 0.12 percent of estimated gross sales per square foot. This value represents a relatively small contribution to the benefit pool and a small percentage of average retail sales.
5. Hotels are also expected to benefit to some degree from the improved visitor access and improved downtown circulation patterns. Again, baseline assessment levels assumed in the model are small -- on the average representing between \$0.36 to \$0.41 per room per night.
6. No assessments were levied for parking square footage; however, land exclusively supporting parking uses was included.
7. For the purposes of this study, a flat rate was used throughout the LID area. No special premium was assigned for uses in close proximity to station areas or for uses with direct connections to stations. The capability does exist to add those variations. With respect to special premiums for direct connections, current policy is to negotiate a capital contribution and/or easement contribution for construction of station entrances. This approach is consistent with that used in the Washington, D.C., transit system; it has been significantly more successful than trying to assess continuing special fees exacted over a specified period of time. In several cases throughout the D.C. system, construction of station entry points has been supported financially by those who benefit directly from them, yet considerable controversy has been generated when yearly access fees have been proposed. In addition, if negotiations are successful and station entryways are constructed with contributions from particular developments, either in the form of actual construction or in granting of easements, then it can be argued that special premium assessments represent "double charges."

The model developed for testing the revenue-generating capabilities of the LID is flexible enough to allow for variation in tax rates by zone according to proximity to transit stations. Once we have agreed on an order-of-magnitude level of assessment, we can alter individual tax rates by subzone in order to reflect varying benefit levels as a function of accessibility. The overall requirement will be to maintain the average rates at a level sufficient to support the required bond amortization rates.

Conclusions

Using a tax assessment rate structure applying to land as well as office, retail, and hotel improvements, the LID will generate a total assessment under scenario no. 1 of \$8.37 million for existing development (Table 8). Of those tested, this scenario is the most restrictive with respect to land area covered. Based on a 10.75 percent bond interest rate over a ten-year amortization period, this annual assessment level will support a bond issue of nearly \$50 million. Using a 1.25 coverage ratio, that issue would be closer to \$40 million.

Potential office development of over 6.0 million square feet over the next ten years will generate additional assessments of over \$1.5 million, increasing the total bond support capability to \$58.5 million. Using the same 1.25 debt coverage ratio, the actual bonding capability following construction of the additional six million square feet will be approximately \$47.2 million.

Tax rates required to generate this bonding capacity are as follows:

- Land: \$0.10 per square foot
- Office: \$0.25 per gross square foot, approximately 1.0 percent of average prime space rental rates in downtown.
- Retail: \$0.15 per gross square foot, approximately 0.06 percent to 0.12 percent of potential gross sales per square foot annually
- Hotel: \$0.10 per gross square foot, approximately \$0.36 to \$0.41 per room per night at 65 percent occupancy

Applying the same tax rates to scenario no. 2, which represents the largest district coverage, raises the bonding potential for existing development to \$58.7 million, or \$47 million with a 1.25 debt coverage ratio. The total increases to \$54.3 million when new development is also included, applying the same debt coverage ratio (see Table 9).

Numerous variations of this approach can be tested. In general, however, the analysis demonstrates that the capability exists to support a local share contribution on the order of \$40 million through an annualized tax assessment program applied to the downtown area benefitting from implementation of the DSTP. The background market study further indicates that, although hardships may exist in individual cases, the resulting assessments are financially supportable by office, retail and hotel space in the downtown.

LOCAL SHARE FINANCING STRATEGIES FROM OTHER TRANSIT-ORIENTED CITIES

As competition for declining amounts of federal dollars available for financing large-scale transit systems has increased, local governments and transit authorities have become more creative in designing and implementing innovative techniques for increasing local share contributions. These techniques have included numerous fund-raising mechanisms, ranging from dedicating station easements at no or reduced cost, to direct payment for connections to transit stations, to creation of both tax increment financing districts and special benefit assessment areas. This section of the study reviews general experience in other transit-oriented cities as well as singles out special case-study examples.

One important issue to remember throughout the review is that each locale has its own set of enabling laws and regulations which may more easily accommodate one financing technique over another. The more important conclusion is not so much which technique is used but, rather, that local share financing in general has become a more accepted and, indeed, essential element in the overall financing program for development of a transit system. Not only has the local government and transit authority joined to implement such a program; but the local development community, if somewhat reluctantly, has cooperated in carrying it out. This public/private cooperation has grown out of a clear recognition that improved transit enhances private development opportunities where major capital investments are made in fixed, long-term improvements.

The most successful techniques for generating local share contributions have included the following:

- Connection fees for direct station connections;
- Selling or leasing development rights over station entrances where the transit authority owns the property;

- Benefit assessment districts;
- Tax increment financing districts around transit stations; and
- Dedicated sales tax revenues.

Transit Station Connection Fees

Connection fees are charges to owners or developers of buildings adjacent to a transit station for provision of direct connections. Such fees have generally been of three types:

1. Fixed payments to the transit agency as repayment for capital costs in construction of the connection. Covered costs can include knock-out panels, special station configurations, plazas, or other special features.
2. Annual fees to the transit agency as a contribution to offset operation and maintenance fees.
3. Transfer of station area land or easements to the transit agency, at reduced or no cost, for construction of the station.

Actual experience in this area has often combined one or more of the elements listed above.

Washington, D.C. The Washington Metropolitan Area Transit Authority (WMATA) has used this technique for value capture since initial stages of the D.C. transit system construction. Early successes were concentrated in the downtown area, but application has recently extended out to the suburbs. The earliest example of a direct connection agreement involved a major department store in the older retail area of downtown. As part of an agreement leading to a direct connection into the main downtown metro station, Woodward & Lothrop (W&L) agreed to grant WMATA an easement for construction of the station entrance at 50 percent of the assessed market value. In addition, W&L agreed to contribute \$130,000 toward the excavation and finish work involved in completing the station entrance. Total dollar contribution between the years 1970 and 1972 was on the order of \$500,000.

In reaching this agreement, WMATA argued that a below grade direct connection into the store from the busiest station on the system would greatly enhance the income-production levels of what was then a low-productivity basement area. That argument has been supported over time. W&L converted the basement area into improved retail marketing space and increased its retail sales volume by over 50 percent. Subsequent increases in

sales have also occurred as new phases in the Metro system have become operational.

Well in advance of opening; Woodward & Lothrop also contributed to the construction costs of the Friendship Heights station, located on the north-western edge of the District of Columbia at the Maryland border. As their share of the enhanced station design, W&L contributed \$300,000 to construct a tunnel from the central station mezzanine to the department store. Also, at the same station location, owners of a major shopping complex (Mazza Gallerie) more recently contributed \$737,000 toward building a direct underground connection to their facility.

Other connection fee agreements have been completed that include another downtown department store (the Hecht Company), and an office building in Clarendon, Virginia. In general, connection fees were calculated on the basis of projections of enhanced retail activity and on repayment to WMATA for special improvements to stations to accommodate direct station access.

Not all attempts at implementing direct connections have been successful. At one particular corner involving development of a major office building, the developer refused to agree on a connection fee. As a result, the station entrance to what has become the second busiest station in the system was constructed to the street without a direct below-grade connection into the building. This change in design contributed in part to a major redesign of the lower floor of the office building. What originally had been included as a below-grade retail shopping arcade throughout the complex was entirely removed along with an already in-place escalator at the opposite end. Without the below-grade transit connection, there was no market for additional retail space. None of the proposed space was leased after the developer and WMATA failed to reach agreement on the cost of the connection. The building across the street with a direct, below-grade connection, has the most successful underground retail space in the central business district.

Attempts by WMATA to add yearly fees to direct connection agreements in addition to lump sum payments have met with stiff opposition. Only the agreement with the Clarendon, Virginia, office building includes small payments which will be determined in the future according to a complex

formula for calculating changes in retail sales activity in ground floor retail space. Whether or not appropriate data will be available for such calculations remains to be determined after the building opens.

Miami, Dade County, Florida. Dade County is currently expected to receive approximately \$5.0 million in connector fees from their Downtown Component of Metrorail system. In relation to this project, downtown Miami building owners that agree to pay a station connector fee in advance of system opening will pay a lower fee than those who make agreements after the system is in place.

Sale or Lease of Development Rights

In the process of developing a transit system, transit agencies often purchase land for legitimate transportation system uses that still allow for alternative use of air rights. Joint development of a station and compatible office and mixed uses generates substantial value for participating private developers.

Where the transit authority has control of the primary parcels of land, including key station access points, it can negotiate sale and/or preferably lease of development rights. The process of capturing at least a portion of the value created by the joint development is accomplished through a straightforward negotiation of a long-term land/air rights lease. Such leases can generate considerable long-term income for the authority as a contribution to either capital improvements or system operating expenses.

Miami. The Office of Transportation Administration (OTA) for Metropolitan Dade County leased air rights over land adjacent to the Dadeland South Rapid Rail Transit Station while that station was under construction. The agreement was negotiated in exchange for acquisition of the site area required for station construction. Air rights opportunities exist for 600,000 square feet of office space, 50,000 square feet of retail space, and a 300-room hotel. In addition, the developer must construct a 1,000-car garage for transit patrons. OTA expects to receive between \$2 and \$3 million in annual payments once the system becomes operational.

Washington, D.C. The Washington Metropolitan Area Transit Authority is packaging joint development projects at any station area where the market will support such development. Past projects have included mixed-use developments at the Rosslyn and Pentagon City stations in Virginia; Van Ness Station and at several downtown CBD stations in the District of Columbia; and

at the Friendship Heights and Bethesda, Maryland stations. Minimum income from five projects currently under contract is on the order of \$1.5 million annually. By next year, that will increase to over \$2.8 million annually.

Negotiations in various stages are currently underway at the Ballston station in Virginia; the White Flint station in Rockville, Maryland; and at the Gallery Station in Washington, D.C.; and joint development planning is underway at numerous other stations throughout both the operating and planned portions of the system. As a result, future financial planning for the Washington, D.C., system assumes a substantial long-term financial contribution from both existing and proposed joint development projects.

Benefit Assessment Districts

The local share financing mechanism most directly related to the Seattle Metro situation is the application of special benefit assessments. This process involves levying a tax on property and/or improvements within a well-defined area that benefits directly from the transit system. Revenue generated from the assessment can be used to pay for a portion of the capital improvements, or it can be used to offset operation and maintenance costs once the system is constructed. It can be a one-time assessment, or it can be applied as a re-occurring assessment over a specified period of time in support of a revenue bond issue.

Los Angeles. In February, 1985, the Board of Directors of the Southern California Rapid Transit District (SCRTD) approved a resolution to proceed with the establishment of benefit assessment districts to help fund the development of phase one of the 18.6-mile Downtown Los Angeles-to-San Fernando Valley Metro Rail subway line. Total first phase development is projected to cost \$1.17 billion with contributions as follows:

Federal Share (56%)	654.2 million
Local Share:	
State (18%)	214.4 million
1/2 cent sales tax	
L.A. County (13%)	152.4 million
City of L.A. (2%)	24.0 million
Additional Required (11%)	<u>130.3 million</u>
Total	\$1,175.3 million

The special benefit tax assessment program has been established to raise the \$130.3 million required to complete the local share contribution. The annual per square foot assessment rate has initially been set at \$0.30, with a maximum allowable rate of \$0.42.

Under the approved legislation, the benefit assessment district assesses either the improvement, or the parcel of land on which that improvement is sited. Improvements in use as offices, other commercial, retail stores, hotels and motels are included. Assessments are applied against either land or improvements, whichever is greater. If the parcel is vacant or improved with a non-assessable use, the square footage of the parcel will be assessed. The following property classes are exempt from assessments:

- Land with improvements in use for residential purposes, except hotels and motels;
- Land and improvements owned by a public entity in use for a public purpose -- if the property is either not owned by a public entity or is not in public use, the property is not exempt; and
- Land and improvements owned by a qualified non-profit organization and in use by a qualified non-profit organization. As with public property, if the parcel is either not owned by a non-profit organization or is not in use by a non-profit organization, the property is not exempt.

Benefit assessments are to be collected yearly as part of the overall tax bill. The annual income generated by this program will be used to back revenue bonds and will terminate once those bonds are retired. Excess collections are to be used to lower subsequent year's assessments or to retire the bonds earlier than originally scheduled.

A appeals process has been set up to deal only with technical matters, not hardships. Square footage calculations and exempt status are subject to appeal.

Miami. In July, 1982, Dade County established a special assessment district within the City of Miami to help finance development of the City's Downtown Component of Metrorail (DCM). The project consists of an automated transit system on a 1.9-mile elevated loop circling the Miami central business district. Total development costs has been estimated at between \$85 and \$90 million.

Local share requirements from the assessment district are to be sufficient to support a \$25 million revenue bond issue over 15 years. Including all supporting costs -- net construction costs, debt service reserve, capitalized interest reserve, bond discount and financing expenses -- generates an estimated yearly bond payment requirement of approximately \$3.17 million. Only one assessment zone has been established with uniform rates applied throughout. This zone is located entirely within the city boundaries.

Under the assessment district ordinance, vacant land and improvements without land will be assessed yearly, beginning at approximately \$0.22 per net square foot of leasable space and declining yearly over a 15-year period as new development is added to the tax rolls. All vacant unimproved land and improvements are included except for religious institutions. City and county government properties are included.

Denver. The 16th Street Transitway Mall is a public facility, owned and managed by the City and County of Denver, Colorado. Opened in October, 1982, it is the largest single public improvement ever developed in downtown Denver. To support the wide range of supplemental services required to maximize the positive effects of the Mall on downtown, the City established a special benefit assessment district for the area stretching between 15th and 17th Streets along the length of the Mall. That district was expanded in 1984 and now extends from 14th to 19th Streets. The Mall covers a 14-block area from Lincoln Street to Blake, running through the center of Denver. It is bordered by a mix of retail, high-rise office, and some residential development.

Maintenance of the Mall is being funded through a special assessment charged to property owners immediately adjacent to the corridor. Both the assessment process and the maintenance operations are under the supervision of Downtown Denver, Inc., a group which represents local downtown businesses. During the 1982-1983 period, the first year of operations, the assessment district raised approximately \$1.5 million. The assessment area is divided into ten zones, five on either side of 16th Street. The zones are parallel to the corridor and are defined by lines running roughly parallel to 16th Street.

Initial economic impact studies calculated an enhanced economic value for each of the pre-defined zones. These studies also identified total retail sales volume by zone and estimated enhanced value to office and retail leases for

buildings in the vicinity of the Transitway. In addition, hotel revenues were calculated for the year prior to opening so that impacts to these uses could also be measured. Total benefit estimates were used to justify designation of the assessment district.

The Transitway Mall project was financed through a grant based on an 85% federal and 15% local contribution. As a result, no local bonding support was required. The assessment district was, therefore, established solely to finance continuing operation, maintenance, and security costs for the life of the improvement. Each of the ten zones is assessed on a land square foot basis. The zones closest to the Transitway are assessed at \$0.52 per square foot of land, while those at the periphery of the district are assessed at \$0.05 per square foot of land. In between, the rates are proportional to the distance from the central spine. No differentiation is made among property types. Current assessment levels are sufficient to finance current costs.

Tax Increment Financing

Tax increment financing is a technique whereby public projects are funded by increases in property tax revenue resulting from increases in private sector investment near the public improvements. The approach is employed in several distinct steps. First, a tax increment financing district is established in the area benefitting from the proposed public improvement project. Second, a base year of assessed property values is established. As property values in the area rise, resulting increases in property taxes are dedicated to offsetting the cost of the improvements, while the equivalent of base line property taxes are distributed to pre-existing taxing jurisdictions.

In a sense, the assessed values of properties within the improvement area are "frozen" at the time the project area is created. Thereafter, taxing agencies other than the one implementing the improvement continue to receive the revenues generated by the tax rate as applied to the frozen base while the agency responsible for implementing the improvements receives the revenues generated by the combined tax rate applied to the increase in assessed valuation in the defined project area. This process continues until the bond issue supporting the improvements is amortized.

There is historical precedent for the use of tax increment financing for transit purposes. The BART Embarcadero Station in San Francisco, for example, was partially financed through a tax increment financing district. This method of taxation, however, can only be used by a redevelopment

agency or some other authority with taxing powers in conjunction with the primary unit of local government having jurisdiction over the project area.

Tax increment financing is currently being proposed as a method of financing local highway improvements supporting operation of the New Carrollton Station, a station on the Orange Line in Prince George's County, Maryland, and an important commuter terminal in the Washington, D.C., Metro system. Without major highway improvements, traffic congestion would severely limit the development capacity of the area surrounding the station. The Washington Metropolitan Area Transit Authority is working with the County Government to designate a Tax Increment Financing district to include the station and the surrounding area. With the highway improvements proposed, major new mixed-use development projects could be accommodated in the area. Given a tax base frozen at this time, the taxes generated by new development would underwrite the revenue bonds required to help support the highway improvements.

Dedicated Sales Tax Revenues

Rather than using either special benefit districts or tax increment financing, the City of Atlanta has opted for application of a sales tax dedicated to the transit system. This mechanism is used to finance the local share of both capital and operating and maintenance costs for the entire system.

To date, over \$2.0 billion has been invested in the combined bus and rail system in the region. To operate this system, as well as to finance additional capital investments, over \$140 million is required annually, with \$70 million allocated to operation and maintenance of the bus and rail systems and \$70 million allocated to rail system capital improvements. Currently, Atlanta's transportation system has \$500 million in outstanding loans with requirements for an additional \$200 million to complete the planned system.

In 1968, local jurisdictions defeated a proposal to increase real property taxes for the purpose of financing the rail transit system. This defeat forced the transit authority to consider alternative revenue producing strategies. Atlanta turned to the sales tax. A one percent dedicated sales tax was approved by two of the counties in the region with a combined population of 1.1 million. Because of the limited jurisdictional approval, expansion opportunities for the 53-mile system are limited to selected areas within the two counties financially supporting the system.

Summary

The effectiveness of local share financing techniques is determined by a combination of legal, political, and institutional concerns, and the ability to juggle those concerns helps to maximize the return on the substantial public investment involved in transit system development. In every city studied, it is recognized that this substantial public sector investment creates value not only for the public sector, but for the private sector as well.

It is also recognized that a strong rationale exists for re-capture of at least a portion of that created value to help pay for the improvements and for the continued operation of the system once it is in place. A variety of effective mechanisms exists to facilitate that value re-capture; and in those cities with the most successful transit programs, private and public sectors have cooperated in their implementation. Cooperation speeds up the development process, both for the transit system and for the commercial development that soon follows. All sectors appear to benefit as a result.

NOTE: The tables for this article were omitted in publication.

**PART IV:
DEVELOPMENT FINANCING AND OTHER INNOVATIVE APPROACHES**

SANTA ANA TRANSIT TERMINAL AIR RIGHTS DEVELOPMENT

Larry A. Boatman
Spillman Boatman, Inc.

and

Jeffrey P. Ordway
Orange County Transit District

INTRODUCTION

Overview

The Orange County Transit District (District) operates a large-scale public investment which includes several real property assets. In some cases, these properties can potentially accommodate additional profitable uses in support of the District's primary transit function. Through joint development, these real property assets can contribute significantly to the on-going financial viability of the transit system. Development of these District-owned properties also promises to provide substantial benefits to local jurisdictions and to encourage private sector participation in the public development process. By promoting high quality, intensive development on District-owned properties, the District can generate new revenues for transit while also creating attractive investment opportunities for the private sector and facilitating local economic development goals. Such an approach assumes overlapping interests between the public and private sectors, and views joint real estate ventures as offering a positive means for the private sector to contribute to the support of public transportation improvements.

The Orange County Transit District

The District is the regional transit agency for Orange County, California, and provides a family of services including fixed-route bus transit, Dial-A-Ride demand-responsive service, and a Commuter Network program. The bulk of the District's service is provided by a system of 46 fixed-route arterial bus lines. The District's small bus Dial-A-Ride system provides complimentary service to its fixed-route system, particularly in the less dense areas of the County, while its Commuter Network program is designed to assist employers to establish car and vanpools as an alternative mode for the trip to work.

The Orange County Transit District, through its enabling legislation, has the authority to "lease, mortgage, sell, or otherwise dispose of any real or personal property within or without the District when, in its judgement, it is for the best interests of the District so to do." Further, the District has the authority to "lease or contract for the use of its transit facilities, or any portion thereof, to any...city or public agency or any person, firm, or private corporation." The District, therefore, is in a position to implement the concept of joint development as it applies to public transit agencies.

The Joint Development Project

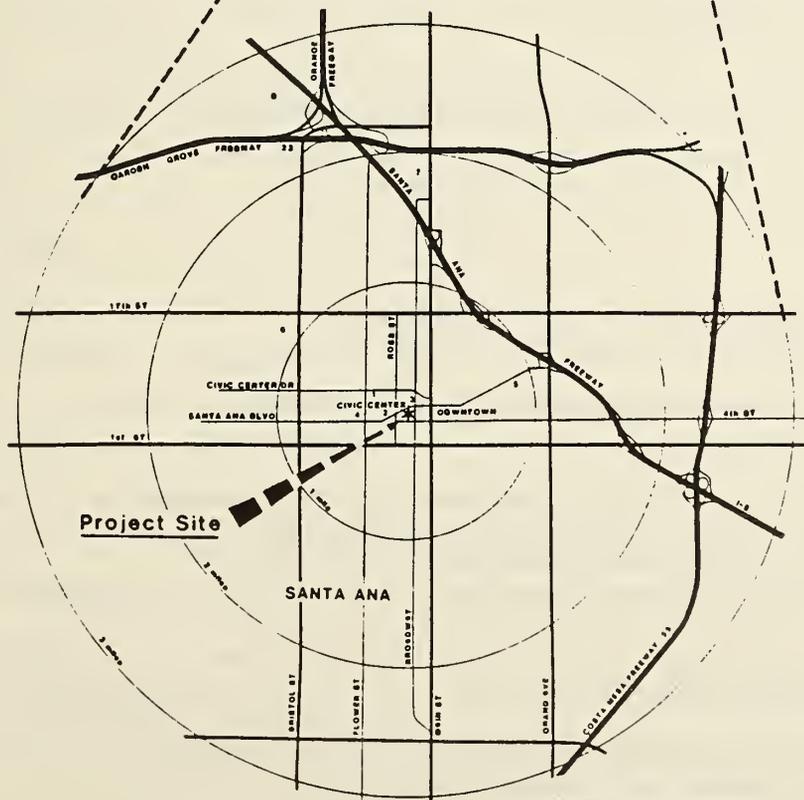
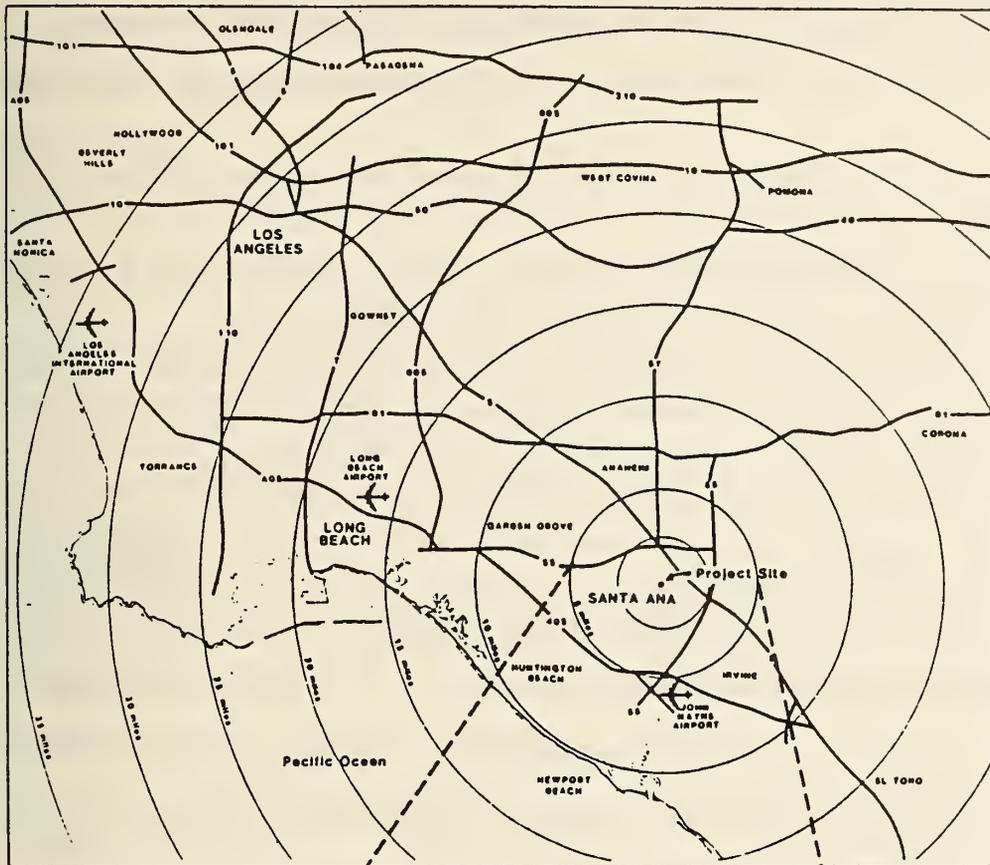
The joint development project which is the subject of this paper, involves construction of a six-story office building in the air rights of the Santa Ana Transit Terminal. The Transit Terminal, located in downtown Santa Ana, California, within the Civic Center Complex, serves as the major downtown terminus of the regional transit system (refer to Figure 1). The office building will be constructed upon an air rights pad designed and constructed as part of the existing terminal structure. An adjacent four-level, 473-space parking structure will provide sufficient parking for the development project.

The District has secured a long-term air rights lease for the project with Property Ventures of Newport Beach, California, which details the responsibilities of the District and developer, establishes the economic relationship inherent in the transaction and sets forth all other terms and conditions necessary to define the relationship of the parties.

Description of the Santa Ana Transit Terminal Joint Development Process

The District's Board of Directors, through its discussions and actions, had implicitly expressed a desire to maximize the return of invested public funds by establishing and promoting the concepts of joint development and value capture. In June, 1984, with the release of a Request for Proposal for consultant assistance, a process was begun to formalize the District's approach to and involvement with joint development. In October, 1984, the District retained the service of Spillman Boatman, Inc., to accomplish the following three-phase project:

- Phase I: Development of District Policies and Procedures on Joint Development
- Phase II: Development and Implementation of Air Rights Leasing/Joint Development Program for the Santa Ana Transit Terminal



- 1 - ORANGE COUNTY COURTHOUSE
- 2 - SANTA ANA CITY HALL
- 3 - HALL OF ADMINISTRATION
- 4 - ORANGE COUNTY JAIL
- 5 - SANTA ANA TRANSPORTATION CENTER (AMTRAK)
- 6 - SANTA ANA COLLEGE
- 7 - SANTA ANA FASHION SQUARE
- 8 - THE CITY

Phase III: Negotiation of Air Rights Lease/Joint Development Agreement

The objectives of this three-phased project have successfully been met by:

1. OCTD Board of Directors adoption of Joint Development Policies and Procedures in January, 1985.
2. OCTD Board of Directors selection of Property Ventures of Newport Beach in August, 1985, for exclusive negotiations.
3. OCTD Board of Directors approval of a joint development lease agreement with Property Ventures in February, 1986.

A brief chronology of events leading to these actions is as follows:

<u>Action</u>	<u>Date of Completion</u>
• Santa Ana Park-and-Ride Structure Completed	May, 1981
• Santa Ana Transit Terminal Constructed	March, 1984
• RFP Released for Consultant Assistance	June, 1984
• Agreement with Spillman Boatman, Inc. Signed for Three-Phase Project	October, 1984
• OCTD Board Adopted Joint Development Policies/ Procedures (Phase I)	January, 1985
• Santa Ana Transit Terminal (SATT) Air Rights Development Prospectus Prepared and Released (Phase II)	March, 1985
• Statements of Qualifications Submitted by Firms Interested in the SATT Air Rights Project (Phase II)	May, 1985
• SATT Air Rights Development Project RFP Released to Pre-Qualified Developers (Phase II)	June, 1985
• SATT Air Rights Development Proposals Received (Phase II)	July, 1985
• OCTD Board of Directors Selected Property Ventures of Newport Beach, California for Exclusive Negotiation of a Lease/Development Agreement for the SATT Air Rights (Phase III)	August, 1985
• Letter of Intent Signed Outlining Business Terms of Agreement (Phase III)	November, 1985
• OCTD Board of Directors Approves SATT Air Rights Lease Agreement with Property Ventures	February, 1986

The Santa Ana Transit Terminal air rights project took roughly one year to complete from conceptual development of the project prospectus to formal signing of a full lease agreement.

Paper Outline

This paper begins by describing the District's Joint Development program, including its objectives, policies, and procedures. The Santa Ana Transit Terminal Air Rights joint development effort is then described. The Developer Selection Process section addresses, in terms of its approach, the project prospectus used in the process, and the project RFP and its results. A description then follows of the Santa Ana Transit Terminal Air Rights Project itself, including the developers background, a description of the air rights project, terms of the lease and the implementation schedule. The project benefits from the perspectives of the District, the developer, and the City of Santa Ana are identified in the next section. Finally, the key findings and conclusions of the joint development effort are presented.

OCTD JOINT DEVELOPMENT PROGRAM

Joint Development Policy and Procedures

The basic goal which underlies the District's joint development policies is that it is in the interest of the District and the community at large to encourage the joint utilization of transit properties for office, commercial, residential and other development in order to generate new sources of income (and/or capital cost offsets), to increase transit ridership and to support local community development goals.

The objectives of the Joint Development Policy are:

- To promote a desirable economic development.
- To enhance the quality of life of the citizens of Orange County.
- To recapture previously expended land acquisition costs.
- To promote high density land use at appropriate transit facilities leading directly to greater transit ridership.
- To preserve valuable real estate on local tax rolls.
- To generate revenues to support the operating cost of the transit system.
- To offset portions of the capital cost through private construction of parking and ancillary facilities.

- To enhance the accessibility to and aesthetic value of District facilities.
- To promote economic benefits directly attributable to the transit investment.
- To create new investment opportunities that are supportive of transit for the private sector.
- To provide appropriate services for the convenience of transit patrons.

These objectives can be best met if well-designed and carefully planned joint development occurs. Thus, the overall joint development policy of the Orange County Transit District is as follows:

It is the policy of the District to permit, encourage and pursue joint development projects on District-owned properties including office, commercial, residential and other facilities in order to promote the safety, convenience, accessibility, environmental quality and economic benefits of the general public.

The following general statements guide the District's approach to joint development projects:

- The District should work cooperatively with local jurisdictions, redevelopment agencies, developers, and other public and private sector entities to promote land use policies which encourage intensive, high quality development on and surrounding transit properties.
- The District should pursue an approach to land development and disposition which maximizes its ability to participate in the increase in value of its property assets over time.
- The District should employ an approach to program management which ensures a predictable and timely decision-making process aimed at fostering a positive investment climate for the private sector.
- The District should promote joint development projects which enhance the use of the transit system and should actively encourage direct connections from surrounding developments in order to promote pedestrian access.
- The District should actively seek to involve disadvantaged, women's, and minority business enterprises in joint development projects.
- The District should assume an active project packaging role in preparing its sites for development.

- The District should consider joint development opportunities in the acquisition of additional property, the location of new transit sites, and the construction of transit facilities.

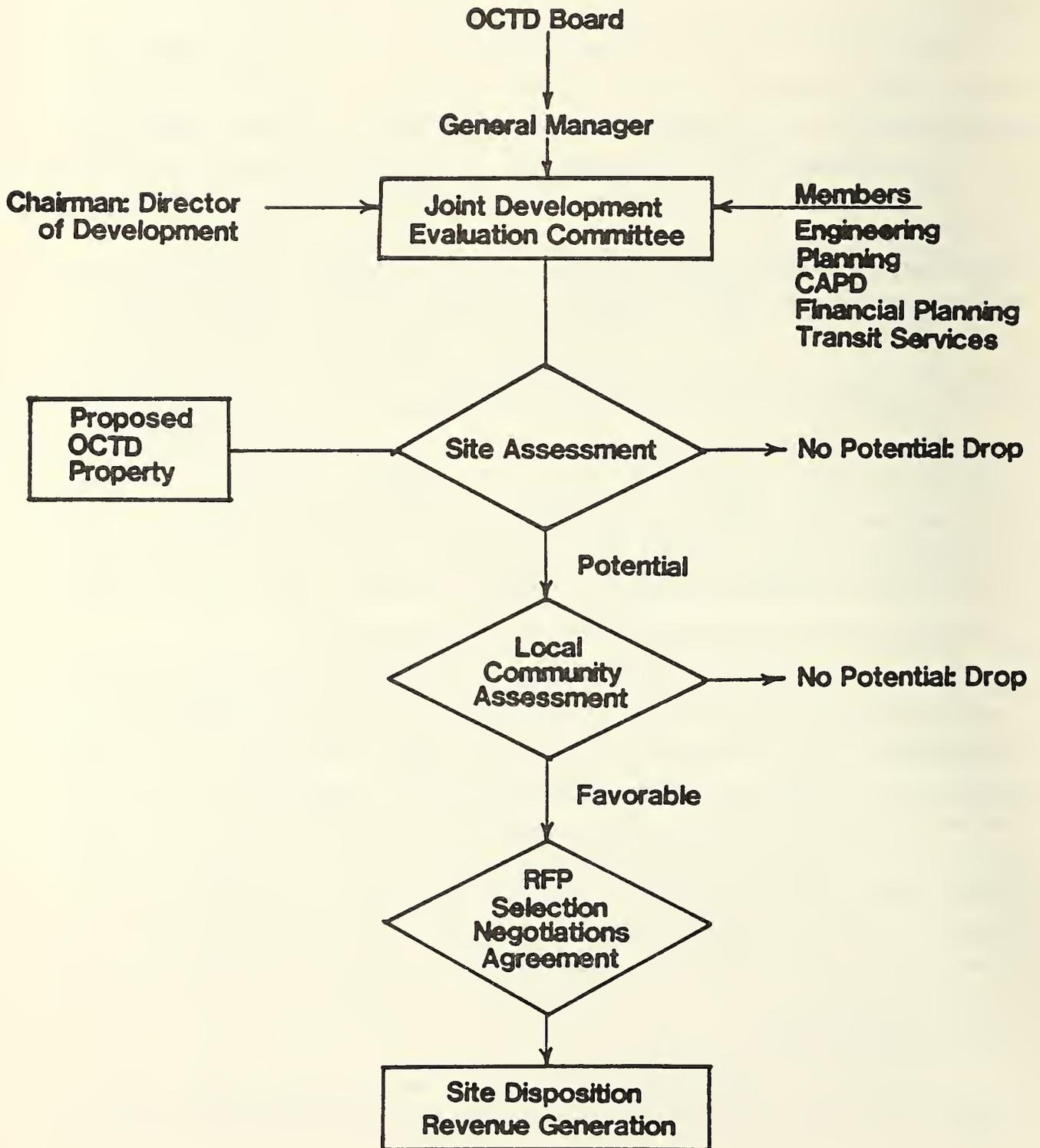
These statements are intended to create benefits which both enhance the public investment in transit and support community and private development goals.

The completion of this first phase of the Santa Ana Transit Terminal Air Rights joint development effort took approximately four months. Two documents were prepared by Spillman Boatman as fulfillment of Phase I objectives. The first, entitled OCTD Joint Development Policies and Procedures, provides (a) definitions of the concept of joint development and the financing mechanism known as value capture; (b) provides examples of joint development activities related to downtown bus terminals; (c) describes the federal government, State of California and local southern California government contexts within which the District may pursue joint development projects; (d) presents the objectives, overall joint development policy statement and supporting general policy statements described above; (e) introduces a series of joint development criteria, addressing issues such as transit facility interface, revenue, circulation, operations, accessibility, parking, etc.; and (f) identifies procedures to be followed by the District in pursuing joint development projects, including site evaluation, and a two-step (RFQ and RFP) developer selection/competitive proposal process. Figure 2 portrays the District's process for implementing joint development projects.

The second report, entitled OCTD Joint Development Policies and Procedures Supporting Information, is essentially an annotated bibliography of approximately 170 publications pertaining to joint development and value capture (as of February, 1985). This document also contains the results of a survey of roughly 30 public transit properties throughout the United States and Canada who were contacted with respect to their involvement in joint development. Of the 30, roughly one-third were bus only operating authorities and two-thirds were rail operators. Finally, as an adjunct to the Santa Ana Transit Terminal effort, Spillman Boatman also provided the District with a brief evaluation of the joint development potential of several properties owned by the District.

Two important conclusions were reached as a result of this Phase I effort. First, the District's Board of Directors adopted joint development

FIGURE 2
OCTD JOINT DEVELOPMENT PROCESS



policies and procedures in January, 1985. Consequently, District staff have the proper direction to pursue joint development projects on District-owned property. Secondly, as a result of both Spillman Boatman's evaluation of District-owned property for additional joint development projects and the success of the Santa Ana Transit Terminal Air Rights effort, the District has begun a second air rights project at one of its park-and-ride facilities.

Santa Ana Transit Terminal Air Rights

The Santa Ana Transit Terminal is located in the Civic Center complex in downtown Santa Ana, California. The Civic Center Complex is a 75-acre government center containing federal, state, county and city facilities. The Complex, which serves as a catalyst for adjacent commercial development, currently employs over 8,000 persons. Office demand in the area has increased as more professionals seek space nearer government facilities and support services. Recent development surrounding the Civic Center represents a private sector investment in excess of \$60 million. The projected increase in Civic Center employment will require the construction of one million square feet of new space within and associated support space adjacent to the Civic Center Complex. The Transit Terminal air rights development will provide a portion of this space.

The Santa Ana Transit Terminal itself is located on a triangular-shaped block bound by Fifth Street on the south, Santa Ana Boulevard on the north, Ross Street on the west, and a four-level parking structure on the east. The Transit Terminal is a partially enclosed, one-level, modern facility, which contains 17 bus berths, a security office, public restrooms and a 100-seat passenger waiting area. Bus access/egress is provided off Santa Ana Boulevard and on Fifth Street between the Terminal and the parking structure. The facility was completed in March, 1984, and was funded, in part, by an UMTA Urban Initiatives Grant. The facility is owned and operated by the Orange County Transit District. Adjacent to the terminal is a four-level, 473-space parking structure owned by the District and currently maintained and operated by the City of Santa Ana.

The air rights development will be located on the southern portion of the triangular area above the Transit Terminal and will have direct access to the parking structure to the east. Approximately 380 code-required parking spaces from the parking structure will be dedicated for exclusive use by the

air rights developer. The development will be constructed on an existing air rights pad of 140 feet by 115 feet. The development will have a separate ground level entrance lobby located on the Fifth Street frontage, allowing the developer to establish a separate identity for the air rights building.

Other pertinent aspects of the air rights development project, highlighted in the District's marketing Prospectus, include:

- Code-required parking spaces are provided for the exclusive use of the air rights project.
- The existing air rights pad will virtually eliminate site work for the developer.
- Concrete foundation, consisting of piles, pile caps and grade beams, is provided.
- Structural steel columns, trusses and framing between ground level and first floor are provided.
- Concrete first floor (roof of the Transit Terminal) is provided.
- Site landscaping and an irrigation system are complete.
- Adjacent sidewalk, street and lighting improvements have been fully completed.

Of particular note in the development of the Transit Terminal, is the construction of the air rights pad on top of the terminal. The air rights pad construction cost was approximately one million dollars and represented roughly 20 percent of the total cost of the Transit Terminal (including the cost of land). Funding for the air rights pad was split between three agencies:

UMTA	\$ 700,000
Santa Ana Redevelopment Agency	150,000
OCTD	<u>150,000</u>
	\$1,000,000

UMTA's portion came from an Urban Initiatives Grant. The financial commitment of both UMTA, through the Urban Initiatives Grant program, and the District and Santa Ana Redevelopment Agency represents a foresight which cannot be over-emphasized. The commitment to construct the air rights pad while the Transit Terminal was being constructed made the entire air rights projects possible.

DEVELOPER SELECTION PROCESS

Approach

Once the District Board of Directors had adopted joint development policies and procedures, Phase II of the Santa Ana Transit Terminal air rights effort began. Phase II resulted in the development of an air rights marketing program and the solicitation of development firms to lease and develop the air rights above the Santa Ana Transit Terminal. The marketing approach to the air rights project involved a two-step solicitation process. The first step included the development of a project Prospectus which was used to solicit qualification statements from developers. The second step involved a request for contract proposals from pre-qualified developers, including financial terms of the air rights lease, architectural plans for the project and a financing plan for project construction and operation. The contract proposals began Phase III of the overall work program, in which a development contract was negotiated to implement the air rights project.

Air Rights Project Prospectus and Marketing Results

More than 150 copies of the Prospectus were directly mailed to development firms with the major concentration on firms which are located in the southern California area and have substantial regional development track records. The District spent approximately \$5,000 to develop and print the Santa Ana Transit Terminal Air Rights Development Prospectus. This is considered to be a key product in the entire joint development effort. Significant emphasis was placed on preparation of the Prospectus because it not only represented the marketing effort for the project, but it was used to convey to the private sector that the District was approaching the air rights project in a professional, business-like manner. The distribution of the Prospectus was extensive, in part to solicit interest in the Santa Ana project and, in part, to deliver a message to the development community that the District was going to pursue joint development actively as a financial endeavor.

Three development teams responded to the SATT Air Rights Development Prospectus:

- IDM Corporation of Long Beach, CA
- Terminal Associates of Santa Ana, CA
- Property Ventures of Newport Beach, CA

The approach used to evaluate developer submittals was to review, in detail, each submittal: verify through field reconnaissance existing projects of each developer; and check, by telephone, selected financial references included in each developer's submittal. By necessity, the judgements made were somewhat subjective since qualifications statements do not lend themselves to a numerical ranking procedure. However, the purpose of the developer evaluation was to solely pre-qualify developers based on past experience and an assessment of their capability to carry out the proposed air rights project.

The Santa Ana Transit Terminal Air Rights Prospectus contained the evaluation criteria for developer submittals. Four key areas were included:

- Developer Experience
- Organization/Management Approach
- Project Architectural/Planning/Design Experience
- Financial Performance

As a result of the evaluation of qualifications, all three firms received a Request for Proposals to prepare contract proposals for the lease and development of the Santa Ana Terminal air rights. The release of the project RFP initiated the second step of the selection process.

Spillman Boatman documented the results of this step of the Phase II effort in a report entitled Santa Ana Transit Terminal Air Rights Development - Evaluation of Developer Qualifications (May, 1985). The report addresses each of the evaluation criteria for each of the three developers under consideration. Additionally, an overall summary of each firm is provided and a recommendation was made to transmit the project RFP to each of the pre-qualified development teams.

Air Rights Project Request for Proposals Process

In June, 1985, the District released the Santa Ana Transit Terminal Air Rights Development RFP to the three pre-qualified development teams. The RFP consisted of the following sections:

- Instructions for Content and Submission of Proposals
- Summary of Proposed Lease Provisions
- Proposal Form (to be completed by the submitting developer)
- Selection Procedure

- Fact Sheets (on both the Transit Terminal and Parking Structure)
- Reviews and Approvals (including all pertinent environmental documents)

In addition, a full set of as-built drawings for both the Transit Terminal and the adjacent parking structure were also provided to each recipient of the RFP. One statement contained in the Instructions for Content and Submission of Proposals section of the RFP warrants special note. In order to ensure receipt of serious proposals, the District required that all proposals submit \$10,000 to the District in the form of a bid bond, check, draft or letter of credit. Only the successful developer's deposit would be held by the District as a guarantee of performance. All other deposits were returned.

The recipients of the RFP were given roughly six weeks to prepare their proposals, with a July 19, 1985, deadline specified in the RFP. As the developers began preparing their submittals, a number of questions arose with respect to information contained in the RFP (e.g., can more than six levels of office structure be planned for; can the District's existing parking structure be expanded to provide additional parking spaces, etc.). As a result of these questions, the District, in order to provide the same information to all proposers, prepared and distributed supplemental correspondence as the need arose. This was an important part of the process in that it was understood when the RFP was prepared that it would probably not be sufficient to answer all questions raised by proposers. The supplemental correspondence released to all proposers was an effective mechanism in dealing with specific questions.

Two development teams responded to the District's RFP with contract proposals:

- Terminal Associates of Santa Ana, CA
- Property Ventures of Newport Beach, CA

Each developer's proposal was evaluated by Spillman Boatman in detail. Architectural concepts were reviewed to determine the feasibility of implementation within the constraints presented by the existing air rights pad. Development cost estimates were reviewed and verified as appropriate for the level of design accomplished to date. Financial proformas were evaluated and

a 15-year projection of project cash flow and income to the District was prepared in order to compare the financial terms proposed by each developer.

The District received two quality, feasible development proposals, either of which would enhance the existing Transit Terminal facility and would generate a significant financial return to the District. Overall, however, the Property Ventures proposal was judged to be superior for several reasons:

- The Property Ventures concept maximized the use of the air rights pad and created a larger leasable area.
- The architectural concept presented by Property Ventures provided a better "fit" with the existing Transit Terminal by carrying the terminal's architectural scheme through to the proposed building.
- Property Venture's proposed financial lease terms provided greater opportunities for participation in project revenues by the District.

As contained in the Spillman Boatman report entitled Santa Ana Transit Terminal Air Rights Development - Evaluation of Developer Proposals (August, 1985), the financial proposals of each developer were reviewed within the context of overall project revenue and cash flow and income to the District. A 15-year financial proforma was prepared for each development. The results of the 15-year proforma are presented in Table 1 for Terminal Associates and Table 2 for Property Ventures.

The evaluation of the two financial proposals over a 15-year period indicates a clear preference for the Property Ventures proposal. Rental to the District under the proposed formula would be significantly higher because: (1) the building size generates a larger gross rental, (2) the formula includes District percentage participation in both adjusted gross income and net cash flow, and (3) the District will participate in the appreciation of the building value if, and when, the building is sold to a third party.

A calculation of the total cumulative rent to the District over the 15-year period indicated a total of \$1.64 million from the Terminal Associates proposal and \$4.34 million from the Property Ventures proposal.

As a result of the consultant's recommendation, the District's Board of Directors on August 19, 1985, selected Property Ventures for exclusive negotiation of a lease/development agreement. Negotiations began that week.

TABLE 1
SANTA ANA TRANSIT TERMINAL AIR RIGHTS PROJECT
PROPOSAL BY TERMINAL ASSOCIATES
15 YEAR FINANCIAL PROFORMA

	<u>YEAR 1</u>	<u>YEAR 2</u>	<u>YEAR 3-5</u>	<u>YEAR 6-10</u>	<u>YEAR 11-15</u>
GROSS INCOME (71,731 N.S.F.)	\$1,420,274	\$1,420,274	\$1,420,274	\$1,635,467	\$1,850,660
VACANCY FACTOR	(426,082)	(213,041)	(71,014)	(81,774)	(92,533)
ADJUSTED GROSS INCOME	994,122	1,207,233	1,346,260	1,553,693	1,758,127
OPERATING EXPENSES	(358,655)	(358,655)	(358,655)	(412,453)	(466,252)
NET INCOME BEFORE DEBT SERVICE	635,467	848,578	987,605	1,141,240	1,291,875
DEBT SERVICE	(691,233)	(691,233)	(691,233)	(691,233)	(691,233)
NET CASH FLOW	(55,766)	157,345	296,372	450,007	600,642
OCTD RENT OPTIONS					
- MINIMUM GUARANTEE, OR	50,000	50,000	60,000	60,000	60,000
- 4% ADJ. GROSS INCOME, OR	39,764	48,289	53,850	62,148	70,325
- 25% NET CASH FLOW	0	39,336	74,093	112,502	150,161
APPLICABLE OCTD RENT	50,000	50,000	74,093	112,502	150,161

Assumptions

1. Base rental values per square foot of \$1.65 (years 1-5), \$1.90 (years 6-10), and \$2.15 (years 11-15).
2. Vacancy rates: 30% (year 1), 15% (year 2), 5% (years 3-15).
3. Gross operating expenses per square foot of \$5.00 (years 1-5), \$5.75 (years 6-10), and \$6.50 (years 11-15).
4. Debt service calculated using 12% fixed rate mortgage for 30-year term.
5. 80% of building costs would be financed.
6. Gross income based upon net leaseable area.

TABLE 2
SANTA ANA TRANSIT TERMINAL RIGHTS PROJECT
PROPOSAL BY PROPERTY VENTURES
15 YEAR FINANCIAL PROFORMA

	<u>YEAR 1</u>	<u>YEAR 2</u>	<u>YEAR 3-5</u>	<u>YEAR 6-10</u>	<u>YEAR 11-15</u>
GROSS INCOME (118,384 N.S.F)	\$2,344,003	\$2,344,003	\$2,344,003	\$2,699,155	\$3,054,312
VACANCY FACTOR	(703,200)	(351,600)	(117,200)	(134,958)	(152,716)
ADJUSTED GROSS INCOME	1,640,803	1,992,403	2,226,803	2,564,197	2,901,596
OPERATING EXPENSES	(591,920)	(591,920)	(591,920)	(680,708)	(769,496)
NET INCOME BEFORE DEBT SERVICE	1,048,883	1,400,483	1,634,883	1,883,489	2,132,100
DEBT SERVICE	(1,024,505)	(1,024,505)	(1,024,505)	(1,024,505)	(1,024,505)
NET CASH FLOW	24,378	375,978	610,378	858,984	1,107,595
OCTD RENT					
- MINIMUM GUARANTEE, OR	50,000	50,000	50,000	50,000	50,000
- 3% ADJ. GROSS INCOME, AND	49,244	59,772	66,804	76,929	87,048
- 30% NET CASH FLOW*	0	94,862	135,894	234,617	306,164
EFFECTIVE OCTD RENT	50,000	154,634	202,698	311,543	393,212

*3% gross income rent is deducted from net cash flow before calculating.

Assumptions:

1. Base rental values per square foot of \$1.65 (years 1-5), \$1.90 (years 6-10), and \$2.15 (years 11-15).
2. Vacancy rates: 30% (year 1), 15% (year 2), 5% (years 3-15).
3. Gross operating expenses per square foot of \$5.00 (years 1-5), \$5.75 (years 6-10), and \$6.50 (years 11-15).
4. Debt service calculated using 12% fixed rate mortgage for 30-year term.
5. 80% of building costs would be financed.
6. Gross income based upon net leaseable area.

THE PROJECT

Developer's Background

Property Ventures is a multi-disciplinary organization, having within its corporate structure a development arm, an architectural firm (Arch/West) and an interior design firm (I.P. Associates). As such, its development approach includes full design involvement as part of the development process. Property Venture's development track record includes several successful projects in southern California. They are currently involved in a multi-building, mixed-use project in Brea, California, known as Imperial Center.

Examples of Property Ventures office/commercial projects range from a 30,000 square foot office building, to a 192,000 square foot sports/recreation/office tower, to a 250-room, 223,000 square foot hotel. Twelve projects were sited in Property Ventures response to the District's RFQ (Prospectus), totaling over 1.2 million square feet of office/commercial development and representing over \$110 million of capital investments.

Santa Ana Transit Terminal Air Rights Project Description

Property Ventures intends to construct a six-story, 126,000 gross square foot office building on the existing air rights pad above the Santa Ana Transit Terminal. The approach includes cantilevering the structure on all sides to maximize floor area. The building will be linked to the existing, adjacent parking garage via a second level, enclosed pedestrian bridge, which will enter the office building at the second level of the two-level entrance lobby located on the Fifth Street frontage.

The architectural concept consists of a modern, blue-colored vision glass structure with granite panels colored to match the exiting terminal structure. The existing facade of the terminal is extended to the entry area of the building to further enhance the visual concept that the buildings are one structure. A matching, enclosed pedestrian walkway extends to the second level of the existing parking structure. The design incorporates a two-level lobby entrance on the Fifth Street frontage complete with a pull-out area for automobile drop-off. The two-level lobby allows for lobby entrance from street level or via pedestrian overpass from the parking structure. No retail space is provided. A helipad is accommodated at roof level as an optional feature.

With the exception of the second floor which includes part of the lobby, each rentable floor is typical, containing 20,351 gross square feet. As designed, the building will include 118,384 leasable square feet (94%) and 100,809 usable square feet (83%).

Figures 3 through 6 contain a rendering of the project, an elevation view, a site plan, and a cross-section of the building.

Construction of the office building is scheduled to commence in March, 1986, and is estimated to be completed in March, 1987.

Terms of the Air Rights Lease Between the District and Property Ventures

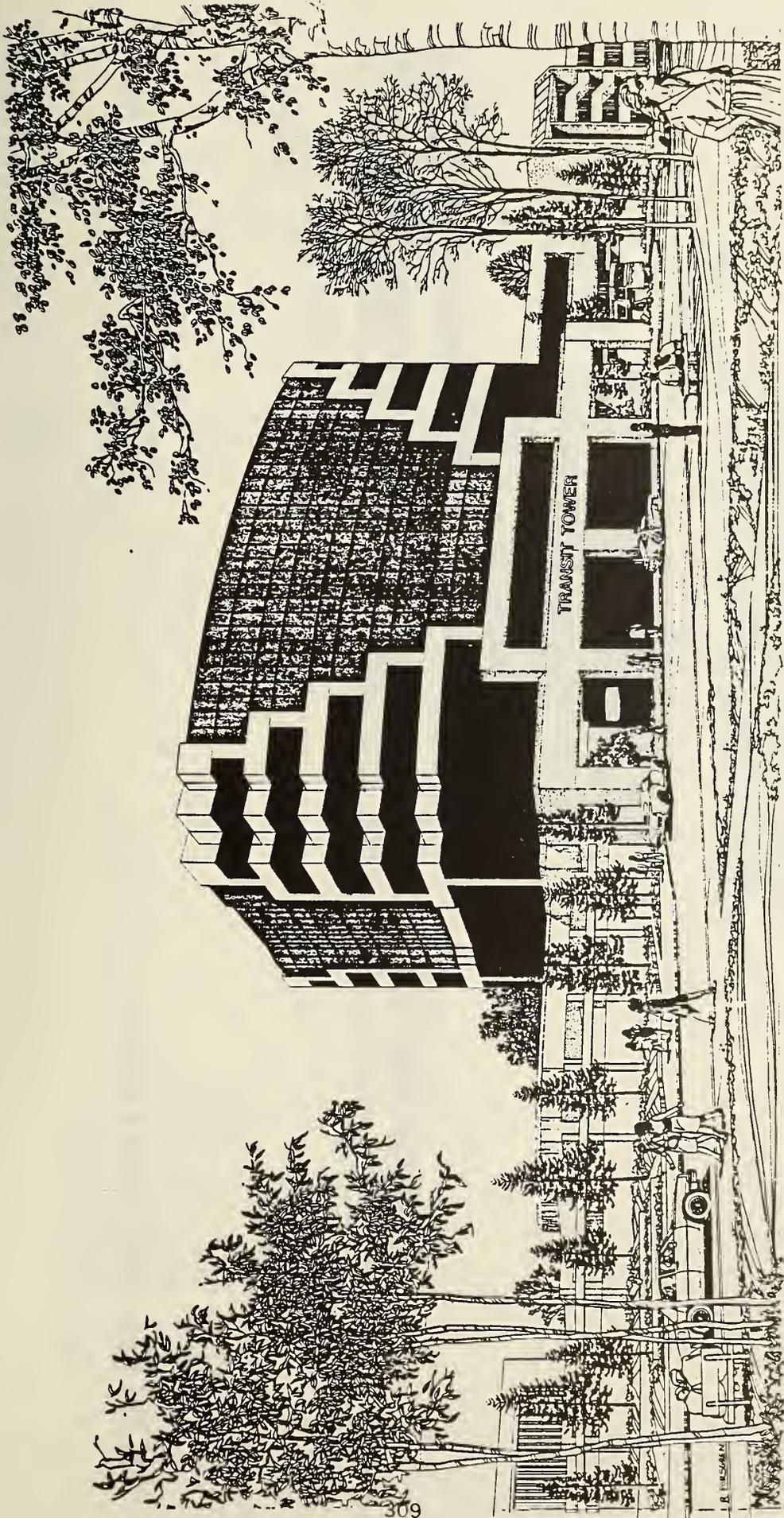
The lease negotiations between the district and property ventures took place in two steps. The first step, culminating in a signed letter of intent (nonbinding), involved negotiating the business terms of the agreement and established the basic framework for the full joint development lease agreement. The second step involved negotiating the full lease agreement. The process was divided into two steps so that the basic business terms and conditions could be negotiated without being sidetracked by all of the minor, yet necessary, terms and conditions of the full lease agreement. The first step negotiations were essentially conducted by four individuals:

- President of Property Ventures
- Property Ventures Negotiating Consultant
- OCTD Director of Development
- OCTD's Negotiating Consultant (Spillman Boatman, Inc.)

The participants were purposely minimized in number so that the basic terms and conditions could be quickly reached. The second step in the negotiating process was designed such that both entities could then involve their legal staffs to ensure that all terms and conditions of a full lease agreement would be properly considered. Table 3 graphically portrays the difference in efforts involved in negotiating a letter of intent and a full lease agreement.

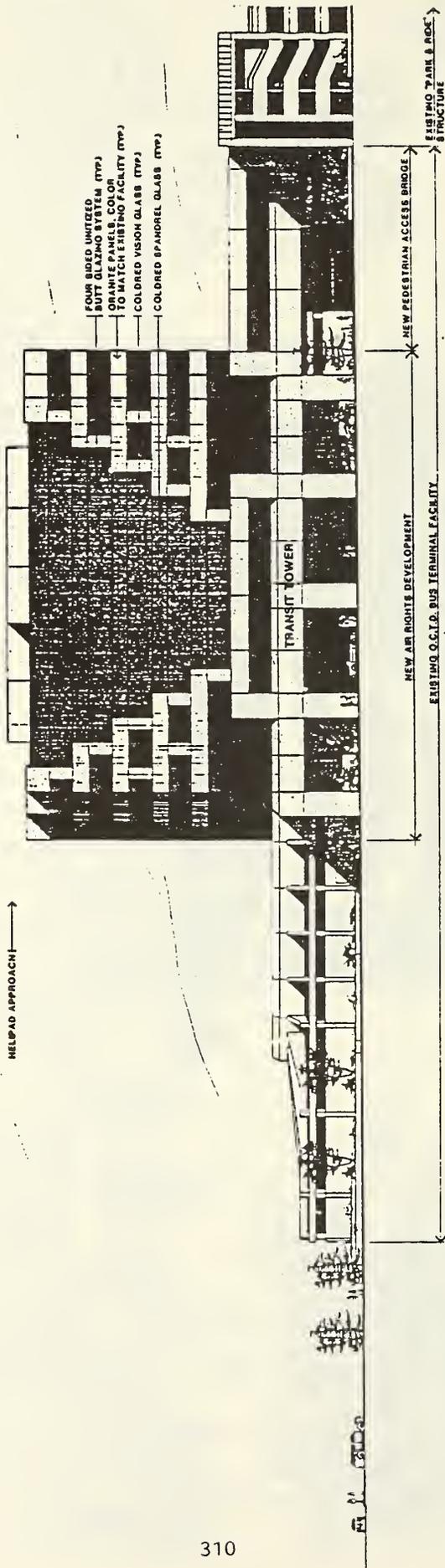
The first step negotiations resulted in what became known as the 3-30-30 agreement, representing rental terms for the District of:

- 3% of gross annual revenues,
- 30% of net cash flow from operations of the building, and
- 30% of the net proceeds from the sale or transfer of the building.



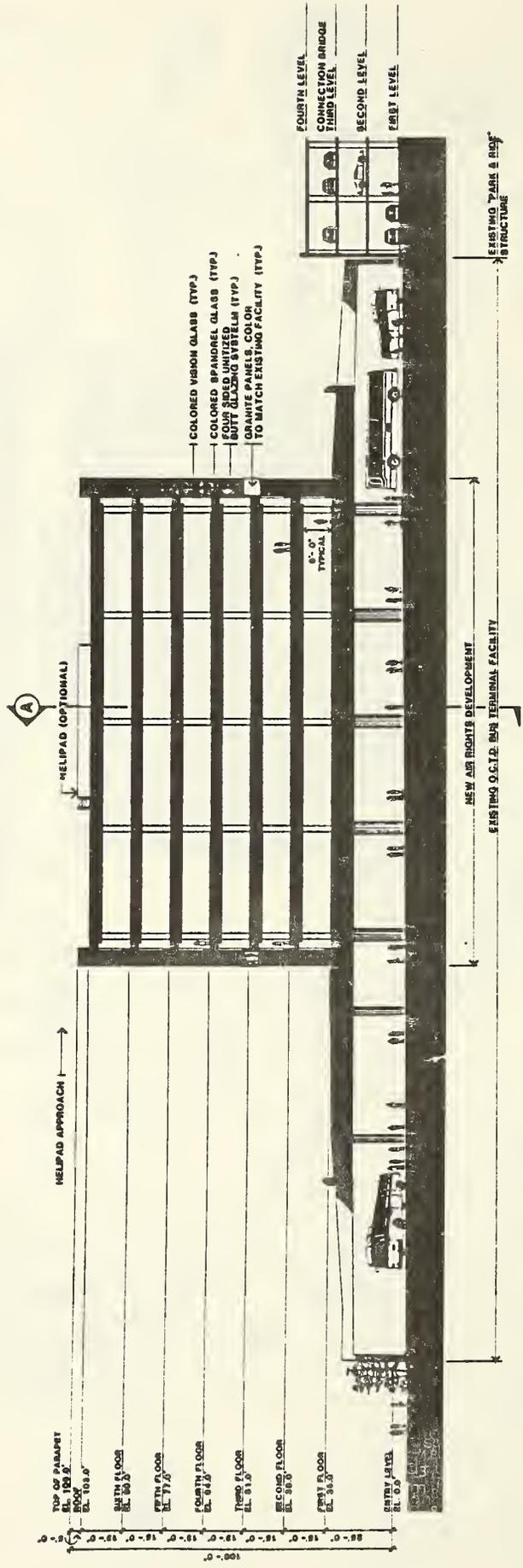
THE TRANSIT TOWER

FIGURE 3



NORTH ELEVATION (SANTA ANA BLVD VIEW)

FIGURE 4



EAST - WEST SECTION B



FIGURE 6

TABLE 3
NEGOTIATING CATEGORIES

STEP I: LETTER OF INTENT PARAGRAPHS	STEP II: FULL LEASE AGREEMENT ARTICLES
<ul style="list-style-type: none"> • Development Proposal • Development Schedule • Ownership • Term of Lease • Rental Terms • Sale of Building • Tax and Depreciation Benefits • Payment of Taxes • Santa Ana Redevelopment Agency • Development Approvals 	<ul style="list-style-type: none"> • Premises - Term of Lease • Definition of Certain Terms • Rent • Development of Air Rights and Construction of Building • Payment of Taxes, Assessments, etc. • Surrender • Insurance • Operation • Repairs and Maintenance of the Premises • Compliance with Laws and Ordinances • Changes and Alterations by Tenants • Discharge of Obligations • Use of Premises • Entry on Premises by Landlord • Limitation of Liability • Damage and Destruction • Mortgages, Transfer, Subleases, etc. • Eminent Domain • Default by Tenant or Landlord • Renewal • Notices • Quiet Enjoyment • Arbitration • Certificates by Landlord and Tenant • Right of First Refusal • Construction of Terms and Miscellaneous Representations and Warranties • Exhibits (including legal description of property, etc.)

In general, the letter of intent dealt with the term of the lease (initial 55-year term, with option to renew for 44 years), identified the percent rent to the District and the percent of net proceeds to the District if the building is sold or transferred, indicated that all percentage rents to the District are against a guaranteed minimum base rent per year of \$50,000, and identified the options available to Property Ventures for acquisition/lease of the code-required parking spaces contained in the adjacent parking structure.

PROJECT BENEFITS

Orange County Transit District

The District stands to definitely gain from its efforts to develop the air rights of the Santa Ana Transit Terminal. First, a long-term revenue stream has been established in the form of lease payments and participation in gross revenues of the development project. In simple terms, based upon an initial capital investment of one million dollars for the air rights pad, and the anticipated rental revenues to the District from the Property Ventures office development over a fifteen-year period (estimated at \$4.34 million), the District will receive over a 430 percent return on its investment. In addition, should the building be sold by Property Ventures, the District stands to gain 30 percent of the net proceeds from the sale.

However, as alluded to earlier, the District will benefit from this project in more than a financial return from the Santa Ana Transit Terminal air rights development. First, District staff has been given clear direction by its governing Board of Directors through adoption of joint development policies and procedures, to actively pursue other joint development opportunities. This is a benefit to staff in that it establishes clear internal operating instructions. Secondly, not only have joint development policies and procedures been established, but a project has been brought to a successful conclusion. The experience gained from the project can now be optimistically applied to other efforts. In fact, the District has already begun a second air rights development project at its Fullerton Park-and-Ride facility in Fullerton, California. Assuming this and other future endeavors are successful, the District will receive increased revenue from the private sector to further support public transit improvements.

A third, intangible benefit has also been accrued by the District. During the RFQ process for the Santa Ana project, a number of developers indicated to Spillman Boatman, that they were unwilling to become involved in a capital project with a public agency. Assuming Property Ventures conveys their positive experience with the District on the Santa Ana project to other private developers, a greater number of responses to future joint development projects on District-owned property can be anticipated.

Property Ventures

The benefits to Property Ventures can be described in two categories. First, in terms of project development, Property Ventures has been provided with a number of items which will reduce their initial cash flow needs, including:

- The provision of code-required parking.
- Virtual elimination of all structural site preparation work.
- Landscaping and irrigation system are completed.
- All requisite sidewalk, street and light improvements have been completed.
- A significant amount of the requisite market assessment has been completed.
- All local agencies (particularly those who will issue permits) have established a relationship calling for successful completion of the project.

These are direct, up-front benefits to any private developer.

Secondly, Property Ventures will receive a financial return on their investment through either rental of floor space and/or sale of the completed building.

City of Santa Ana

The City of Santa Ana benefits in a number of ways. Financially, there will be both direct and indirect benefits. The direct benefits will occur as property taxes are paid by the air rights building owner. Indirect benefits will accrue as the air rights building tenants purchase goods and services within the City. A maximum indirect benefit is accrued by the City if the tenants of the air rights building represent relocations from other cities.

The City of Santa Ana also benefits from the further development of its Civic Center Complex. The air rights project is one of many which will further solidify the Complex as the County seat of government and will make the area that much more competitive with other areas of the County.

CONCLUSIONS

The success of the District's Santa Ana Transit Terminal joint development effort has led to a number of conclusions which will positively effect the District's future joint development efforts and, hopefully, will assist other properties in their own efforts. These conclusions are discussed below.

Potential Application for Bus-Related Projects

One concern identified by the District at the outset of the project was that the air rights development was related to a bus terminal. A significant number of joint development success stories exist related to rail rapid transit projects; there are few, similar success stories associated with bus-only facilities. The success of the Santa Ana Transit Terminal Air Rights Development project, however, provides a blueprint which other bus-only transit operators can use to market their properties. And, considering the fact that there are significantly more bus-only properties than there are rail properties, the benefits to the transit industry, particularly small and medium-sized transit properties, should be enhanced.

UMTA Urban Initiatives Program

As a result of the success of the Santa Ana project, reinstatement of an Urban Initiative Grant, or similar capital grant program by UMTA is definitely called for. This would be particularly justified considering UMTA's current stance on private sector involvement in public transit services and improvements. Not all properties have the financial means to prepare sites for future joint development efforts. As has been the case in Orange County, an urban initiative type program can be successful at stimulating development at the local level. And, assuming successful private sector developments as a result of transit investments, local agency reliance on federal operating subsidies would be reduced.

The provision of seed money by UMTA under a grant program would not have to become a major element in UMTA's budget, nor would these grant

funds have to become a major element in any particular project. In the District's case, the total cost of the transit terminal and park-and-ride facility was \$8.16 million, with an UMTA Urban Initiatives Grant accounting for only \$700,000, or 8.6 percent of the total project cost. Funding this marginal project cost has allowed the District to market the terminal's air rights; without it, the air rights may not have been developed.

Professional Project Approach

The District firmly attributes a significant amount of its success with the Santa Ana joint development project to its overall approach. The marketing program and negotiating process were "private sector oriented" and demonstrate the importance of a business-like approach on the part of the public sector.

1. Marketing Program: Both the process and products used to solicit a developer warrant special attention. The process used was the common, two-step approach using first a Request For Qualifications to pre-qualify developers and solicit interest, and second, a Request For Proposals to solicit specific contract proposals from the pre-qualified developers.

The products used to solicit a developer were two professionally-prepared brochures, both entitled Santa Ana Transit Terminal Air Rights Development. The first brochure, the project Prospectus, contained material on the area, setting, site, the proposed project, and the request for qualifications. The second brochure contained all of the same material as the first, except the request for qualifications sheet was replaced with a Request For Proposals packet. Both products are high-quality brochures prepared by a private graphics firm specializing in the development of marketing material.

2. Negotiating Process: As described in "The Project" section, the negotiating process involved two steps. The first step involved negotiating the business terms of the agreement and established the framework for a full joint development lease agreement. This process, although commonly used in the private sector, should definitely be applied in public-private negotiations as well. The District's success with this process is a case in point.

Program Development/Project Development

One critical lesson to be learned from the District's experience, is that explicit policy direction must be obtained before any specific joint development projects are undertaken. Phase I of the District's joint development effort was specifically designed to obtain Board of Directors approval on an overall joint development policy and a set of implementation procedures. Embedded in the procedures is the delegation to staff of conducting the District's joint development program. Ultimate authority, of course, should still reside with the Board of Directors, including selection of a developer for exclusive negotiations and approval of the binding, full lease agreement. However, day-to-day project activities, including negotiations, can most effectively be accomplished by delegated staff with the authority to make decisions. This is particularly important at the negotiating table where the developer must feel that the transit agency's representative can negotiate directly and with authority.

One Stop/Shop Concept

Another approach, effectively employed by the District, is the designation of one individual as the project manager. That individual, in addition to directing day-to-day activities on the project, should have the following responsibilities:

- Be the liaison between the transit agency and all other local agency personnel (e.g., city staff in planning, traffic, redevelopment, etc.). Efforts should include obtaining data, keeping all vested interests informed, responding to questions, etc.
- Be the liaison between the transit agency and the development community. In the District's case, the individual's name, address and phone number were listed in both the RFQ and RFP. Thus, all questions from the developers were dealt with by a single person with potential confusion virtually eliminated.

Coordination Between Public Agencies

As indicated above, the District identified one individual as the liaison between itself and other local agencies. This approach allowed for a high degree of coordination between the City of Santa Ana and the Transit District. Equally important, however, was the City's concurrent designation of a

single individual as the City's project manager. In the case of the Santa Ana Transit Terminal joint development effort, the City of Santa Ana had already established such an approach; the Director of their Downtown Development Commission assumed the liaison role for the City. Essentially all communication between the two agencies on the project were successfully conducted through these two individuals.

Next Steps

As a result of the success of the Santa Ana Transit Terminal joint development effort, the District has begun a second project at its Fullerton Park-And-Ride facility. This existing facility is located at the confluence of two major freeways (Interstate 5 and the Riverside Freeway). The facility provides parking for 900 cars, has 14 bus berths, and serves over 2,200 passengers daily. The park-and-ride facility is located on a highly visible and accessible site and contains excellent sites for one or more office buildings. The District's study will determine the value and market for the property and, if warranted, lease air rights to private developers to generate income.

In addition to the Fullerton P&R project, the District is actively pursuing joint development opportunities on both its currently owned property and on property it may purchase as a result of various planning studies. For example, in 1983, the District purchased a seven-mile strip of abandoned railroad right-of-way in the central part of the County for future use as a transit corridor. While the transit corridor plans are being developed, the District decided to lease portions of the ROW to generate income. A number of short-term lease agreements (i.e., 3 to 5 years) have been signed with the private sector to cover ROW maintenance costs, and the District is conducting discussions with a number of developers with respect to longer term leases associated with proposed development projects. The District is also currently conducting planning studies related to the need for additional transit centers and small bus operating/maintenance terminals. Staff is explicitly considering the potential for joint development in these studies.

HOW CITIZENS' ASSOCIATIONS VIEW DEVELOPERS' OFFERS OF INNOVATIVE TRANSPORTATION SOLUTION

Frank Spielberg
SG Associates, Inc.

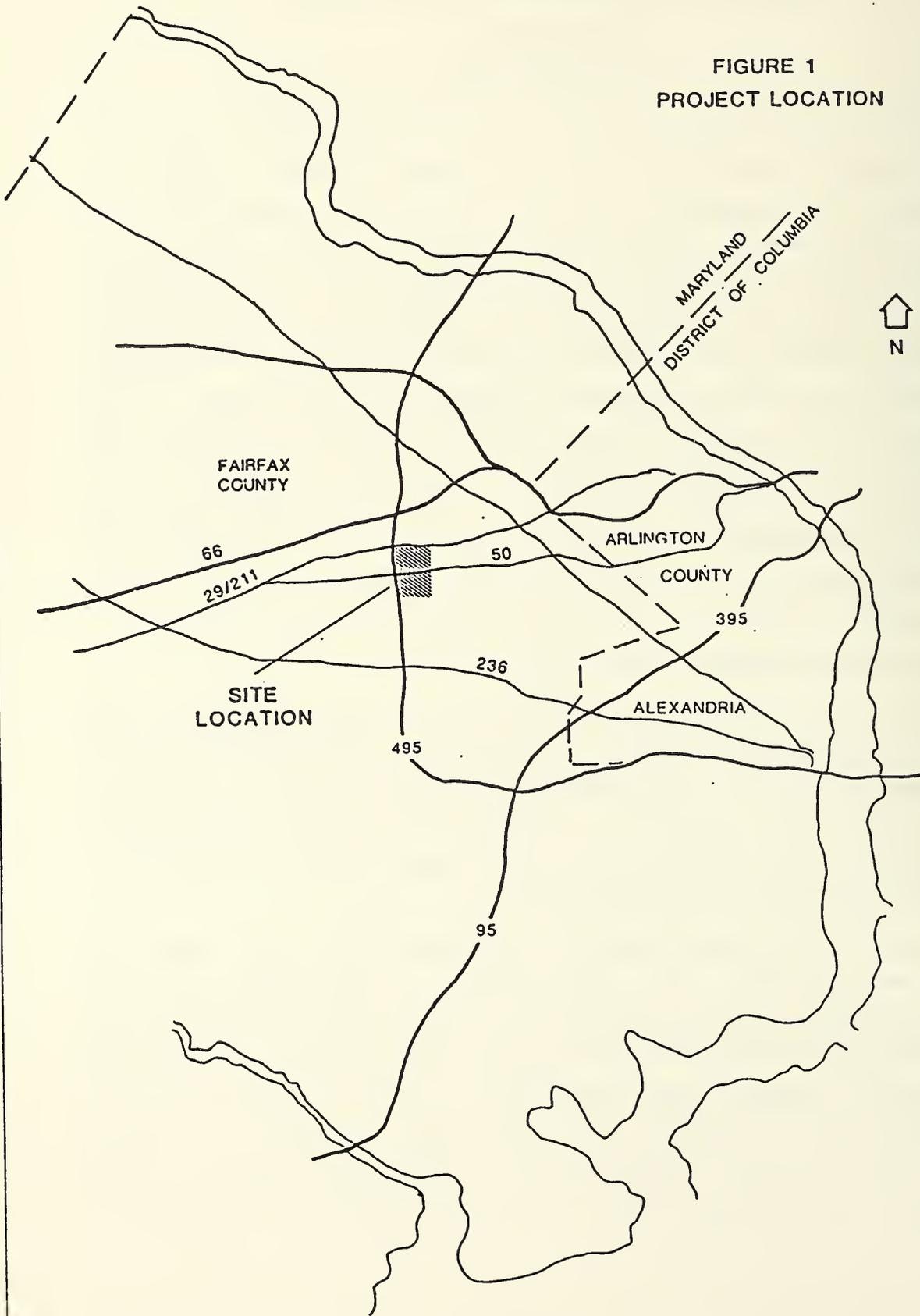
Practicing transportation professionals typically participate in major development projects as representatives of either the developer or local government. Although in these capacities we often deal with citizens groups, we may not have a full understanding of their methods, their motives, their true concerns or their internal decision-making process. Several years ago, as president of a local civic association, I had the opportunity to participate with a coalition of such groups in their response to proposals for a major development project involving both substantial developer financing of transportation improvements and innovative management strategies for traffic control. As we increasingly find governments seeking financial or other contributions from developers in order to accommodate traffic generated by the project we are likely also to find developers seeking more dense development rights and greater use of innovative strategies by developers to reduce the traffic impacts attributable to their projects. Understanding how local civic groups react to innovative concepts will aid in developing more acceptable programs.

SETTING AND DEVELOPMENT CONSTRAINTS

The site of the proposed projects consists of approximately 360 acres located in Fairfax County, Virginia, in the southeast and northeast quadrants of the interchange of the Capital Beltway (I-495) and Arlington Boulevard (US Route 50). (See Figure 1.) At the time the site was proposed for development this was purported to be the largest undeveloped parcel in private ownership within the Capital Beltway.

The site was the major remaining undeveloped portion of a larger site that had been assembled under single ownership in the 1930s. Since the parcel was assembled Arlington Boulevard was constructed east-west and the Capital Beltway was constructed north-south through the site. At the time that Arlington Boulevard was constructed the owner obtained from the Virginia Department of Highways and Transportation the right to a specified number of access points. Otherwise access to Arlington Boulevard through the property was restricted. When the Capital Beltway was constructed in

FIGURE 1
PROJECT LOCATION



the late '50s and early '60s a full interchange was provided with Arlington Boulevard, but again, access to and from the site was restricted.

In the early 1970s the site, still undeveloped, was part of a comprehensive planning study conducted by Fairfax County with participation by local citizens groups.

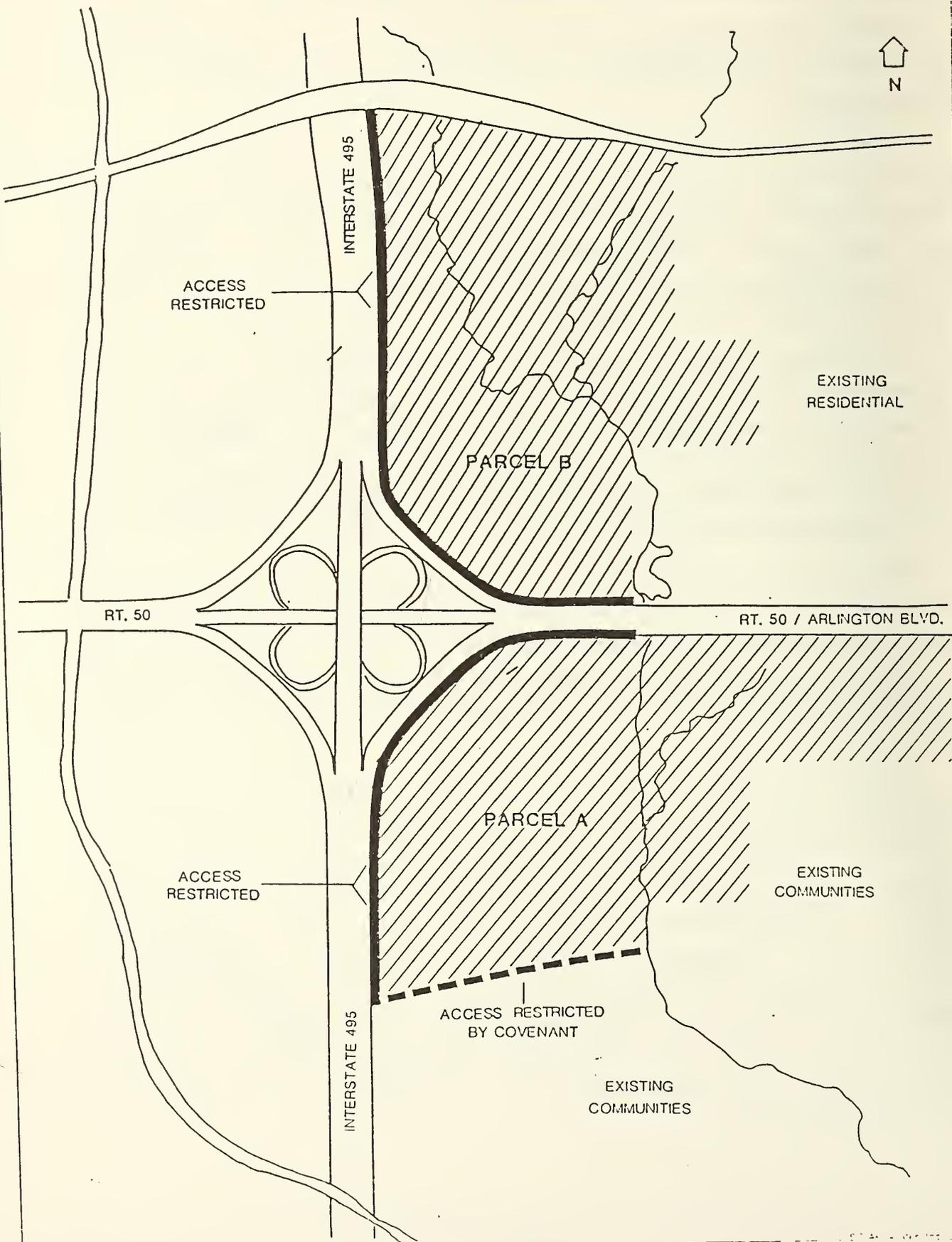
Although many participants in the planning study recognized the potential of the site for commercial uses, it was felt that the access problems imposed severe limits on the traffic generation that could be accommodated and, hence, on the desirable development densities. Further, many citizens of surrounding neighborhoods hoped that substantial portions of this heavily wooded tract could remain in a natural state.

In particular, referring to Figure 2, the site could have no access from the west due to the existing Interstate. From the east and south access was limited by the existence of residential communities that would adamantly oppose any through traffic. From Arlington Boulevard traversing the center of the site access points were limited due to the proximity of the freeway interchange and associated access controls.

Due to these access constraints the site was identified in the Master Plan (and zoning) for residential use at about four dwelling units per acre over most of the site with higher density adjacent to Arlington Boulevard. Several of the local community groups suggested even higher density along Arlington Boulevard in exchange for very low density or park land at the southern end.

Land use planning in Fairfax County is a two-stage process involving a Master Plan and specific zoning. The Master Plan defines appropriate uses for areas while zoning establishes permitted uses for sites. The Master Plan may also provide for optional uses depending on fulfillment of various conditions. The Master Plan is reviewed on a three-year cycle. At review times any applicant -- a landowner, a citizen or County staff -- may propose a change in planned use. These proposals are reviewed by the Planning Commission and the Board of Supervisors, with public hearings before both groups, and, if approved by the Board of Supervisors, are then incorporated into the Master Plan. Subsequent rezoning applications are then guided by the revised Master Plan.

FIGURE 2



Development in Fairfax County operates under the "proffer system." In theory, the adopted Master Plan for the County has identified the proper use for each parcel of land based on a variety of factors including soils, drainage, utilities, adjacent uses and transportation capacity. A site may be developed up to its zoned limit as a matter of right. However, if it is wished to develop more intensively than existing zoning will permit, the developer must demonstrate that changed conditions make rezoning appropriate or that the applicant will undertake expenditure so that an optional condition of the Master Plan is satisfied. In particular, the developer may make an offer to the County -- a proffer -- to make an investment that will change conditions enough that rezoning is appropriate. Proffers can take many forms but typically relate to increasing roadway capacity or otherwise improving transportation conditions. The proffer in the instant case offered, in addition to roadway improvements, management actions to change the basis of the roadway capacity analysis, protection of existing communities and actions to assure maintenance of environmental quality.

INITIAL DEVELOPMENT PROPOSAL

In 1979 a site plan was filed by the contract purchaser of parcel A, the southern half of the site, to develop the entire parcel with single family residential units at approximately four dwelling units per acre -- consistent with existing zoning -- with all access to be from Arlington Boulevard. The surrounding civic associations were not completely pleased with this proposal as it omitted any consideration of higher density commercial development along Arlington Boulevard, meant that almost all of the heavily treed site would be graded for development, and raised the possibility of significant additional traffic through adjacent neighborhoods at some future time. Nonetheless, they reluctantly accepted the proposal as it was within the "matter-of-right" limits of the existing zoning.

Shortly afterward a revised proposal was put forth calling for roughly 3.5 million square feet of office development on parcels A and B, each parcel under separate ownership. At this point the local civic associations from surrounding residential neighborhoods recognized the need for concerted action and formed a coalition known as SCORE -- an acronym for Support and Conserve Our Residential Environment. This group had several concerns regarding the development. While traffic issues received most attention,

questions of run-off during construction, building height and bulk and open space preservation were raised.

To support their request for rezoning for intensive commercial use the developers proffered the construction of a diamond interchange to connect the site access road to Arlington Boulevard. They further offered to make this the only access to parcel A -- parcel B would also have access from US 29/211 on the north side of the site. To assuage the fears of the existing residential communities south of parcel A the developers offered a covenant, to run with the land, that a vehicular roadway would never be built across the southern boundary of the site. This covenant was signed and is still in force. Continuance of this covenant was incorporated in the site plan that was ultimately approved. Although it has not been tested there is every reason to believe that it is enforceable.

Even though the diamond interchange proposed for access to parcels A and B represented a significant investment by the developers there were still fears by SCORE and its constituent organizations that there would be serious degradation in the level of traffic service and in both air and water quality. Support for this position was received in a review of the project by VDH&T which revealed that project related traffic would cause significant congestion during peak hours on one of the exit ramps from the Interstate and because the site access was too close to the existing interchange to provide adequate merge and weaving areas.

At this point, several proposals were put forth by the developer to implement Transportation Systems Management (TSM) strategies to limit site related vehicular traffic generation. These included staggered work hours and measures to increase ridesharing and transit use including both the employment of a ridesharing coordinator and imposition of on-site parking changes.

SCORE's reactions to these proposals was initially skeptical since there was little evidence that such tactics had been successful elsewhere. The position of SCORE that emerged after lengthy discussion was that they would accept the proposal with the TSM actions only if development approval were given in stages and the permission for full build-out would be granted only when it was demonstrated that the proposed TSM actions were in fact effective in reducing the traffic generation. The developer's response was that he

could not accept this constraint. His costs for the basic site improvements, including the proffered roadway construction, were such that financing could not be obtained unless full build-out were guaranteed.

At this point, the Master Plan revision and rezoning came before the Planning Commission and the Board of Supervisors and was defeated. Two factors were key to the defeat -- unified community opposition in an election year and the VDH&T analysis that indicated that the developers proffered investment would not solve the traffic problems.

It is important to note that the basis for community opposition was not to commercial development, per se, rather it was based on:

- A perception that the size of the proposed development was too large for the road system.
- Skepticism that the proposed TSM strategies would be implemented or enforced.
- A view that the developers proposed transportation actions might solve his local access problems but did little to solve area problems.
- There were inadequate provisions for environmental protection.

SECOND, FINAL, DEVELOPMENT PROPOSAL

Following the defeat of the rezoning application the land passed to new contract purchasers. Contracts for both parcels A and B were taken by new interests -- each a larger and more well-established development organization than the previous group. Both groups obtained new attorneys and consultants.

The development proposals brought forth by the new owners were similar to those of the prior year -- roughly four million square feet of office and hotel development, although a substantial residential component was included at the north end of parcel B and the northeast portion of Parcel A. The new proffers basically began where the previous set had left off (i.e., from the start, the proposed proffers included both significant expenditure for highway improvements and TSM strategies).

The roadway improvements proffered by the developers, acting in concert, included not only immediate site access but also major reconstruction of the I-495/US 50 interchange. The cost of this work was then estimated at about \$12 million, but the in-place cost when completed was closer to \$20

million. TSM strategies to reduce traffic generation were also an integral part of the proposal.

Community reaction was again generally negative, primarily due to the size of the project. The increased expenditure to address highway traffic effects were favorably received because the proposed construction addressed all issues raised by VDH&T and provided not only for site access but also actions to maintain and improve the level-of-service for existing traffic. The TSM strategies were viewed more positively in part because the developers presented some evidence of their effectiveness in other locations and, in part, because the developers seemed to be more willing to accept development conditions tied to demonstrations of effectiveness of TSM actions as the sites were developed. Once again, however, the need to obtain full build-out approval due to the large up-front investment was cited.

After substantial negotiation, an agreement was reached leading to approval of the project by the Board of Supervisors. This agreement permitted almost the full development density requested. In order to accommodate traffic the developer undertook some \$20 million in highway improvements, only part of which were directly required for site access. In addition, a monitoring process was established to measure site related peak hour vehicular trip generation at various stages of site development. Under the program, if site traffic exceeds established levels the Board of Supervisors may withhold building permits for a stated period until the developer institutes management actions to reduce peak traffic generation.

Appendix A presents selected elements from the proffers offered by the developer of Parcel A. With minor changes these conditions were contained in the approval given by the Board of Supervisors.

From a transportation viewpoint the key feature is that the responsibility of the developer has three elements:

- Initial expenditure for a major roadway capital improvement to be prior to any building occupancy.
- Continuing obligations to establish and maintain a TSM program including a ridesharing program, feeder bus services to a nearby Metrorail station and charges for on-site parking.
- A procedure for monitoring site related traffic and instituting further TSM actions if required.

FINDINGS

The project presented above is perhaps atypical in that it clearly had many aspects making it appropriate for commercial use and would have been planned and zoned for such uses but for a series of historical actions that severely limited access. Further, the Fairfax County "proffer" system provided an established procedure by which an applicant for a changed use could offer to undertake expenditures to make that use possible.

That the process worked is demonstrated by the fact that almost \$20 million of road construction work is now virtually complete, most of the residential uses on the site have been constructed and are occupied and work has begun on the commercial buildings.

For the citizens of the surrounding areas the expenditures offered by the developers were key to reducing opposition. These expenditures included not only the "up-front" highway improvements that will mitigate the effects of the substantial traffic to be generated but also expenditures to monitor, on a continuing basis, the traffic impacts and environmental conditions as the project is built and occupied.

We should note that throughout the process the citizens groups never perceived the developers offers as gifts to the County -- all parties believed that the investments were being made only because they were essential to make the project work and to obtain approval. If local area traffic conditions would be better when the construction was completed, that was seen as an incidental benefit.

The citizens groups also recognized that there was a price to be paid for the developers investment in terms of approval for increased development density, and that the developer would not have made such substantial offers unless he believed that added profits would support the expenditure. In fact, a major topic of discussion throughout related to attempts to quantify the relationship between incremental density granted and the developer expenditure that could be supported. Clearly, the developer knew what these trade-offs were and how much could be offered, but he chose not to share this information. The citizens associations were not able with their resources to estimate the trade-off values and felt that the County staff did not provide the information. The citizens, therefore, could only respond to offers made

by the developer. They could not determine whether alternative proposals would have been reasonable and financially feasible.

From the experience in this project the following observations can be made:

1. For the developer, expenditures specifically directed to mitigate problems perceived by the community, can aid in receiving project approval.
2. For local governments and citizens:
 - Significant expenditures on transportation projects that will have a real effect on the transportation system can only be expected from developers of significant projects.
 - Developers will expect to receive benefits, probable in the form of approval of greater density, in return of significant expenditure.
 - Government agencies must understand development financing and be in a position to evaluate whether private expenditure, offered or demanded, is consistent with the revenue to be generated by added development rights.
 - Citizens groups are likely to want "checkpoints" in the approval process -- points at which the effectiveness of proposed TSM strategies can be measured -- and beyond which development cannot proceed without specific approval. Developers making a significant "up-front" expenditure for transportation improvements cannot agree to such conditions. The assured "build-out" must be sufficient to justify the overall expense. If "checkpoints" with real power are to be applied then the investment requested from the developer must also be incremental.

**PART V:
INTEGRATING FINANCING TECHNIQUES**

ALTERNATIVE FINANCING FOR TRANSPORTATION IMPROVEMENTS IN MINNESOTA

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and

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INTRODUCTION

Decreasing revenue from traditional funding sources, backlogged projects and growing capacity and development needs have accelerated the search in Minnesota for alternative techniques to finance transportation improvements. This paper describes how the Minnesota Department of Transportation (Mn/DOT) is responding to these issues and needs through implementation of alternative transportation financing and management techniques and the establishment of new cooperative arrangements between the state, local, and private sector.

BACKGROUND

During the last several years, a variety of factors have converged to encourage the development and implementation of alternative transportation financing techniques. Among these factors are:

- the declining status of our nation's transportation infrastructure,
- the diminishing purchasing power of traditional sources of revenue,
- the continuing cut-back of federal funds in selected transportation program areas,
- the shifting of federal transportation responsibilities to states and local governments under the goals of "new federalism," and
- the on-going need for transportation investments to foster and facilitate renewed economic development and growth.

In Minnesota, several other trends have been occurring to make the search for innovative financing not only attractive -- but imperative. For example, the early 1980s marked a period of substantial highway revenue shortfalls of over \$361 million, and the deferral of 149 scheduled improvement projects. In addition, significant increases in the miles of abandoned rail line and increases in transit program costs were also occurring.

Like many state transportation authorities, Mn/DOT began to assess alternative strategies for increasing revenues. Guiding this effort were objectives to:

- reinforce the user fee concept in identifying alternative revenue raising strategies,
- stabilize revenues from the effects of inflation,
- encourage greater participation from local units and the private sector in transportation improvements,
- provide for mechanisms to advance transportation improvements in areas with immediate development potential or economic need,
- establish procedures to more closely monitor and evaluate the performance of transit program services, and
- identify alternative methods for providing more economical and efficient transportation services.

From these objectives a number of alternative financial and management techniques are evolving to address transportation needs in Minnesota.

ASSESSING THE POTENTIAL FOR IMPLEMENTING ALTERNATIVE FINANCING TECHNIQUES

The Joint Center for Urban Mobility Research has suggested that the potential utility of alternative transportation financing techniques can be assessed in light of several factors including:

- the degree to which the political and business climate agrees with the need for transportation improvements and supports alternative methods for increasing revenues,
- the opportunities available for implementing new financing techniques, and
- the extent to which existing public-private relationships have responded to or are capable of responding to transportation financing needs.¹²

¹²Rice Center, Joint Center for Urban Mobility Research, "Technical Report: Planning and Financing Urban Mobility In Texas," prepared for the Texas Department of Highways and Public Transportation, September 1983, pp. 63-65.

In addition to these factors, the strength of the overall economy and state and local enabling legislative powers are also important to the potential acceptance and utility of alternative financing techniques.

Current conditions in Minnesota reflect many of the characteristics favorable to alternative financing concepts. For example, the state is characterized by:

1. Strong political and business interest support for a balanced and well-functioning transportation system. Proposals to increase, modify and strengthen the funding capabilities of traditional transportation user fees have met with general favor among public interest groups, business interests, the Governor and the Legislature. For example, since 1979, the state motor fuel tax has been increased from 9 cents per gallon to 17 cents per gallon.
2. New interest in the development of innovative alternatives for financing and providing public services. When estimated revenues and forecast needs do not match, the nature and extent of transportation services are likely to be reevaluated. In Minnesota efforts are underway to identify alternative types of services, alternative service providers, revised standards of service, contracting out and other options to reduce the cost of providing transportation services. For example, in 1982 and 1983 Ted Kolderie, of the University of Minnesota's Hubert Humphrey Institute of Public Affairs, published papers which assessed alternative options for financing and providing public services.¹³ Several legislative, citizens league and state agency studies have investigated opportunities for providing adequate levels of public services within the constraints of limited public revenues.

In 1981, the Minnesota Legislative Highway Policy Study Commission directed Mn/DOT to undertake several pilot programs to

¹³Ted Kolderie, "Many Providers, Many Producers: A New View of the Public Service Industry," University of Minnesota, Hubert Humphrey Institute of Public Affairs, 1982. Ted Kolderie, "The Redesign of Public Transit: Changing the 'Givens'," University of Minnesota, Hubert Humphrey Institute of Public Affairs, March 17, 1983.

determine if additional state performed maintenance activities could be conducted more efficiently by private contractors. Mn/DOT advertised for bidders and awarded contracts for gravel shoulder maintenance, stockpiling of sand and snow and ice control.

Both the legislature and Mn/DOT closely monitored the maintenance by contract projects. Average costs for each of the privately contracted out projects were higher than similar work activities performed by department forces. The results indicate that more successful ventures could be achieved if project specifications are clear and comprehensive, expectations are well understood by all parties and state consultation is readily available. The Department is continuing to investigate the feasibility of expanding the use of private firms for state highway maintenance activities.

In addition to using private contractors, Mn/DOT has also negotiated agreements with 26 local units of government throughout Minnesota to share equipment and/or maintenance activities on state highways located within cities.

3. Growing consensus for the implementation of state and local cost-sharing and public-private partnership arrangements. The search for alternative financing techniques is leading to an acceptance of the idea that infrastructure and public service costs must be tied more directly to the recipients benefitting from such investments.

In 1981, the Minnesota Business Partnership suggested in an issue of the Harvard Business Review that there is a growing need to produce constructive partnerships between business and government sectors.¹⁴ The Partnership went on to note that the role of business today extends beyond simply furnishing products or services that are profitable to acting as good corporate citizens within communities.

¹⁴Judson Bemis and John A. Cairns, "In Minnesota Business is Part of the Solution," Harvard Business Review, July-August 1981, pp. 92-93.

This theme of cooperation is being incorporated into many public agency programs. A recent newspaper story featured an article on how the City of Minneapolis is no longer approving the use of economic development grants without specific developer financial participation in related infrastructure investments. For example, one developer donated 16 acres of land to the city of Minneapolis, with a value of \$4-\$7 million.¹⁵

Interest in cost sharing and public-private partnerships has extended to state transportation programs. In 1984, Mn/DOT published a report entitled Public-Private Partnership: A Means for Funding Highway Design and Construction Activities. The Department is continuing to assess opportunities for the further implementation of this concept in Minnesota. A Northstar Workshop for state business leaders and public officials is being planned for May 1986 to develop a definite agenda for:

- encouraging greater private sector participation in highway improvement activities and
- establishing specific policies and procedures for facilitating public-private transportation partnerships.

4. Broad state and local taxing and enabling powers to secure revenues for infrastructure investments and improvements. Land use planning requirements are legislatively authorized for all cities, counties and regions in Minnesota. Existing planning and environmental protection provisions can be used in gaining developer support to minimize some effects of new development projects.

Traditional local taxing powers and assessment provisions can also be used to finance some development related public service costs.

In addition to the traditional powers of local governments, the Minnesota Tax Increment Financing Act of 1979 enables local

¹⁵Martha S. Allen, "City Seeks Return on Development Grants," Minneapolis Star and Tribune, Monday, May 6, 1985, p. C1.

governments to use property tax powers to underwrite development related project costs.¹⁶ Tax increment financing was originally authorized by the Minnesota Legislature in 1947. The legislation permits local units to issue bonds for the public costs of development projects within designated tax increment districts. Local bonds are backed by the anticipated "captured" or increased value in property taxes for properties located within the districts.

Tax increment districts are made up of single or multiple parcels within larger project areas. Each project area may have more than one tax increment district. Unlike many states, Minnesota tax increment financing is not limited specifically to redevelopment areas. The legislation provides for three types of districts, each with different qualifying requirements:

- Redevelopment Districts -- areas of extensive deteriorated or underutilized property
- Housing Districts -- areas planned for low or moderate income housing
- Economic Development Districts -- areas which are not redevelopment or housing districts can qualify as economic development districts if the local units determine that the establishment of a district will:
 - discourage the loss of commerce, industry or manufacturing to another state,
 - increase employment in the community, or
 - preserve or enhance a city's tax base.

In 1983, there were 246 reported tax increment financing districts located in 113 Minnesota cities.¹⁷ Several of these districts were designed exclusively to finance transportation improvements

¹⁶Minnesota Statutes, Chapter 273, "Tax Increment Financing Act of 1979."

¹⁷Minnesota State Planning Agency, "Tax Increment Finance Districts In Minnesota: 1983 Financial Disclosures," May 1985, p. 6.

necessary to support the subsequent redevelopment or new development of an area.

ALTERNATIVE TRANSPORTATION FINANCING TECHNIQUES

During the last several years a number of management and revenue changes have been implemented by Mn/DOT to improve Department efficiencies and respond to the need for additional transportation funding.

The diversity of techniques which have been employed to address funding related issues include:

- User Fees
- Debt Management
- Cost-Sharing Partnerships
- Program Evaluation & Management

USER FEES AND FIXED SHARE FINANCING

The constitutionally-established Highway User Tax Distribution Fund accounts for nearly 50 percent of annual Mn/DOT highway revenues. The Highway User Tax Distribution Fund has historically been made up of revenues primarily derived from state motor fuel taxes and state vehicle registration fees. However, revenues from motor vehicle excise taxes were recently removed from the general fund and dedicated to transportation.

While motor vehicle excise tax revenues have bolstered the transportation account, inflation and fuel efficient vehicles have reduced the purchasing power of the per gallon motor fuel tax. Even though Mn/DOT has been successful in obtaining public, business and legislative support for increasing traditional user fees, alternative taxing structures continue to be examined to address future transportation needs.

Motor Fuel Taxes

In Minnesota, as in most states, motor fuel taxes make up the principal source of state highway revenue. In the early 1980s, the Department estimated that every mile per gallon saved in new car fuel efficiencies was equivalent to the loss of one cent in annual motor fuel taxes. To compensate for these losses in revenue, legislative action has been successfully sought to

increase Minnesota motor fuel taxes. Figure 1 depicts the recent history of motor fuel tax increases in Minnesota.

Motor Vehicle Excise Tax (MVET)

A new "twist" in user fee concepts was accomplished with the 1981 passage of legislation to permit the phased transfer of motor vehicle excise tax revenues from the state general fund to state transportation programs. Under the provisions of this legislation, 75 percent of motor vehicle excise tax revenues will be transferred by 1992 to the state highway program and 25 percent of revenues will be used to support state transit assistance programs. Out of the transit portion of these revenues, 80 percent will be directed to the Minneapolis-St. Paul metropolitan area and 20 percent will support transit systems in other areas of the state.

The phased transfer of motor vehicle excise tax revenues for multiple transportation uses represents a significant step in addressing overall mobility needs in Minnesota. The transfer will:

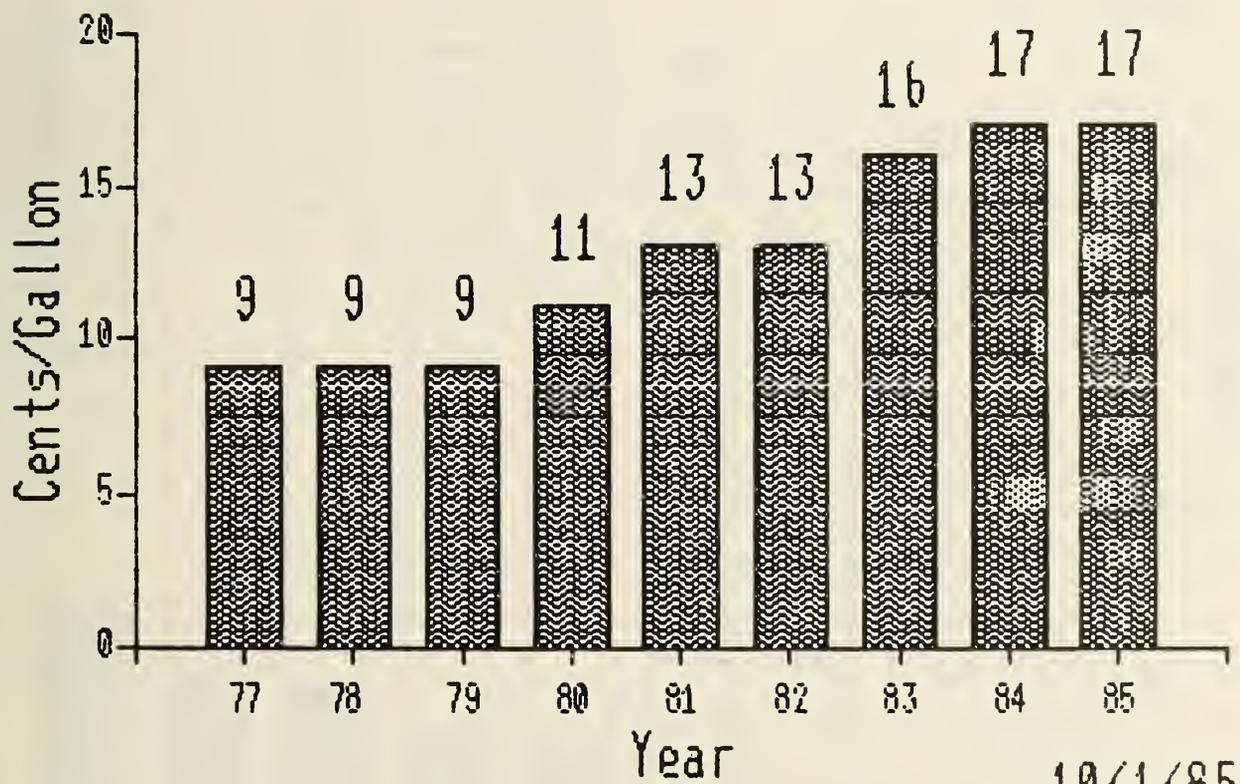
- supplement existing highway revenues to meet needs of the state, cities and counties,
- provide an inflation-sensitive revenue source for highway improvements,
- reduce dependence on bonding to finance highway projects,
- provide a stable source of revenue for state assisted transit services, replacing biennial general fund appropriations,
- permit the expansion of transit program services to meet future needs, and
- provide a potential source of revenue to support other transportation programs such as rail rehabilitation and light rail transit development.

Total projected highway and transit revenues resulting from the transfer of the motor vehicle excise tax are depicted in Figure 2.

Variable Motor Fuel Taxes

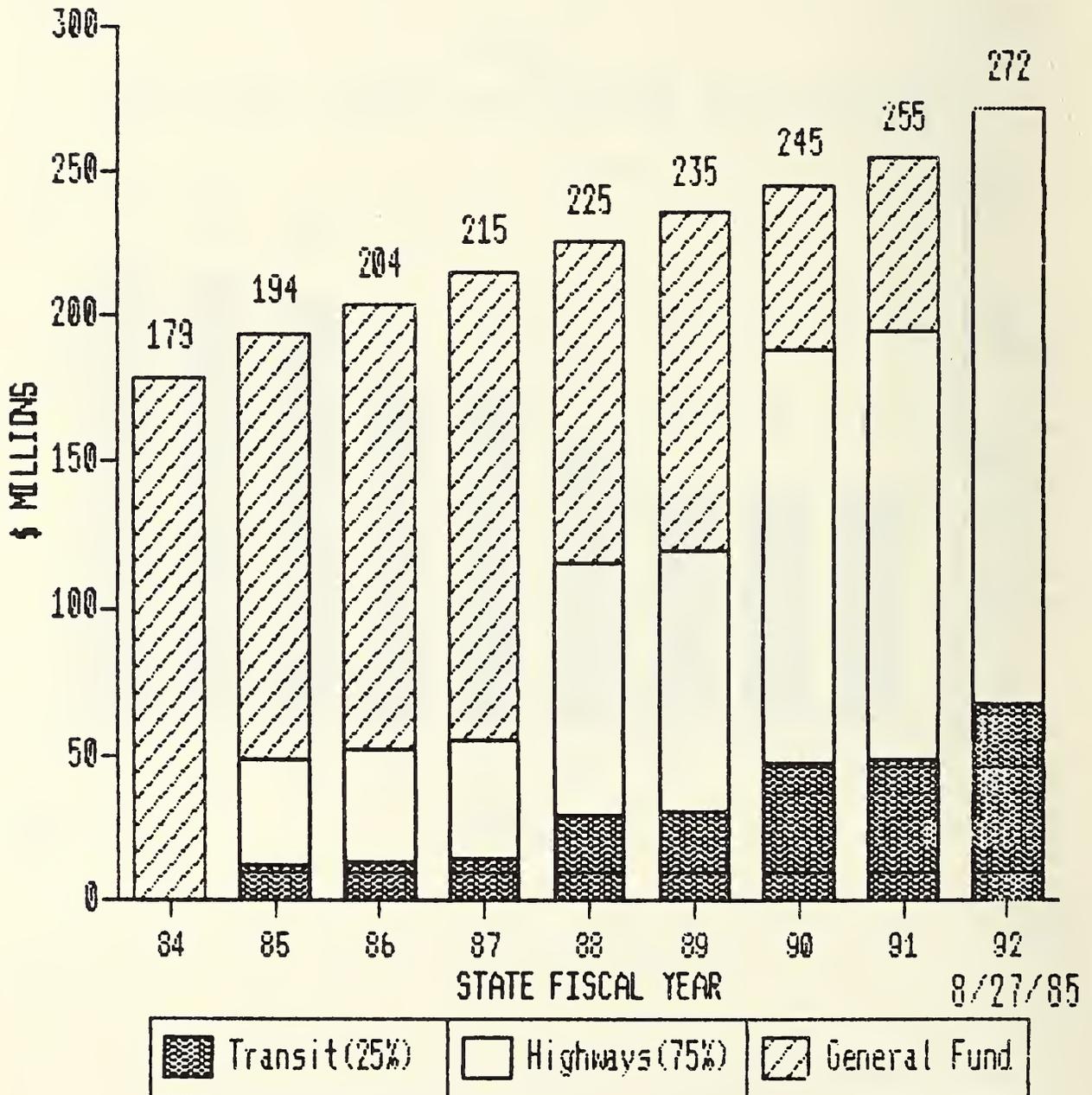
In 1985, Mn/DOT supported legislation to establish a variable motor fuel tax. The variable tax would be adjusted annually to account for declining fuel consumption and increasing highway maintenance costs. The maintenance

Figure 1
Historical Minnesota Motor Fuel Tax



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Figure 2
MINNESOTA MOTOR VEHICLE EXCISE TAX REVENUES



cost adjustment would be based on the Federal Highway Administration Federal Operations and Maintenance Cost Index.

The low rates of inflation in 1984-85 highway construction costs and other state tax priorities deferred legislative action on the variable fuel tax. If larger inflationary increases occur in highway maintenance and construction costs and fuel consumption declines, the Department anticipated increased pressure to stabilize motor fuel tax revenues.

Vehicle Registration Fees

Vehicle registration fee increases have also been implemented. Automobile registration fees in Minnesota are based on vehicle value and age. In 1981, minimal automobile registration fees were \$12.50, with an average fee of \$35.00. Following legislative changes the minimal automobile registration fee in 1985 is \$35.00. Registration fees for trucks are based on load capacity (gross weight) with adjustments for age. In 1981, a series of phased truck fee increases were approved. The last increase became effective in 1985.

Weight Distance Tax

Mn/DOT is currently conducting further analysis to identify tax structures which would achieve equity in road user fees by relating truck charges more closely to load, distance traveled and pavement damage factors. The Department is also reviewing existing state truck and weight regulations to identify opportunities for encouraging the use of less damaging vehicles.

DEBT MANAGEMENT

In addition to state highway user fees, special state legislation such as bonding authorizations provide a source of transportation revenue.

Trunk Highway Bonds

Trunk Highway Bonds may be sold to help finance the cost of highway improvements. The bonds are repaid from highway user fee revenues.

In 1982, the Minnesota Legislature passed Constitutional Amendment 2, which removed a 5 percent interest rate limitation and \$150 million ceiling on trunk highway bonds.

While the constitutional amendment removed externally-imposed interest and ceiling limitations, Mn/DOT developed a debt management policy which

limits the total amount of Trunk Highway debt outstanding at any time. The policy directs that the decision to sell Trunk Highway bonds will be made only after conducting an analysis of a ten-year revenue and expenditure forecast which can demonstrate that, for the first six years of the ten-year period, debt costs for both existing and proposed bonds will not exceed 25 percent of estimated available capital funds for any one of the six years. Further, the proceeds from Trunk Highway Bonds will be used solely for long term capital investment purposes which have an expected useful life greater than the 20-year term of bonds.

In fiscal year 1985, approximately \$37 million in bonding was targeted by Mn/DOT to support major construction and reconstruction projects on the state trunk highway system.

Local Revenue Bonds for State Highways

Timely response to new development needs has been a continuing issue for the Department. Highway programs for major projects are proposed five to six years in advance of actual construction. Private development proposals are often conceived and completed in much quicker time frames.

In 1985, the Minnesota Legislature discussed the need for transportation improvements in areas with immediate development potential. The result was the passage of legislation allowing two Minnesota cities the option of selling general revenue bonds, without referendum, for the purpose of accelerating the construction of two state highway projects. Mn/DOT is responsible for repaying the local revenue bonds, without interest, at the time the two projects would have been constructed, or as federal aid for the projects is received by the state. Total costs of the two projects are estimated to be approximately \$47.5 million, consisting of:

- the construction of interchange improvements adjacent to a former major sports facility which is proposed for redevelopment -- \$21.5 million.^{18,19}

¹⁸ Laws of Minnesota, Chapter 295 amending Minnesota Statutes 1984, Sections 473.556, 1985.

(Footnote Continued)

- the construction of the 5th Street parking garage over proposed Interstate 394 on the west side approach to the City of Minneapolis -- \$26 million.²⁰

COST-SHARING PARTNERSHIPS

One response to rising costs and lagging revenues has been to find new ways to finance transportation services. Greater state, local unit and private sector participation is becoming a major factor in responding to transportation needs in Minnesota.

Minnesota Rail Service Improvement Program

In 1982, Constitutional Amendment 4 was passed to permit the sale of state bonds for the Minnesota Rail Service Improvement Program. This legislative action was a response to rail service problems and the increasing number of rail abandonments occurring in Minnesota.

The Minnesota Rail Service Improvement Program allows the state, railroads and rail users to enter into contracts and loan agreements to rehabilitate lines which are in danger of being abandoned. Since its conception the program has resulted in nine public-private partnerships which share the costs of rail improvements. Two examples of the program include the following:

- Morris to Beardsley: This was a 39-mile marginal line, which was placed on the abandonment map in 1981. The line could not safely handle unit trains, and elevator operators on the line believed that poor rail conditions placed them at an economic disadvantage.

Estimated costs to improve the line were \$4 million. The railroad balked at this level of investment on a marginal line. Based on grain transportation needs of the area and the potential for increased usage, Mn/DOT recommended a project. To encourage investment by the railroad, rail users and shippers offered to loan

(Footnote Continued)

¹⁹City of Bloomington & Bennett, Ringrose, Wolsfeld, Jarvis, Gardner Inc., Draft Airport South Environmental Impact Statement, Bloomington, Minnesota, June 1984, Table 6.56, p. 6-145.

²⁰Laws of Minnesota, Chapter 299, Section 41, 1985.

the railroad 10% of the cost and Mn/DOT offered to loan 40% of the cost at 5.5% interest. The railroad reassessed the line and agreed to the project. The rail user loan is being repaid over a two to three year period. To date, the shippers have been repaid roughly \$278,400 of a \$295,800 loan to the railroad. Mn/DOT's loan to the project will be paid back over a ten-year period. Mn/DOT received its first annual payment from the railroad in August 1985 for an amount of \$221,811.59.

- Hanley Falls to Madison: Lac Qui Parle County formed a regional rail authority to purchase and reestablish a 36-mile line from Hanley Falls to Madison, Minnesota. Federal funding of approximately \$1.7 million, state support of about \$2.5 million and nearly \$743,000 in local funds are being used to replace and rehabilitate the line. Burlington Northern Railroad leases the line from the local authority and provides the maintenance. Mn/DOT and local investors are being repaid through Burlington Northern lease payments.

Nine rehabilitation agreements representing 317 miles of rail line, have been financed since the beginning of the Minnesota Rail Service Improvement Program. A history of the program shows that funding has been received from the following sources:

State Bonding and General Funds	\$12.9 Million	32%
Federal Funding Assistance	\$12.6 Million	32%
Private Railroads and Local Shippers	<u>\$14.4 Million</u>	<u>36%</u>
TOTAL:	\$39.9 Million	100%

In addition to rail rehabilitation projects, Mn/DOT has loaned money to grain elevators on project lines for capital improvements to increase loading or shipping capacity. Of a total \$563,300 in loans, approximately \$57,000 have been repaid to date by elevator operators and shippers.

Highway Improvement Projects

In Minnesota, a number of highway projects have been partially funded through cooperative partnerships with local governments and the private sector. Funding for projects has generally been derived from assessments

and tax increment financing in which the city sells bonds and repays them with property taxes generated from the development.

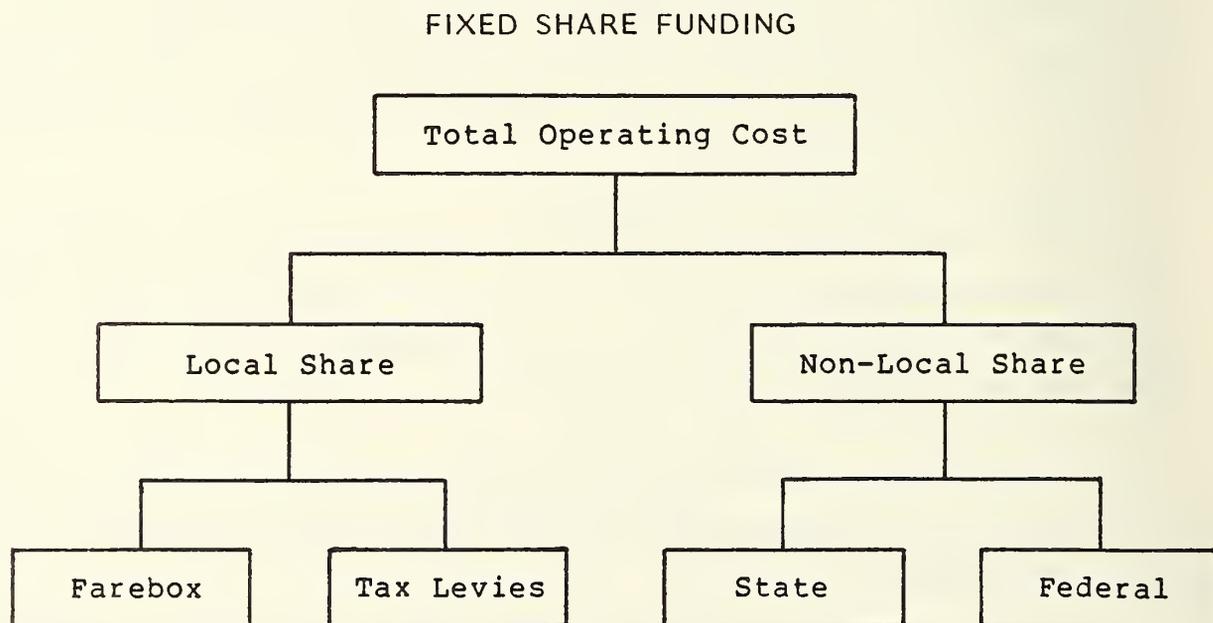
- I-94/Boone Avenue -- A developer and the City of Brooklyn Park identified the need for an interchange improvement to serve a large industrial/warehouse development. Tax increment financing was used to finance \$4 million of the construction and engineering costs. In addition, the developer was assessed \$400,000 towards right-of-way and construction.
- I-394/Carlson Parkway -- The City of Minnetonka will contribute \$5 million toward the construction of the Carlson Parkway interchange. Tax increment financing will raise \$3.25 million, and a developer assessment of \$1.75 million is dedicated for right-of-way and construction. The cost/sharing arrangement also includes federal interstate dollars and state funds.
- I-494/County Road 15 -- A \$7 million interchange will be totally financed by the City of Plymouth through tax increment financing. No state money is allocated to this project.
- I-494/169 -- The City of Eden Prairie is contributing \$2.4 million in direct assessments and \$17.6 million through tax increment financing in the construction of a ring road to improve access and circulation in an area of development.
- Highway 12/Ridgedale Interchange -- In 1975-76, the developer of the Ridgedale Shopping Center was assessed \$440,000 by the City of Minnetonka for the construction of a new interchange which would significantly improve access to the development.
- Highway 52/37th Street in Rochester -- A cost-sharing arrangement involving federal, state, county, city, and private money is being used to make interchange improvements needed for a new development. The developer will contribute approximately \$225,000 via city assessment.

Mn/DOT is continuing to explore opportunities and methods for expanding the application of cost-sharing partnerships in meeting highway improvement needs. Potential public-private applications which are currently under consideration include:

- Road Strengthening Projects: where an individual business or group of shippers may realize significant shipping savings through the improvement of a roadway's carrying capacity.
- Improvement of State Highways Within Redevelopment Areas: where local units and developers may enhance the redevelopment potential of areas through participation in state highway improvements.

Fixed Share Funding for Transit

Beginning on January 1, 1984, all Minnesota transit systems, except the Metropolitan Transit Commission which provides service to the Twin Cities Metropolitan Area, began receiving state funds through a "fixed share" funding procedure rather than the deficit funding method used in the past. Basically, fixed share funding requires the system to pay a fixed local share (35% for rural and handicapped, 40% for small urban and urban, and 55% for large urban) of the total operating cost. The state share is calculated by subtracting the local share and any federal dollars received from the total operating cost. The following diagram depicts how fixed share funding works:



Local Share = (Total Operating Cost) x (Local Share %)

Federal Share (Urbanized) = Direct Funding from UMTA

Federal Share (Non-Urbanized) = (Operating Cost - Farebox Revenue) x 40%

State Share = (Operating Cost) - (Local Share) - (Federal Share)

In 1984, fifty-seven (57) transit projects statewide received \$22.1 million in state funding, through 71 contracts administered by Mn/DOT.

PROGRAM EVALUATION AND MANAGEMENT TECHNIQUES

Another important element in long-term financial planning is the implementation of internal cost-savings and efficiency measures. Mn/DOT has been actively pursuing alternatives to improve the management of transportation facilities and services so that overall costs may be reduced. Examples of Mn/DOT activities include the following:

Value Engineering Improvement Program

Value engineering is a management tool to optimize expenditures for highways and transportation facilities. Value engineering encourages an approach to project development which will optimize the difference between the cost of making a product and the cost of satisfying the need for the product or service.

Mn/DOT began an in-house value engineering program in 1975, although a value engineering incentive clause had been introduced in highway construction contracts in 1972. Mn/DOT's Value Engineering Improvement Program has resulted in savings to the state of approximately \$88.2 million. In fiscal year 1985 alone, savings of nearly \$19.3 million were achieved by the program.

Transit Performance Evaluation Process

In 1983, Mn/DOT developed a process for evaluating transit systems known as the Performance Evaluation Process (PEP). PEP generates performance scores that are based on standard performance measures. The performance measures are cost efficiency, service effectiveness, and cost effectiveness. Standard transit data is aggregated to produce these performance measures. The data items and performance measures are as follows:

Data Items:

Miles (system total)
Hours (total vehicles)
Employees (full time equivalent total)
Revenue (farebox and contracts)
Vehicles (total operating plus backup)
Cost (total cost)
Passengers (total)
Subsidy (federal plus state plus local)
Population (service area)

Measures:

Cost Efficiency

Hours per employee
Miles per vehicle
Cost per mile

Service Effectiveness

Passengers per mile
Hours to population
Revenue to subsidy

Cost Effectiveness

Cost per passenger
Revenue to cost

The overall performance scores are arranged in system peer groupings. This makes it possible to identify those systems that exhibit overall performance that is significantly above or below the average performance of the group. The peer groups used by the PEP process are urbanized (over 50,000 population), small urban (2,500 to 50,000 population), rural (under 2,500 population), and specialized services to elderly and handicapped people.

After the evaluation process is complete and individual systems are scored and ranked, Mn/DOT's project managers share the PEP results with the individual system managers at the local level to assist them in implementing corrective action if needed, and to help providers establish goals and objectives in their management plans. The information from this process is considered in the annual funding allocation for each system by project managers in determining the acceptable funding limits within a peer group.

CONCLUSION

Transportation maintenance, preservation and improvement needs are continuing to foster the search for alternative revenue sources and funding techniques. The Transportation Research Board in a recent special conference on alternative financing noted that:

Most new sources are really extensions of traditional sources rather than truly innovative solutions. There is no fail-safe funding. What may work well in one community may not work at all in another. Regional differences, political structures, prevailing ideologies, special factors

and economic bases all limit the types of mechanisms that can be used in a particular area.²¹

This paper has described the diversity of alternative funding techniques that are evolving in Minnesota. Many reflect a "twist" or extension of traditional user fee concepts, others reflect enhanced and innovative relationships between the state, local governments and the private sector.

Minnesota has been relatively successful in raising revenue for transportation. Figure 3 depicts the increases in state revenue which are expected to occur through 1990 as a consequence of actions taken in the last few years.

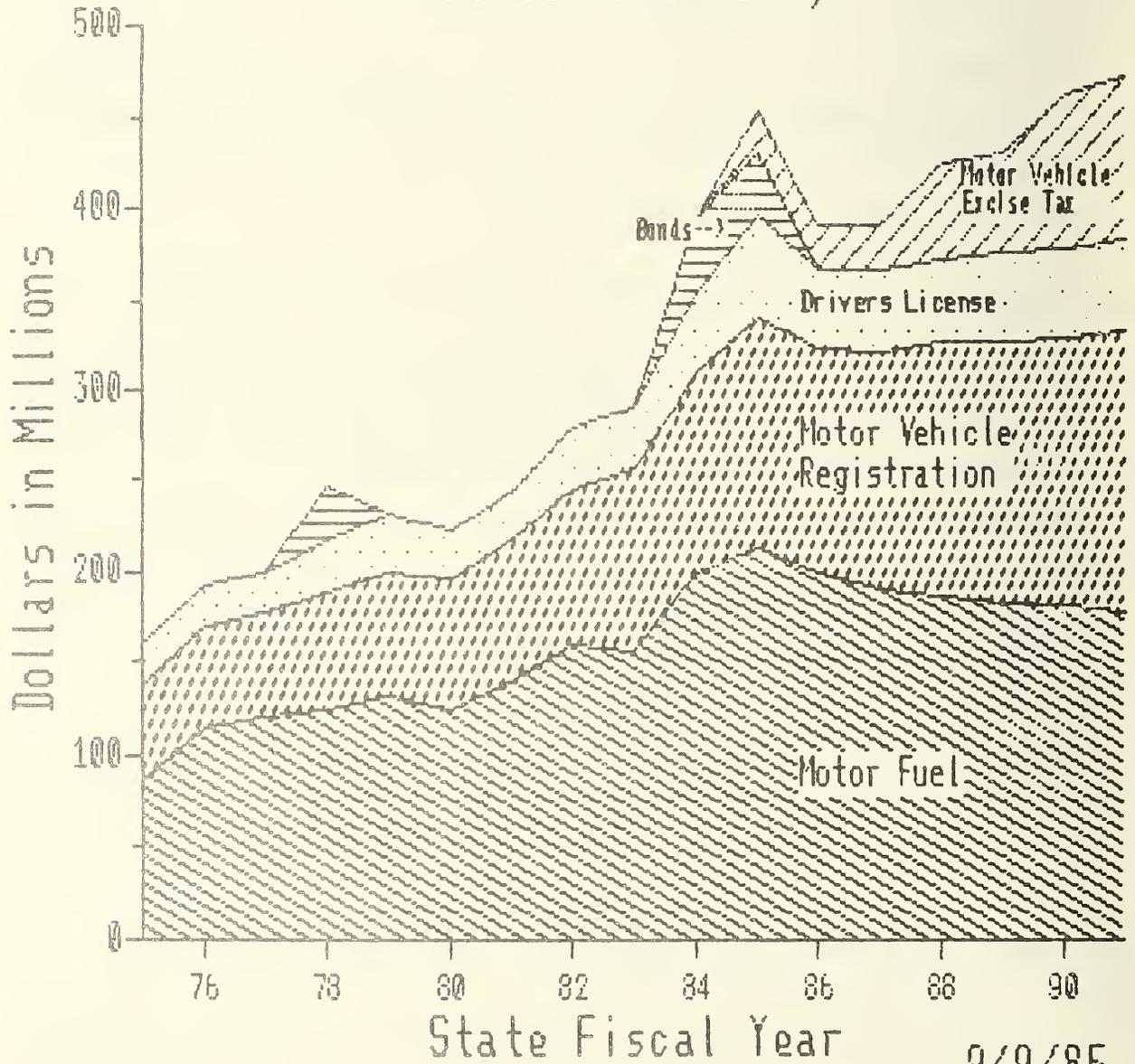
Although these increases are impressive, it is clear that further work must be accomplished to:

- minimize the effects of inflation and fuel efficient vehicles on user fee revenues,
- more closely align user fee costs with actual use of the system, and
- obtain greater financial support for new transportation improvements from those most benefiting from the improvements.

Mn/DOT is continuing to address these issues as we move into the future. We are optimistic that efforts such as next year's North Star Workshop on Public-Private Partnerships and other on-going studies will enhance our ability to meet state transportation demands.

²¹Transportation Research Board, "Proceedings of the Conference on Evaluating Alternative Local Transportation Financing Techniques," Special Report 208, p. 5.

Figure 3
 MINNESOTA TRUNK HIGHWAY REVENUES
 (State Funds Only)



9/9/85

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STRATEGIES FOR PRIVATE SECTOR PARTICIPATION IN THE PROVISION OF TRANSPORTATION FACILITIES

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SUMMARY

The purpose of this paper is to explore the concept of public/private cooperation as related to transportation projects, to identify the forms which this cooperation can take, and to provide policy alternatives which government may want to consider to encourage such cooperation in the transportation area.

There has been a rapid growth in the area of public/private cooperation in transportation projects during the past decade. The emerging literature in this area was reviewed and case studies were developed and analyzed. A "spectrum" of strategies which could be appropriate for use in Wisconsin was developed as follows:

1. Contributions - Developers provide the major cost for transportation improvements which directly benefit their projects.
2. Planning - Land use planning by local jurisdictions for areas surrounding transportation improvements support the state's investment in such improvements.
3. "UDAG" Selection Process - A "match" of local real estate investment and/or direct contributions are included in the criteria for highway project selection.
4. Impresario - The state acts as a "broker" by promoting and marketing a project, finding a developer and financing, consulting on design and execution. Though this is an activist strategy, no investment of state funds is required.
5. Fiduciary - An actual investment by the state in particular areas or selected private sector developments.
6. Transportation Corridor Development Corporation - A special purpose entity with authority in many areas. Associated with very large transportation projects, such as the proposed Milwaukee light rail system.

7. State as Developer - The state not only organizes a development, but also finances, executes and owns it.

The strategies are analyzed according to their overall effects (economic, safety, traffic, aesthetics, local autonomy), legal issues (fairness, legislation required, ease of enforcement) and effects internal to DOT (expertise required, effects on schedule, consistency with past practice, and effects on project costs).

INTRODUCTION

There has been a rapid growth in the area of public/private cooperation in transportation projects during the past decade. Public sector budgets have been strained and the environment for private sector real estate development has become difficult. Public/private projects have provided benefits to both sectors. The purpose of this paper is to explore the concept of public/private cooperation as related to transportation projects, to identify the forms of cooperation, to provide policy alternatives which encourage cooperation and to recommend implementation strategies for the policy alternatives. This paper is a result of a project conducted for the State of Wisconsin for the purpose of helping to set state policy for public/private cooperation in transportation projects.

While the literature on this subject and the number of actual projects implemented has increased substantially, our study provided an opportunity to explore a few unique directions:

1. Few states have studied or implemented policy in this area. Most of the projects and literature is focused on local and metropolitan areas or specific transportation projects.
2. Most of the effort in the public/private area has been in mass transit. Our study can be applied to all modes but emphasizes highway transportation because it is the State's major role in Wisconsin.
3. The study examined policy and implementation, and provided a "pro-active" direction. Most existing work in this area is reactive to particular transportation projects and modes.
4. Our study also allowed us to develop and classify a range of alternative strategies based on their (a) the type of involvement the state would have in pursuing such policies, (b) ability to be implemented, and (c) effects.

Background of Public/Private Cooperation

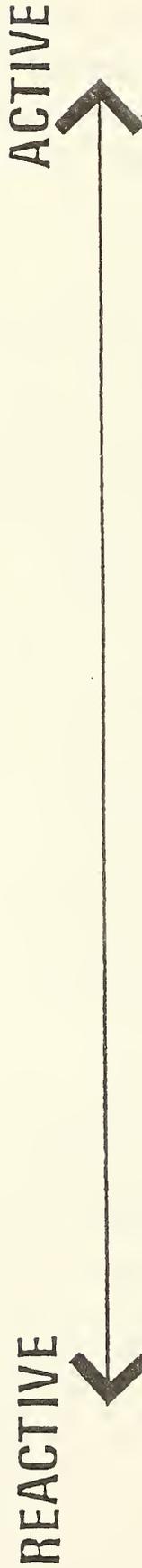
Public/private cooperation has been an inherent part of major events in the history of the United States. The early settlement of North America was a joint effort by various European governments and private companies. Immigrants were attracted by the opportunity to obtain free or low cost land through these corporations. At the same time, they produced exportable goods, paid taxes and provided for the defense of the colonies.

A public/private development, whose size and ingenuity rivals today's projects, was the creation of Washington, D.C. After years of debate on the location of the nation's capitol, the present location of the District of Columbia was chosen as a compromise by Congress, but they did not appropriate monies for its purchase or construction. George Washington, after much negotiation with the five landowners in the area, developed the basis for agreement that satisfied them all -- an official public/private development. The owners donated their land to the new government, keeping every other "block" in the District, except for that area designated for the Capitol and major buildings. The Government, by creating the Capitol, would attract the population that would make the owner's remaining land quite valuable. In other words, a donation of land by the private sector and the infrastructure by the public sector was necessary for the success of the project.

A century later a reversal of this situation occurred in the largest type of joint development ever undertaken -- the development of the transcontinental rail lines. In this case, the government ceded tracts of land to the railroad companies in return for their providing the infrastructure -- the railroads.

Public/private development has emerged again as a viable, innovative and salubrious concept. It is not new -- it has been creatively and effectively used for centuries, and specifically, it has been an integral part of the settlement, formation and expansion of our country. Under careful management, it may once again have an important and appropriate part for future development.

FIGURE 1



<p><u>Donations</u></p> <ul style="list-style-type: none"> --Individual project basis --donations accepted in the form of cash, land W U Q 	<p><u>Controls on Development</u></p> <ul style="list-style-type: none"> --State exercises control on development process in order to assure a better environment and safer transportation system --Access Control --Zoning Requirements --Planning Requirements 	<p><u>UDAC</u></p> <ul style="list-style-type: none"> --Projects selected partially on the basis of ratio of private and local investment to state expenditures. --Those projects with a high ratio would be favored over those with lower ratios. 	<p><u>Impresario/Broker</u></p> <ul style="list-style-type: none"> --State puts together people and projects utilizing variety of approaches, e.g. tax incentives, financial 	<p><u>Fiduciary</u></p> <ul style="list-style-type: none"> --State acts to maximize return on its investment, may operate land bank, sell access rights, provide front end loans for private projects 	<p><u>Development Corporation</u></p> <ul style="list-style-type: none"> --State establishes separate public/private agencies to put together public/private deals in relation to transportation investment. Examples: Light Rail Development Corporation, Regional Highway Development Corporation 	<p><u>State as a Developer</u></p> <ul style="list-style-type: none"> --State initiates and develops projects in cooperation with local government; example, tourism centers
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Benefits of Public/Private Cooperation in Transportation Projects

Public/private cooperation in transportation projects has emerged and grown during the past fifteen years because of the numerous benefits demonstrated by such projects. During an era when state revenues have been strained and risks in real estate have increased, the benefits of such joint developments have been recognized. These include:

1. Increased transit ridership by coordinating building and state transit projects.
2. Efficiency of circulation and amenity which gives joint development a competitive advantage.
3. Implementation of private sector projects which would not be feasible without transportation improvements.
4. Additional job opportunities for Wisconsin.
5. Higher property and sales taxes.
6. Opportunity for value capture on public property because of private development.
7. Revenue from the sale or lease of state real estate.
8. Sharing of land acquisition and construction costs.
9. Enhanced environment around a transportation facility with amenities provided by the private sector.
10. Ability to implement regional and/or central city planning.

Project Objectives

The objective of this study is to analyze factors which have contributed to the success of public/private cooperation in land development and transportation projects and to apply these factors to formulate State Department of Transportation policy.

It is intended that the information resulting from this study will provide the State with a clearer understanding of the potential for private sector participation in state investments in transportation. With this information the State will be able to formulate policies that maximize the level of participation of the private sector in state transportation programs.

Methodology

The project involved four phases: data collection, data analysis, generation of alternative strategies and the analysis of implementation issues. The first phase, data collection, involved a literature search, using the NTIS

data base and other sources, which identified 112 citations. The abstracts of these documents were reviewed, and approximately fifty publications were selected for detailed review. Of those we found ten reports to be especially rich in information pertinent to this project. Issues that were identified as being particularly relevant to our study were the legal, political, economic, financial, scale and organizational aspects of the various joint development projects.

In the second phase, data analysis, case studies were selected from the literature and from examples of public/private cooperation that had taken place in Wisconsin in the past. The projects were summarized and then analyzed according to the following set of questions:

How were possible joint development projects identified?

Who negotiated the terms?

What was the role of local government in arranging the project?

What was the basis for determining the dollar amount involved?

What types of contributions were involved in lieu of monetary?

How was an equitable contribution determined?

The next phase of the project involved the formulation of alternative strategies for public/private cooperation in transportation projects. This was an iterative process. Initial models were developed based on the case studies as well as discussions by the project team. These strategies were then presented to private developers for their comments, and based upon their comments, ideas were added or discarded as appropriate.

Based upon these discussions, the strategies were placed along a continuum which represents a spectrum of activism in private development. This continuum ranges from the State taking an active role in the development process at one end to the State assuming a more passive role at the other.

The strategies were then analyzed according to their overall effects (economic, safety, traffic, aesthetics, local autonomy), legal issues (fairness, legislation required, ease of enforcement) and effects internal to DOT (expertise required, effects on schedule, consistency with past practice, and effects on project costs). These issues were analyzed as related to the implementation of these strategies if they were to be adopted.

STRATEGIES FOR PUBLIC/PRIVATE COOPERATION

From our review of past practice as well as discussions with developers, it was apparent that a wide variety of strategies exist for the enhancement of the cooperation between the public and private sectors for transportation projects. These strategies range along a spectrum which represents different degrees of state activism towards private development. The various strategies arranged along the continuum are shown in Figure 1. On one end of the continuum, the State takes a very active role in development, while at the other end, the State reacts to development proposals. Between these two extremes there are various other options with different degrees of activism. These strategies are not mutually exclusive and the State could adopt or combine parts of each strategy as part of an overall policy. The strategies will be described and discussed beginning at the "reactive" or passive end of the spectrum, then moving towards the active end.

Contributions

At one end of the spectrum, the State would accept contributions from the private sector in the form of land, services and/or monetary contributions. This is a growing trend nationally (Braun AASHTO; California, Minnesota, Colorado legislation) and has been used in Wisconsin in a number of cases (De Pere, La Crosse, etc.).

Generally, the private sector approaches the Department of Transportation with transportation improvement needs that must be met for a private development project to be successful. This approach to the State may be made indirectly through a local municipality or directly to the State. The State exerts some control over the private project and can move a project ahead on the priority list if the developer is ready to contribute at a higher level.

The contribution approach has several advantages. It is legal under existing law; it provides a way for the State to receive compensation for project components that are clearly related to private development, it provides developers with a means to get the infrastructure improvements they need and are ready, willing and able to pay for; it is simple and can be done relatively quickly; it can provide high leverage and be responsive to comprehensive needs. The disadvantage of such an approach is that it is difficult to tie the benefits of a project to a single development. Negotiations may lead to

different results at different locations in the State, and it may be hard to require a contribution for some projects and not for others.

Examples of the contributions strategy include (Note the examples in this paper are hypothetical and do not necessarily represent real case studies):

- A large office development, eventually employing 2,000 workers, is proposed. The developer (corporate or real estate) requires an interchange improvement to more directly service this project. The development provides the entire cost of this improvement.
- A substantial suburban shopping center contributes land and the costs of a structure for an intercity bus station which the State builds.

Planning/Controls

Under a planning/controls strategy, the State would expand its planning function to affect local land use and zoning decisions in order to assure a better environment, a safer transportation system, and a sharing of project benefits. Among the tools that might be used are expanded access control, zoning and planning requirements. With this strategy the State may require that a land use plan be developed for an area within a specified distance of a transportation improvement, and that zoning changes be made before a project is constructed. This would be done to assure that the value of state investment is not diluted by inadequate local control of safety, traffic flow, function and/or aesthetics. This strategy may or may not have a direct economic benefit like other strategies, but would result in a higher quality transportation system and a better environment to protect the State's investment.

This approach could be applied consistently across the State. A critical issue of this proposed policy is its effects on local autonomy. Should such an approach be implemented in close cooperation with local government or should the safety and environmental consideration have priority?

Examples of the land use planning strategy include:

- A proposed highway interchange improvement may well induce incremental/strip development between the town and the interchange. To protect State investment, the township is asked to provide a comprehensive land use plan to insure the safety, adequacy of traffic flow and aesthetics for one-half mile from the planned improvement.

Local standards for land use, density, parking, access points, signage, setbacks, service roads and landscaping area required. The regional planning agency and state assist the township in the preparation of the land use plan.

- A state-funded parking garage (or railroad, bus station, etc.) in a downtown is contemplated. The state asks the city for a land use plan on adjacent blocks to encourage a higher density development, covered arcades and walkways, and retail development.

"UDAG"

This strategy is based upon the "Urban Development Action Grant" selection process used by the federal government to encourage private sector monetary involvement in urban development projects. The UDAG Program was established by Congress in 1977 to help alleviate physical and economic deterioration in distressed cities and urban counties by means of fostering public/private partnerships to revitalize cities. Monies are given based on distress, the project's impact and the amount of private sector monies involved. The program uses a scoring and ranking system for project selection purposes.

This strategy, as applied to state transportation decisions, would allocate additional "points" to transportation projects, based upon the ratio of private and local dollars to state funds. This factor would then be considered along with others such as safety, benefit/cost, etc. to select and prioritize projects for the State. The State would receive a cost savings on the project because of the larger non-state share and be able to fund additional projects.

The funds would be applied for jointly by the private sector and the local government. Competition between projects and between localities would lead to a maximum local dollars/state dollars ratio. The non-state share could be private and/or public sector contributions.

The advantage of the "UDAG" approach is that it would encourage local communities and the private sector to put together projects which maximize the development potential of a transportation project. In addition, the approach would provide incentives through a competitive process for localities to increase their share of project costs and thereby provide a greater return on state investment. A potential disadvantage of the approach is that other

criteria for project investment such as safety and congestion could be ignored in the decision process if too much emphasis is placed on development aspects. A proper balance between criteria would be necessary and the process should also consider the effects of project size as decisions are made.

Examples of the UDAG selection process can include:

- A city which is a regional center in Wisconsin is getting some \$10 million dollars worth of construction on its southwest side this year with the possibility of more construction in the future. A \$1 million dollar road widening and signalization project is needed in this area. The 10:1 ratio of new construction to project cost places it at number 6 on the list for 1986 projects.
- In addition to the above, a \$100,000 contribution to this project by the city involved and private corporations adds more leverage. Potential dollars contributed has a triple leverage factor equalling \$300,000 of additional local projects. This project is now number 3.
- A state road goes along a lakefront in a suburban/rural town of 5,000 population in an area which will attract much new development in the next 20 years. The town wants the road improved, including an overlook, wayside and landscaping. The town then will donate a park and scenic easement on the lakefront land it owns, a small marina will be built as well as retail space and condominiums. The local match is 2.5 to 1 which includes the city lands and easement.

Impresario

As the State takes a more active role in the development process, the next strategy is one of "State as impresario" -- that is, the State serving as a broker or middleman to promote, generate, market, coordinate and seek financing for public/private projects. The State orchestrates mechanisms to assist development in the form of Tax Incremental Financing (TIF) districts, loans, grants, infrastructure improvements, etc. The benefits of this program are a better environment, higher property tax returns, and potential direct contributions. The State, in cooperation with local government, would assist private developers in putting together project packages utilizing a variety of funding and assistance mechanisms. Funding by the State, if necessary, would eventually be paid back through loans, tax revenues, direct payments, services and/or land contributions.

The advantage of this strategy is that the State would have a greater degree of control over the end result because of its expanded participation. Some disadvantages are that the State may not have the development and investment expertise to put together deals that are good for the State and that some projects may not occur if they become tied up in public debate. In addition, the State may be in competition with local governments which perform a similar role. Such a system, if adopted, would have to have a strong state/local partnership to be effective.

The impresario approach is the most widely used strategy in joint development. This "broker" often finds project financing from a number of sources (HUD, UDAG, foundations, UMTA, EDA, private sector financing, equity), and proposes a mix of uses -- retail, public, office, cultural, housing and transportation -- to generate an integrated and viable project.

Examples of the Impresario strategy include:

- As part of the "I-94 connection," WDOT attempts to generate interest in a new research park 20 miles west of Milwaukee. U.W. Madison and Milwaukee will provide a joint robotics and research center; the State will contribute land and infrastructure. Milwaukee heavy industrial corporations are raising \$20 million dollars towards this scheme. Two Milwaukee corporations will move their robotics research facilities there in phase 1. A paint research facility and chemical distribution warehouse will be part of phase 2. A total of 1,000 acres, which includes lakes, jogging trails, day care centers, etc., will be built over 15 years.
- The State proposes a series of tourist centers at the state borders and on state highways in major tourist regions. Each will have brochures, maps, lodging information, etc. WDOT and the DNR will buy the land and provide access, an imprimatur, design and construction services. State and local chambers of commerce, tourist agencies, etc. will fund their construction. Each center will carry souvenirs of the state and state products -- cheese, dairy, other food, paper, t-shirts, etc. A Wisconsin snack bar will be included. Each regional center will, in addition, serve regional food, i.e. Scandinavian, German, Polish, etc., as well as have local crafts, souvenirs, and products. Any profits will go to tourism

development. Centers located along interstate roads will use cash flow to pay for interstate improvements based on an agreement with the federal government.

Fiduciary

The next strategy along the spectrum is the "State as fiduciary." In this strategy, the State views itself as a guardian of the public trust in the administration of an investment program. State holdings would be managed in such a way as to maximize the long-term benefits to the taxpayers and greatest return on state investment. The rationale behind this approach is that the State is looking to maximize the long term return and promote economic development for its transportation investment, and that it adopts strategies to recover value gains through holding land and/or the capture of property value increases. For instance, the State could purchase and hold land in a land bank to capture value for future development; sell access rights; provide loans for qualifying private development.

Two other forms of this approach would be to sell access rights or to use traffic impact fees. Sale of access rights would involve a charge for land access to the state highway system for developments above a certain threshold size. Traffic impact fees would be paid by developers to cover the extra costs due to the traffic impact of their project. Payment could be in the form of cash, land, service or developer-constructed local improvements. The fees could be set in proportion to the trip generation (or square footage, etc.) of a development. To some extent the use of Tax Incremental Financing (TIF) to pay for transportation improvements could be viewed as a type of fee system. These types of fees have an advantage in that they are not tied to the timing of a transportation project because they are collected when the development occurs rather than when the transportation project occurs.

The benefits of this strategy are that the State would maximize revenues and provide means for the State to recover gains in value generated by its projects. If items such as sale of access rights or traffic impact fees were adopted as a state policy, it would be uniform throughout the state so no one community would have an advantage over another. Such fees can directly place the cost of transportation improvements upon the uses which generate the need for the improvements. Access to the state highway system has a real value and this approach can provide a mechanism to capture the value.

The disadvantages of the approach are land speculation (land bank), and it may have a questionable legal basis. The State also may be open to criticism for unfair competition with the private sector. For these reasons, state involvement in land purchases and sales would have to be carefully controlled. Fee systems have a disadvantage in that they impose a fee where none existed in the past and may be viewed as unfair to new projects. In addition they may cause jurisdictional problems with local government, especially for projects which have a major traffic impact but are not located directly on the state transportation system.

Examples of the Fiduciary strategy include:

- An environmentally sensitive area is located adjacent to a new state road. The State DNR purchases that area and WDOT acquires adjacent lands which are likely to be developed in the near future. WDOT develops a plan which responds to the nearby environmental tract, yet which allows development and sells the land to the private sector.
- A major corporation will locate a regional headquarters on a state highway in a Milwaukee suburb. In return for landscaping, scenic easements, and minimum access cuts, the State buys an adjacent parcel for use by the corporation for expansion purposes. Agreements are made for the adjusted price of the parcel in the future. If it is not purchased in eight years, the State can dispose of it.

Development Corporation

Another active strategy is the establishment of state transportation development corporations. These would be independent state or local agencies, whose purpose is to encourage and assist development related to transportation projects in the state. Projects would be identified by the development corporation; negotiations would be made by the corporation on the basis of market factors, and the benefits would be a better environment and a higher return on investment.

Three types of development corporations were identified: (1) a corridor development corporation could be established which would invest in a particular transportation corridor, (2) a tourism development corporation could be established which would be designed to attract and stimulate the tourist

business through joint projects along the highways and (3) a rail development corporation which would seek private sector development to be tied to rail transportation projects (i.e., light rail transit, short line railroad rehabilitation).

The advantage of a development corporation is that it would be a single purpose agency that would concentrate all of its efforts on facilitating joint development. It would have expertise available to put together projects and serve as a bridge between the public and private sector. The disadvantages of this approach are that it may be applicable only to a limited number of projects, and it would take considerable lead time to become effective. It could be viewed as a competitor to private development, but with a properly defined charter, it could be a positive influence.

Examples of projects of such a corporation include:

- A light rail system is proposed to be built in Milwaukee. A Corridor Development Corporation is formed. It has acquired a closed food manufacturing plant and 50 acres on the northwest side of Milwaukee, which is adjacent to the right-of-way and a state highway. A kiss and ride, park and ride lot, and a city bus "station" will be developed. The corporation is marketing the building as either offices or a speciality shopping center and will connect the station to it with a glass-enclosed walkway. EDA, UDAG, IRB and its own bonds will be used in this undertaking.
- The air rights over a major downtown Milwaukee bus station will be developed as a parking (500 cars), office (200,000 square feet), and retail and bus transfer station (20,000 square feet). The rights are provided gratis to the developer in return for station connections to the street, station area within the new buildings, as well as other planning considerations.

State as Developer

The last strategy has the State assuming a totally active role in becoming a developer in its own right. The State would purchase land, plan, execute and manage projects for profit. The land market would determine the investment and the benefits of this strategy would be cash return on investment. The State would be limited to projects which were in the overall state interest.

The advantage of such an approach is that the State both assumes risk as well as receives benefits from its projects. The State would be able to exercise control in order to meet overall state goals. The disadvantages are that it may provide unfair competition with the private sector, and that there is not expertise available to carry it out on a wide scale. Competition between areas of the state could lead to politically acceptable but economically unsound projects. In addition, the extra level of bureaucracy and the requirements for an open process may inhibit projects more than it helps them.

Examples of the State as Developer strategy include:

- The state would develop public/private tourism centers. Such centers would combine existing tourist information centers/rest areas with space for private vendors or shops that would sell Wisconsin-related products, such as T-shirts and cheese. They would be located on major highways at the state borders as well as in the major tourist regions of the state. The State would have the responsibility and authority over decisions as well as ownership of the project. The State would take a more active and positive role than in the Impresario strategy by investigating and identifying potential sites; working with tourist groups and chambers of commerce; arranging for pre-leasing and marketing; acquiring land and contracting for design, etc.
- State parking garage facilities may also have a number of parking-related, private sector activities within them. A car wash, auto repair and convenience stores, such as a cleaners, shoe repair, magazines and snacks could be justified.

Characteristics of Strategies

A listing of the major characteristics of each of the strategies is given in Figure 2. Each general strategy is compared as it relates to various stages in the development process. These stages of the process are the identification of projects, the negotiation process, the basis for determination of state-local-private shares in a project, and the type of shares that could be received. As the strategies range along the reactive to active spectrum, the State would play a greater role in the process. Projects are identified by the private sector at the passive end of the spectrum, by local government at the center and by the State at the active end. Similarly, negotiations are

FIGURE 2
STRATEGY

PROCESS	Donations		Controls		UDAG		Fiduciary		Impresario		Development Corporation		Developer	
	Private Sector	Local Government	Private	State and Local	Private/Local Gov't.	State	State	State	State	State and local; developers	Development Corporation	Market	State	State
Project Identification														
Negotiation (Who)														
Basis for Share	Negotiated		Pre-set by policy		Competition Max local \$ state \$	Negotiated Sales Lease	Negotiated Use TIF, loans Improvements Infrastruct.	Market	Land Market					
Type of Share	Cash, Property, Services, Assessment, 5-10 year payments for improvements	Better Environment, Safer Transportation	Local Investment & Jobs; Socio-Economic	Cash return on investment; short & long term		Better Environment; Property Tax Return	Better Environment, Return on Investment	Cash return on investment						

handled by local to state government across the spectrum. The basis for sharing costs varies depending on the strategy chosen. In some cases, it is negotiated (contributions, fiduciary, impresario); in other cases it is preset by policy (planning and portions of the fiduciary approach); and in other cases, it occurs as a result of competition (UDAG, development corporation, State as developer). The type of contribution that could be received varies considerably. It could be in the form of cash, land or other developer services or in the general form of a better environment, a safer transportation system, and/or greater economic opportunities for the State.

IMPLEMENTATION ISSUES

Comparison of Strategies

To assist us in evaluating the strategies, each strategy was compared according to various criteria. The criteria used are in three categories: overall effects, legal issues and internal effects. Overall effects include economic effects, effect on safety, traffic flow and aesthetics and effects on local autonomy. Legal issues include fairness, legal implications and ease of implementation. Internal effects include expertise required, effects on project schedule, effects on project cost and consistency with past practice.

The comparison of strategies is shown two ways. In Figure 3 a series of comments are given for each strategy and each criterion while in Figure 4 a positive or negative rating is given for each cell in the table. From these tables it can be seen that the strategies have generally positive effects in all criteria except the one dealing with the required level of expertise needed to carry out the strategy. Those strategies that are on the reactive end of the spectrum tend to have the most positive ratings while those on the active end tend to have less positive ratings. This difference does not mean that the active strategies are undesirable but relates more to their relative ease of implementation.

Economic effects would be positive for all strategies with contributions, the UDAG process and the impresario being the most positive. Effects on safety, aesthetics and quality of flow are neutral (neither better nor worse) for UDAG and the fiduciary strategies and positive for the rest with planning having the greatest positive effect. Local autonomy is increased with the UDAG strategy, neutral for contributions and the impresario and negative for

EFFECTS ON STRATEGY			LEGAL ISSUES		W.D.O.T. INTERNAL EFFECTS		
ECONOMIC EFFECTS	EFFECTS ON SAFETY, AESTHETICS, AND QUALITY OF FLOW	EFFECTS ON LOCAL AUTONOMY	FAIRNESS	LEGAL IMPLICATIONS	EASE OF ENFORCEMENT	EXPERTISE NECESSARY	
CONTRIBUTIONS	<ul style="list-style-type: none"> - CAN STRETCH STATE FUNDS THROUGH ADDITIONAL LEVERAGE - EXPEDITES DEVELOPER PROTECTION THROUGH STATE INVESTMENT IN IMPROVEMENTS - MAY BE CRITICAL TO PRIVATE PROJECT 	<ul style="list-style-type: none"> - LOCAL APPROVAL AND ENVIRONMENTAL CONCERN ARE NECESSARY - LOCAL GOVERNMENT MAY AGREE TO DEVELOPER STATE AND DEVELOPER MAINTAINS AUTONOMY 	<ul style="list-style-type: none"> - TIES PROJECT COSTS TO THOSE WHO BENEFIT 	<ul style="list-style-type: none"> - EXISTING STATUTE MAY NEED AMENDMENT - PRECEDENT IN WISCONSIN AND OTHER STATES - GROWING TREND 	<ul style="list-style-type: none"> - NEEDS VOLUNTARY AGREEMENT - LETTERS OF CREDIT ETC. 	<ul style="list-style-type: none"> - MAINTAINING SKILLS AND SAVVY - REAL ESTATE/DEVELOPMENT EXPERTISE NEEDED 	<ul style="list-style-type: none"> - HAS BEEN USED IN WISCONSIN, SEE PRECEDENT IN 'CASE STUDY' SECTION
PLANNING	<ul style="list-style-type: none"> - HIGH LEVEL OF CONTROL - PROMOTES BETTER SAFETY, FLOW, AESTHETICS 	<ul style="list-style-type: none"> - LONG TERM BENEFITS FROM A BETTER ENVIRONMENT AND LAND USE, PROMOTES STATE INVESTMENT IN IMPROVEMENTS - MAY DELAY PROJECT IN SHORT RUN - MORE COORDINATED AND LONG-TERM DEVELOPMENT PATTERNS 	<ul style="list-style-type: none"> - FAIR IF CONSISTENTLY APPLIED - SAME RULES FOR EVERYONE 	<ul style="list-style-type: none"> - PRESET BY REGULATORS - MAY REQUIRE LEGISLATION TO INCREASE POWERS RELATED TO CONTROLS 	<ul style="list-style-type: none"> - PERMIT PROCESS - NEED TO APPLY FOR D.O.T. SELECTION PRO-CESS 	<ul style="list-style-type: none"> - PLANNING/REAL ESTATE/TOWNSHIPATION EXPERTISE REQUIRED 	<ul style="list-style-type: none"> - EXPANDED ROLE IN PLANNING
U.D.A.G. SELECTION PROCESS	<ul style="list-style-type: none"> - DEVELOPMENT EFFECTS TO BE BALANCED BY OTHER CRITERIA 	<ul style="list-style-type: none"> - INCREASED LOCAL AUTONOMY - COMMUNITIES CAN TAKE ACTION TO IMPROVE THEIR CHANCES OF GETTING PROJECTS 	<ul style="list-style-type: none"> - MARKET MAKERS DECIDE WHERE RESOURCES ARE USED - SAME RULES FOR EVERYONE - NEED TO GIVE DISCREETION TO MARKET 	<ul style="list-style-type: none"> - PRECEDENT IN BAY (S) AND (6) BAY (8) - SIMILAR TO NEILANISM FOR BRIDGES - FITS WITHIN EXISTING LAW 	<ul style="list-style-type: none"> - INTERVAL CRITERIA USED FOR PROJECT SELECTION 	<ul style="list-style-type: none"> - REQUIRES EXPANDED EVALUATION PROCESS - REQUIRES A HIGH DEGREE OF UNDERWRITING AND REAL ESTATE EXPERTISE 	<ul style="list-style-type: none"> - NEW APPROVAL HIS PRECEDENT IN BRIDGE DECISIONS - INTO INTEGRATED PROCESS
PROVULARY	<ul style="list-style-type: none"> - HIGH LEVEL OF CONTROL ESPECIALLY WHEN STATE HOLDS LAND - CAN PROMOTE AND COORDINATE TRANSPORTATION AND DEVELOPMENT 	<ul style="list-style-type: none"> - LOCALS MAY INITIATE REQUEST, IF STATE DOES IT MAY HAVE AN EFFECT ON LOCAL AUTONOMY 	<ul style="list-style-type: none"> - DEPENDS ON SKILL OF IMPRESARIO - ALL PARTIES MUST AGREE FOR PROJECT TO PROCEED 	<ul style="list-style-type: none"> - PRECEDENT IN R.R. ACQUISITION FOR ECONOMIC DEVELOPMENT - MAY REQUIRE CHANGE IN STATE STATUTES 	<ul style="list-style-type: none"> - OTHER THAN TRAFFIC FEES, NO QUESTION OF ENFORCEABILITY 	<ul style="list-style-type: none"> - REQUIRES A HIGH DEGREE OF UNDERWRITING AND REAL ESTATE EXPERTISE 	<ul style="list-style-type: none"> - NEW ROLE FOR W.D.O.T.
IMPRESARIO	<ul style="list-style-type: none"> - HIGH DEGREE OF CONTROL WITH EXPANDED STATE ROLE - PROMOTES BETTER ENVIRONMENT 	<ul style="list-style-type: none"> - LOCAL GOVERNMENT INPUT PART OF 'IMPRESARIO' PROCESS 	<ul style="list-style-type: none"> - DETAILS ON SKILL OF IMPRESARIO - ALL PARTIES MUST AGREE FOR PROJECT TO PROCEED 	<ul style="list-style-type: none"> - PRECEDENT IN STATE R.R. REHABILITATION - POSSIBLE UNDER CURRENT LAW TO LIMITED EXTENT? STATE WOULD CREATE DEFINITIVE ROLE 	<ul style="list-style-type: none"> - NO CHANGE FROM CURRENT PROCEDURES 	<ul style="list-style-type: none"> - REQUIRES A HIGH DEGREE OF UNDERWRITING AND REAL ESTATE EXPERTISE 	<ul style="list-style-type: none"> - NEW ROLE FOR W.D.O.T.
DEVELOPMENT	<ul style="list-style-type: none"> - HIGH DEGREE OF CONTROL WITH EXPANDED STATE ROLE - PROMOTES BETTER ENVIRONMENT 	<ul style="list-style-type: none"> - CAN HAVE REDUCED LOCAL ROLE. - CORPORATIONS MAY HAVE STRONG POWERS 	<ul style="list-style-type: none"> - ONLY APPLICABLE IN LIMITED SITUATIONS IN WISCONSIN 	<ul style="list-style-type: none"> - REQUIRES LEGISLATION - EXISTING LAW FOR COUNTY DEVELOPMENT CORPORATION (HAS HAD LITTLE OR NO USE) 	<ul style="list-style-type: none"> - NOT APPLICABLE. CORPORATION IS AVOIDABLE 	<ul style="list-style-type: none"> - REQUIRES A HIGH DEGREE OF UNDERWRITING AND REAL ESTATE EXPERTISE 	<ul style="list-style-type: none"> - D.O.T. MAY SPONSOR OR EXERCISE SUCH CORPORATIONS NOT RUN BY EXISTING AGENCIES
STATE AS DEVELOPER	<ul style="list-style-type: none"> - HIGH DEGREE OF CONTROL WITH EXPANDED STATE ROLE - PROMOTES BETTER ENVIRONMENT 	<ul style="list-style-type: none"> - CAN HAVE REDUCED LOCAL ROLE - CORPORATIONS MAY HAVE STRONG POWERS 	<ul style="list-style-type: none"> - MAY BE UNEQUAL COMPETITION WITH PRIVATE SECTOR 	<ul style="list-style-type: none"> - DIFFICULT UNDER CURRENT STATE AND FEDERAL LEGISLATION - NEED TO SHOW ABILITY GOOD 	<ul style="list-style-type: none"> - WOULD HAVE TO ABIDE BY EXISTING LEGISLATION 	<ul style="list-style-type: none"> - REQUIRES A HIGH DEGREE OF UNDERWRITING AND REAL ESTATE EXPERTISE 	<ul style="list-style-type: none"> - WOULD BE REQUIRED BY RETURN ON INVESTMENT

FIGURE 3

FIGURE 4

	OVERALL EFFECTS			LEGAL ISSUES			W.D.O.T. INTERNAL EFFECTS			
	ECONOMIC EFFECTS	EFFECTS ON SAFETY AESTHETICS + QUALITY OF ROAD	EFFECTS ON LOCAL AUTONOMY	FAIRNESS	LEGAL IMPLICATIONS	TYPE OF ENFORCEMENT	EXPERTISE NECESSARY	EFFECTS ON PROJECT SCHEDULE	EFFECTS ON PROJECT COSTS	CONSISTANT WITH PAST PRACTICE
CONTRIBUTIONS	++	+	0	+	+	+	-	+	++	+
PLANNING	+	++	-	++	0	-	0	-	0	+
V. D. A. G. SELECTION PROCESS	++	0	+	+	0/+	+	-	+	++	0/+
FIDUCIARY	+	0	-	0	-	0	--	0	0	0
IMPRESARIO	++	+	0	0	0	+	--	-	0	-
DEVELOPMENT CORPORATION	++	+	--	-	--	0	--	-	+	--
STATE AS DEVELOPER	+	+	--	--	--	0	--	-	0	--

other strategies. The use of development corporation and the State as developer could have a greater negative effect, however this would depend a great deal on how it were implemented.

With respect to legal issues, the reactive end of the spectrum would have generally positive effects while newer, more active roles would be viewed as negative in that they could require legislative changes. Contributions which is an existing technique is rated positive for all three criteria in the legal category. UDAG is also positive in most categories. The development corporation and the State as developer have potentially greater legal problems. The rating of the strategies on legal issues relates to how quickly they can be implemented rather than how desirable they may be. Those strategies which have negative ratings are more long term while those rated on the positive side could be implemented in the short term.

Internal effects on WDOT are the last category of criteria. Lack of expertise within the Department in the land development process, underwriting and negotiation savvy is seen as a difficulty for nearly all strategies. This is especially true on the more active end of the spectrum. If the Department seeks an expanded level of public/private cooperation in transportation investment, this deficiency will need to be overcome. The strategies would have a mixed effect on project schedule by speeding projects up under contributions and UDAG but slowing them down with planning and the more active strategies. Project costs could be reduced with contributions, UDAG and development corporations and probably be not affected by the other strategies. Finally, consistency with past practice relates to the degree of activism of the strategy. The Department has been involved in contributions and planning in the past and to a more limited extent in UDAG-type procedures. The other strategies involve newer roles, especially as they relate to development corporations and the State as a developer.

Implementation Time

In order to have an effective program of public/private cooperation in transportation investment at the state level, a spectrum of strategies was recommended, rather than one or a few specific actions. The size and scope of activities of the Department of Transportation and the many "joint" development goals clearly implies that a variety of "tools" are warranted.

The implementation methods we suggested are based upon the relative newness of the strategies in departmental functions, political and bureaucratic realities, and legal constraints; and are divided into three groups based on short, medium, and long term time frames for implementation.

SHORT TERM IMPLEMENTATION includes strategies which can be implemented within the existing legal framework and have precedent in the department. These include the "Contributions," "Planning," and "UDAG" processes. These can be integrated into existing DOT procedures.

MEDIUM TERM IMPLEMENTATION would involve a longer period of time, possibly several years. Strategies in this category are not now part of DOT's ongoing policies or procedures. Feasibility studies of the implementation of these suggested policies as well as specific projects will need to be done. The "Fiduciary" and "Impresario" strategies are in this category.

LONG TERM IMPLEMENTATION includes strategies which would take a longer time period in that they likely involve legislative change and/or a new direction for department action. These strategies involve the most innovative or large scale projects. While these strategies are innovative both at the state level and in Wisconsin, examples of these policies are being implemented nationally. Strategies include a "Transportation Development Corporation" and the "State as Developer."

Almost all of the implementation literature in Joint Public/Private Development is concerned with specific projects rather than the creation of the organizations, rules and legislation that developed such projects. Our primary concern was with issues of legality and potential problems in implementation and with policies which could be applied to a variety of projects.

Short Term Implementation

Some short term strategies could be implemented rather easily and quickly. The "Contributions" strategy, as a formal policy, was discussed as an innovation by a number of Department of Transportation personnel as well as developers. In fact, it has been in place as a State statute for a few years. Implementation of this policy simply requires dissemination and publicity.

The "UDAG" strategy could also be easily implemented. The highway project selection process is continually being studied and refined. Additional "points" in the process would be given for a local match or contribution as part of the overall selection process. Some additional study to assess the degree of importance of this factor and the consequences of these changes to the existing formulas would be necessary.

The "Planning" strategy could also be implemented in the short term. One part of this strategy would be to develop land use planning guidelines within the Department of Transportation for different types of transportation improvements. The second part of this strategy, requiring localities to develop land use planning in conjunction with state improvements, is more problematical. Local governments may not have the time, expertise or willingness to engage in this activity. An implementation plan in this area is needed.

Medium Term Strategies

The "Impresario" strategy, an aggressive brokering role by the State has, in fact, been recognized as a need in specific transportation areas and appropriate legislation is already in place. The existing "Freight Railroad Assistance" statute authorizes an "impresario" role for DOT in this area -- a problem area that needs aggressive development. Legislation would be needed to expand these same "impresario" powers to a range of transportation projects.

The State has already proposed a project which is similar in part to the "Fiduciary" role we suggest -- the AHEAD program (A Highways Economic Assistance and Development Fund). This fiduciary role requires state legislation. However, existing statutes and judicial decisions in Wisconsin presently allow for fiduciary opportunities in the area of acquiring additional lands for transportation-related purposes. This can provide, in essence, a fiduciary role by the State in "investing" in land, including asset management and land use controls which can be implemented in the short to medium term.

Longer Term Strategies

The strategies of "State as Developer" or the formation of a "Development Corporation" may require statutory authority and the creation of an organization with additional personnel, staffing and budgetary considerations.

Considerable discussion, feasibility studies and hearings would be involved before such strategies were implemented. There may, however, be particular opportunities for development that could be done in-house and in conjunction with other agencies and consultants. We suggested, for instance, that a series of tourist centers, including shops, could be developed by the State.

REMAINING ISSUES IN PUBLIC/PRIVATE DEVELOPMENT

Though a number of public/private development projects have been implemented, there still exists a number of unresolved issues relative to policy in this area.

1. Social Equity: While private sector forces often respond only to market forces, the participation of the public, and public monies, in a project should involve a level of civic consciousness. This may mean, for instance, locating development to revitalize depressed areas in the state, job creation, design quality, or the provision of parks or other public facilities.
2. Negotiating Public/Private Contracts: There has been very little work on the "fair share" that each partner -- public and private -- should bring to the table as an investment, and capture as a return during the life cycle of the public/private project. In negotiating, the public should not give away their rights, but should also not create conditions which lead to the potential failure of projects. What are ways to evaluate and negotiate a fair share?
3. Public/Private Corporations: Nonprofit development corporations, often started, sponsored or otherwise supported by government, are a common form for initiating, developing and helping implement public/private projects. There is the need to study these organizations in terms of their operations, budgets, leadership, ties with government and the private sector, and evaluate their successes.
4. Evaluation of Completed Projects: What has been the success of such projects? What can be learned from the failures and non-built proposals? How to measure various consequences of existing public/private projects?

A new generation of public/private projects is now underway. The use of this technique in development is growing and gaining in acceptability.

Levels of government heretofore uninvolved in this area are showing serious interest and intent to pursue this direction. Our policy study for the State of Wisconsin's Department of Transportation has provided a comprehensive method for developing, analyzing and implementing policies for Public/Private Cooperation in Transportation and Real Estate at the State level.

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IMPLEMENTATION CONSIDERATIONS FOR INNOVATIVE MECHANISMS:
AN EXPLORATORY VIEW OF TRADITIONAL AND INNOVATIVE
IMPLEMENTATION EXPERIENCES

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ABSTRACT

Over the last five years, state and local governments have been more actively pursuing alternative forms of innovative financing, such as tax increment financing, traffic impact fees, donations, local option fuel taxes, special benefit assessments, air rights leasing, tolls, etc. Increased infrastructure repair needs and increased needs of capacity improvements have spurred this increased interest. Some state and local governments have been more successful (State of Florida, Local Option Motor Fuel Tax; New Orleans, Sales Tax; Ft. Collins, Colorado, Impact Fees; Prince Georges County, Maryland, Tax Increment Financing; etc.) than others in implementing innovative mechanisms. This paper includes an exploratory survey of the literature on implementation experiences with traditional and innovative financing mechanisms, identifies and illustrates hypothetical key tasks for successful implementation, and uses descriptions of successful experiences to confirm key tasks. Of the tasks identified, such as developing a transportation investment program, selecting appropriate financing mechanisms, attaining political acceptance, developing an implementation strategy, and identifying institutional arrangements, the more important appear to be developing a transportation investment program and attaining political acceptance.

BACKGROUND

Transportation financing is at a crossroad. We have come to believe that mobility is a right and that its provision is automatic. Yet, transportation professionals know that its not quite so automatic, but instead requires resolution of complex issues. One such issue that has gained prominence recently is that of financing -- who shall pay for construction of transportation improvements? There is general agreement that transportation improvements serve national, state or local interests and financing should reflect such interests. Since 1921, highway acts have provided funding for federal-aid highways. At the state and local levels, traditional sources of revenue

such as gasoline and property taxes are continuing to be the mainstays but innovative funding mechanisms are also being pursued. The degree of future mobility available from state and local transportation systems may indeed depend on their resourcefulness in implementing innovative funding mechanisms to support such systems.

So far this year, eleven states have adopted legislation to increase their motor fuel taxes by between 1 cent (Oklahoma) to 4 cents (Arkansas) per gallon (1). Some states (Arizona, Iowa, and Oregon) phased fuel tax increases over a period of years, presumably to minimize the burden on their residents. In twelve states, legislation to increase motor fuel taxes failed. Legislation permitting local option fuel taxes was passed in three states (Arizona, New Mexico, Oregon) and failed in four states.

In a study of efforts to finance public transit, it was found that: sales taxes were passed by 12 local governments and defeated by 2; property-related taxes were passed by 13 local governments and defeated by 3; gas taxes were defeated by 2 local governments; and other tax measures (beer, professional service, and self-employment taxes) passed by 3 local governments (2).

The experiences with implementing transportation financing mechanisms, both traditional and innovative, are mixed. There is a need to understand: why some financing mechanisms are implemented and others are not; what the conditions are under which mechanisms are implemented; and what opportunities exist for increasing the successfulness of implementation.

In this paper, experiences with implementation of traditional and innovative financing mechanisms are explored in an effort to identify key tasks which may need to be accomplished in order to more successfully implement innovative financing mechanisms.

CONTEXT FOR IMPLEMENTATION

General conditions favoring the implementation of financing mechanisms include: strained transportation systems, stabilized economy, and supportive market and other forces.

Transportation systems are strained in two directions. In the stable areas of the nation, transportation systems are facing deterioration. In the growing areas of the nation, transportation systems are straining to keep up

with increasing demand. In February, 1984, the Joint Economic Committee of Congress released its 1983 comprehensive study of national infrastructure needs and ability to pay. The infrastructure condition of various states was studied and an aggregate estimate of national infrastructure needs and available revenue, through the end of the century, was made. By relying on estimates of needs for 23 case study states, the congressional study applied generalized rates to develop an estimate for national needs. Including highway, bridge and other transportation components, the national infrastructure needs were estimated to total \$898 billion (in 1982 dollars) and anticipated revenues \$545 billion for the period between 1983 and 2000. The study found the single most dominant need across the country is for highways and bridges, amounting to a short fall of \$265 billion for the same period and for all highways and bridges (3). The same study compared historical per capita capital outlays with projected per capita capital needs for highways and found that the greatest infrastructure need exists in the Midwest and the least for the West (4).

In contrast, demographic trends suggest transportation demand and corresponding capacity needs are likely to increase in the Southeast, Rocky Mountain, and Far West regions of the nation. The greatest population growth is expected to occur in the Southeast, increasing from about 43 million in 1970 to 68 million in 2000 (5). Since there is a direct and positive relationship between population and travel, we can expect travel demand to increase at the greatest rate in the Southeast.

Whether due to infrastructure decay or increasing travel demand, there will continue to be an ongoing need to fund transportation improvements by both old and new financing mechanisms. Since the needs occur on all levels of the transportation system and the resources of the federal government are limited, the need to implement supplemental financing mechanisms will predominantly be faced by states and local governments.

Complementing transportation conditions, a stable economy and favorable market forces increase the chances for implementing financing mechanisms. Under a stable economy, one neither buffeted by high inflation nor recession, the general population is likely to have sufficient disposable income and industries and business are likely to make sufficient profit to accommodate the

likely increases in taxation due to the implementation of innovative mechanisms. Disposable income is the income left after taxes. Disposable income rose from \$6,558 per person to \$8,004 in the decade between 1970 and 1980. Between 1980 and 2000, disposable income is forecast to rise by 73 percent (6). These data are in real terms, that is, impacts due to inflation have already been adjusted out. The regional distribution of the forecasted rise in disposable income is anticipated to be in the Southeast and the Plain States. Similarly, real income for industries, measured by the Labor and Proprietor's Income, also rose in the 1970s, about 29.2 percent. This income is expected to rise 115 percent by the end of the century, with most of the gain occurring in the Rocky Mountain region of the nation (6). Under conditions of real increases in income for individuals and industries, increases in local taxation, in general, are likely to find a more hospitable audience.

Counteracting this positive force, local initiatives to limit taxation may impede implementation of alternative financing mechanisms. The more celebrated examples include Proposition 13 in California and TRIM (Tax Reform Initiative by Marylanders) in Prince Georges County, Maryland. Both passed in 1978 and both limited property tax revenues. Since 1978, the number of initiatives have increased, but so has the attrition rate. Only 13 percent of the 305 initiatives distributed for signatures ever reached the ballot in 1984 (7). In 1984, California voters rejected Proposition 36 which would have extended cost-cutting to fees and assessments and would have required a two-thirds vote by the State legislature or voters to impose new taxes. During the same year, voters in Michigan rejected Proposal C which would have amended the state constitution in order to limit the funds available for public transportation (8). These changes in voter preferences suggest that the public may have reevaluated the desirability of reducing State or local government revenues. It is not clear, however, whether this reevaluation is uniform throughout the country. Certainly, where it has occurred, implementation of revenue measures will be easier.

Market forces also influence whether alternative revenue mechanisms are implementable. Market forces are at work at the macro level and the micro level. At the macro level, interest rates on tax exempt bonds had a major increase between 1970 and 1983, rising from 6 percent to 13 percent (9). The rates have now stabilized at about 10 percent. Still, current local government borrowing is hampered by the higher interest rates, which have

significantly increased the cost of borrowing. At the micro level, local economic conditions influence whether the private sector is willing to undertake developments at a given site and pay a contribution to finance a transportation improvement. If the potential to make a profit at a particular site is there and transportation improvement is seen as a way to increase revenues and profits, the implementation of such an alternative mechanism as impact fees will be accepted.

Market forces then, along with economic conditions, and the condition of the transportation system may either encourage, support or hamper the implementation of financing mechanisms. These factors establish a general context within which financing mechanisms are implemented.

ELEMENTS OF IMPLEMENTATION

By implementation, I mean the process by which financing mechanisms are successfully initiated, given a supportive general context. Whether introducing a new mechanism or increasing the use of an existing mechanism, the public is being asked to authorize the collection of additional revenues. This public may consist of residents of a community, county commissioners, state legislators, land developers, etc. The central questions to be asked are: Are the mechanisms justified? Are they fair? Will the revenues generated be used to address the needs identified? The sponsoring agency must address the above questions to establish credibility with the public. In addition, the sponsoring agency will have to address some questions of its own. Such questions may include: What are the more reasonable mechanisms which can be implemented in this area? How can the financing mechanisms be successfully marketed to the public? How can interjurisdictional conflicts be avoided? Who shall administer and manage the implementation of the mechanisms?

Tasks which address the above implementation issues may be hypothesized to include:

- Developing a transportation investment program,
- Selecting appropriate financing mechanisms,
- Attaining political acceptance,
- Developing an implementation strategy, and
- Identifying institutional arrangements.

The first task, developing a transportation investment program, implies the identification of a range of transportation improvements, from those improvements that are needed now and are implementable with the existing financing mechanisms to those improvements that would be possible given the introduction of other financing mechanisms. Most states and urbanized areas now prepare a transportation improvement program. The Orange County Transportation Commission (California), in an effort to support passage and implementation of a one percent transportation sales tax and other financing mechanisms, developed three alternative investment programs for a 15-year period: high, medium, and low (10). The high investment program, totaling \$11.5 billion, would require extensive use of new or modified revenue mechanisms perhaps with some enabling legislation and voter approval. The medium program, totaling \$6.1 billion, would possibly involve enabling legislation and voter approval. The low program, totalling \$2.7 billion, would be funded with existing mechanisms. Details such as these allow the public to identify explicitly whether additional financing mechanisms are justified by giving them the opportunity to weigh whether the incremental improvements in transportation were worth the increase in taxation.

The second task is selecting appropriate mechanisms. Out of the universe of possible mechanisms, the sponsoring agency determines which financing mechanisms are most appropriate to implement in its specific area. With the existence of an investment program, the evaluation of appropriate alternative mechanisms can begin. Criteria for evaluating possible appropriate revenue mechanisms in Knoxville-Knox County, Tennessee, included legal feasibility, political feasibility, social equity, and revenue generation (11). Under the legal feasibility criterion, each mechanism was evaluated for its ability to be implemented under present federal, state and local legislation. The political feasibility criterion included an evaluation of mechanisms according to the willingness of the public to support increases in taxation. By social equity, financing mechanisms were evaluated for their ability to distribute the burden of payment throughout the community, while sensitive to the ability to pay. Under the revenue generation criterion, each mechanism was evaluated for its ability to generate substantial revenue. Of the 34 mechanisms evaluated, four were identified as being capable of generating significant revenues: motor fuels tax, commercial parking tax, a gambling tax, and

tax increment financing. Of these four financing mechanisms, the most acceptable option was deemed to be the motor fuels tax, since state enabling legislation was in place.

Even implementation of one mechanism may require its evaluation for appropriateness. For example, since 1981, Fairfax County, Virginia, has been permitted by the Virginia General Assembly to undertake roadway improvements through the use of general obligation bond revenues or general fund revenues. Before 1985, the County could spend a maximum of \$55 million in any five consecutive fiscal years for constructing or improving roads on or to be placed on the State's primary or secondary system. In the 1985 session of the Virginia General Assembly, Fairfax County lobbied and obtained a removal of the ceiling on Fairfax County's self-financed road improvement program (12). While the County has been successful in obtaining removal of the ceiling, the funding level actually sought is governed by a financial management policy to protect its high credit rating. The funding level sought is kept consistent with these provisions: (1) the long term debt does not exceed three percent of the total assessed value of taxable real and personal property, (2) the annual debt service is kept below ten percent of annual general fund disbursements, and (3) bond sales do not exceed an average of \$60 million per year or \$300 million in five years (13). It may be this prudent policy that has kept the County's bond rating at AAA, the best issued by Standard and Poor's.

The third task is attaining political acceptance. Under this element, the issue of marketability to the public, or public acceptability, is paramount: if there is a need to support the transportation program with additional funds, will it require voter approval, how do we get it? The approaches for evaluating and ensuring a mechanism's political acceptability vary considerably: from conducting a large sample survey of voters in Knoxville, Tennessee (14), to political consensus building in Atlanta, Georgia (15). Through a series of negotiations and compromises with the City of Atlanta, the surrounding counties, the Governor of Georgia, and the Georgia legislature and through significant input from community meetings, the Metropolitan Atlanta Rapid Transit Authority (MARTA) put together a winning referendum for a one percent sales tax. The referendum was supported by a service

package that addressed multiple issues of concern to the voting and non-voting public, identified by extensive interaction with affected communities.

The fourth task is developing an implementation strategy. For this element, the concern is with the equitable distribution of the cost burden, the equitable distribution of available revenues, and the acceleration of project implementation. In other words, the issue to be addressed here is: are the mechanisms fair? Can project implementation be accelerated as an opportunity to minimize costs? Fairness is a particularly important issue when several actors are involved. In the case of Palm Beach County, Florida, it was not that simple to implement an informal 1974 traffic impact fee ordinance when several developers contributed disproportionately to the need for highway improvements. For example, there were cases where one developer would not trigger the level of service D standard for improvement, yet subsequent developers would. When subsequent developments did trigger the threshold, the County had to decide whether the first developer should pay his share. Recognizing that all developers are responsible for all projected traffic, the informal traffic impact fee ordinance was modified and formally adopted as the County's Fair Share Ordinance (16). Fair share traffic impact fees are now based upon the generated trips per unit as a proportion of one lane's capacity times the cost to construct one additional lane for one mile.

Another component of this task is using existing opportunities for accelerating the process for project implementation. This means using the existing state and local relationships fully. For example, the State of California Department of Transportation established in 1983 policies to guide implementation of its programs. Included in these policies is one known as Caltran's Interchange Policy, affecting the prioritization of local highway projects on the state system. The policy expressly states that "The higher the ratio of private to public funds, the higher the priority should be, if all other conditions are met" (17). In this instance, a locality's use of private sector funds will speed implementation of a highway project. This was the case for a jughead interchange on I-405 in Los Angeles, where the Hughes Corporation contributed about 90 percent of project costs.

Lastly, the fifth task is identifying institutional arrangements. Of primary concern in this element is the governmental arrangement to implement financing mechanisms. This is an important task because of the difficult

issues of interjurisdictional conflicts and implementation management which may exist. Provisions should be made for sufficient authority to administer the financing mechanism and the transportation investment program. Sufficient authority is needed so that such administration can be responsive to community concerns and economic changes as they occur, without losing control of the budget.

In San Francisco, California, a city known for its complex interjurisdictional relationships, a committee of three County Commissioner and representatives from each of the three transit operators has guided the administration of a long term financing plan for transit operations since 1977 (18). The three County Commissioners from the San Francisco-Oakland Area also serve on the Metropolitan Transportation Commission and this ensures a sensitivity to regional planning and policy issues. The three transit companies, Bay Area Rapid Transit, AC Transit, and San Francisco Muni, have overlapping service districts, thus there is a need to have the institutional arrangement coordinate service delivery as well.

The five tasks -- developing a transportation investment program, selecting appropriate financing mechanisms, attaining political acceptance, developing an implementation strategy, and identifying institutional arrangements -- are all interrelated. In most cases, they are dependent on each other. The influence appears to be predominantly unidirectional. The investment program influences the selection of appropriate mechanisms, the selection of appropriate mechanisms influences the attainment of political acceptance, the attainment of political acceptance influences the implementation strategy, and so on. However, the argument can be made that the investment program is developed with some prior consideration of what the public feels are appropriate tax limits, i.e. the attainment of political acceptance. In addition, the development of an implementation strategy may be influenced by the identification of institutional arrangements. For example, knowing that a toll authority is the likely institutional structure, the implementation strategy is unlikely to focus on multimodal equity issues.

SUCCESSFUL IMPLEMENTATION EXPERIENCES

By examining a selection of successful experiences in implementing traditional and innovative financing mechanisms, it may be possible to identify key elements for successful implementation of innovative mechanisms. We look

at implementation of sales taxes, ad valorem taxes, local option gas taxes, development fees and tolls.

The Atlanta, Georgia, experience was referred to earlier in this paper. It will be helpful to revisit the experience of Atlanta because it provides an example of a successful implementation after an earlier defeat. In 1968, a MARTA service and funding package was placed before the voters and suffered a sound defeat. Reasons identified for the defeat include (19): use of the property tax as the funding package, lack of communication with major segments of the community, insensitive to immediate transportation needs, lack of firm federal funding commitment, and a lack of consensus among different interest groups. Between 1968 and 1971, considerable attention was placed on correcting each of the above problems. The primary problem was the source of funding, since property taxes proved unpopular to implement. After settling on the one percent sales tax, MARTA focussed on building political consensus.

Political support was acquired, in part, by the development and adopting of formal policy statements regarding a fare policy, the duration of the sales tax, and service components of the 53-mile rapid transit system and improvements to the bus system. Needed service components were identified from many sources, but especially from extensive community meetings. Special community concerns were incorporated in the policy statements adopted by the MARTA board. In 1971, another package went before the voters. This one was much stronger than the earlier, 1968, package because it included an explicit funding mechanism, a commitment to maintain low fares, a service package for bus and rail services, and a series of policy statements addressing interest groups' concerns in the area. The new package, proposed for referendum in 1971, had something positive for everyone and passed.

The Atlanta experience has remained relevant for the 1980s. We need only look to the experience of Pinellas County, Florida, and New Orleans, Louisiana, in 1983, and the experience of Austin, Texas, in 1985. In 1983, Pinellas County voters approved the raising of the Pinellas Suncoast Transit Authority's ad valorem tax cap from 0.25 million to 0.75 million (20). This was a reversal of a 1982 vote in which the electorate defeated the measure. The difference between the two outcomes was attributed to a more complete explanation of the planned transit improvements. Residents were more able to

identify what the increased tax would fund. Apparently the improvements, including creation of a county wide transit authority, developing express bus service between the downtowns of St. Petersburg and Clearwater, adding new routes in unserved areas, extending hours of available service, initiating new commuter services, etc., were just what the public wanted. Fifty eight percent of those voting approved the new tax cap.

In contrast to the Atlanta, Georgia, and the Clearwater County, Florida, experience, the experiences of New Orleans, Louisiana, and Austin, Texas, do not involve reversal of a past failure. However, the experiences do also affirm the importance of public acceptance in the success of any effort to implement new financing mechanisms. In 1983, the Regional Transit Authority (RTA) of New Orleans found itself with a projected deficit of \$19 million and an expiring one cent sales tax (21). The one cent tax revenue was passed in May, 1982, to fund transit and city services with only 51 percent of the voter's approval. Its passage was attributed to a major effort by the Mayor and his staff. Given the City's tradition of low local taxes, its passage was a surprise. In 1983, it was determined that an extension of the one cent sales tax was needed for over a two-year period, after alternative funding sources were considered and rejected. The one cent sales tax was determined to be feasible but the issue of public support was in doubt. This time, the Mayor was neutral on the tax issue. The RTA, the Chamber of Commerce, and the City Council embarked on a sophisticated approach to successfully obtain the public acceptance. The approach included: analyses of previous referenda by the RTA, and appeals to specific segments of the population who had not been substantially supportive of the 1982 referendum -- homeowners and middle-aged college graduates. The appeals focused on the attractiveness of the measure compared to an earnings tax which was also proposed. A January, 1983, poll of residents showed that while only 8 percent of the population believed that the system would shut down if the tax were not passed, this same small segment of the population supported the tax by an overwhelming 80 percent.

Together with the Chamber of Commerce and the City Council, the RTA formed an organization called City's Economy Needs Transit (CENT). Funded predominantly by the Chamber of Commerce, CENT conducted a substantial

public relations effort. This effort included: monitoring grass roots efforts, staffing a citywide phone bank, staffing a speakers' bureau, obtained noteworthy endorsements, collaborated on press conferences, developed and aired radio and television advertising, advertised the tax measure on buses and shelters, and sent out mail grams. This effort proved to be invaluable in encouraging public acceptance of the sales tax.

As recently as January 19, 1985, the City of Austin, Texas, used a citizen involvement program to successfully obtain voter approval to fund an ambitious transit program with a one cent sales tax and establish the Capital Metropolitan Transportation Authority (22). The key to Austin's success was attributed to the identification of needed transit improvements through an aggressive public involvement campaign including neighborhood meetings, employee meetings, civic meetings and association meetings.

Highway related experiences are not unlike the experiences of those which are transit related. That is, the existence of a well-defined investment program and the acceptance of the financing mechanism by the affected public may ensure implementation. An example of recent successes in implementing innovative financing mechanisms is Tulsa, Oklahoma. In April, 1985, the Tulsa voters approved a five-year extension of their one cent sales tax to fund capital improvements, including roads and street improvements totaling about \$100 million (23). This measure is innovative in that the local sales tax is used, in part, to fund road improvements.

Hillsborough County, Florida, has had the same experience as Atlanta, Georgia, and Pinellas County, Florida, in overcoming defeat at the polls. Initially failing to obtain voter approval for a one cent voted gas tax (requires a county-wide referendum for approval) in 1979, Hillsborough County mounted a well-funded and highly-publicized campaign in 1980 to promote and advertise the tax. The second attempt proved successful (24). In 1982, Hillsborough County generated \$3.1 million with the one cent tax for highway and transit improvements.

Recent efforts to implement additional local gas taxes have also proved successful in Hillsborough County. In 1983, the State of Florida granted counties the authority to levy an additional tax of one to four cents per gallon by a vote of their county commissioners, also known as the local option motor fuel taxes (25). This authority was expanded in 1985 to include an additional two cents, bringing the total to six cents. To levy a local option

gas tax of three or more cents requires a majority plus one vote of the county commissioners. In 1983, Hillsborough County Commissioners voted to adopt a four cent tax and in August, 1985, voted to increase the motor fuel tax by another two cents, bringing the total local fuel tax in the county to seven cents (including the voted gas tax) (26).

Often broad based support, as discussed for the above mechanism, by the public will not in itself ensure smooth implementation. This is especially true for mechanisms involving the private sector. The case of Fort Collins, Colorado, is a good example (27). In the 1970s, extensive public meetings and forums coupled with public interest to manage growth led to the adoption of the Land Development Guidance System to guide growth. However as city development fees increased, developers and home builders complained that they were being overtaxed since the general public also bore responsibility for the need to improve facilities. In response to these complaints, the City and the Colorado Home Builders Association conducted a joint study on the cost of expanded public services and facilities associated with new development and the amount of revenue required to be generated to support such services and improvements. The result of this effort, the Fort Collins Cost of Development Study, includes a mutually agreed, fairer development fee system. In addition, this effort resulted in closer cooperation between the public and private sector as these fees are reviewed each year by local builders, developers and key city staff. In addition to broad based support, there is a need to ensure that the mechanism also be accepted by those developers and businesses affected by it. As we have seen, such acceptance encourages smoother implementation.

Another example of the involvement of the private sector can be found in the implementation of tax increment districts in Prince Georges County, Maryland (28). As a result of the TRIM (Tax Reform Initiative by Marylanders) amendment passed by a county referendum in 1978, the County found itself with a general property tax revenue limit of \$143 million per year. This severely constrained capital improvement programs and indeed led to cutbacks. To explore new and alternative methods for financing public improvements, a public/private task force was established. After considering a range of financing mechanisms, the task force agreed to adopt tax increment financing (TIF), a mechanism whose revenues are generated by the

increase in property values between a selected base year and some future year. Since revenues generated by TIF's are not subject in Maryland to the limitations on taxes, they can be considered new funds. In this case, the involvement of the private sector aided the County in identifying and selecting a feasible financing mechanism. As of the end of fiscal year 1984, ten districts existed, for a total funds balance of approximately \$6.5 million (29).

Moreover, the private sector has also aided implementation by eliciting public support for a financing mechanism. The involvement of the Chamber of Commerce in New Orleans has already been mentioned. In Houston, Texas, the Chamber of Commerce was one of the moving forces in obtaining the public approval for revenue bond measures. Its efforts included publicizing the need for transportation improvements to relieve congestion in its Regional Mobility Plan, developed in collaboration with planning and implementing agencies. On September 13, 1983, Houston area voters approved the establishment of a county level toll authority, the Harris County Toll Road Authority, and a \$900 million revenue bond plan to finance three toll road projects, including the 21.6-mile Hardy Tollway (30).

A review of these implementation experiences suggests that recurring tasks include developing an investment program and attaining political acceptance. Most financing mechanisms require the public's approval. Accordingly, it is no surprise that a financing mechanism is implemented when the voters' preference is gauged well or is influenced by an active public relations effort. Closely tied to the public's willingness to be taxed is the justification for the tax. That is, the public goes along with the proposed tax, if it finds that the conditions of the transportation system are compelling enough.

Selection of appropriate mechanisms, development of implementation strategies, and identification of institutional arrangements were not mentioned in the literature. This does not necessarily mean that the three tasks are not important. Rather, this observation may suggest any of a number of issues. First, the literature may not report on these elements because they may be viewed only as relevant to the local packaging of financing mechanisms. While these elements are important in supporting and structuring a proposed funding package, they may not be critical in ensuring the public's approval. Also, the predominant focus of local areas may be to implement one

financing mechanism at a time. As such, any discussion of the three elements may be superfluous, since they may be more applicable to issues of packaging several financing mechanisms.

In one state, each of the above tasks are addressed in enabling legislation for an innovative mechanism. In July 1985, the State of Pennsylvania passed the Transportation Partnership Act, which has the potential of assisting local governments in addressing all of the implementation issues identified above. Under the authority of the Act, "the governing body of any municipality ... may establish a transportation development district for the purpose of planning, financing, acquiring, developing, improving and operating transportation facilities or transportation service within the district" (31). Section 4 includes provisions for developing a multiyear prioritized program consistent with regional and State programs. Section 3 allows one or more municipalities to impose an assessment or tax on business property benefiting from the improvement. In this way, selecting a financing mechanism is made easier by the reduction of options. Formally attaining political acceptance is made unnecessary because only the adoption by the municipalities' governing body is required for imposition of formula-based assessments. Developing an implementation strategy is aided by Section 6, which allows municipalities to participate in and contribute to the planning, financing, development or improvement of any State highway located within a transportation district on a negotiated basis. Highway improvements on roads owned by the State of Pennsylvania will be undertaken by the State and within its priority. Identification of institutional arrangements is streamlined by the stipulation that each municipality finances and operates those projects or services within its portion of the shared district, in those cases where two or more municipalities are involved.

Perhaps because implementation issues were addressed a priori or minimized by the Pennsylvania enabling legislation, transportation development districts can be established relatively quickly. In fact, some districts have already been established. East Whiteland and Tredyfflin townships, located in a high-tech corridor west of Philadelphia, have set up transportation districts for expanding the interchange between U.S. Route 202 and Pennsylvania Route 29. The transportation district has committed \$4 million, the State \$8.5 million and the developer, Rouse and Associates, \$2.6 million (32).

CLOSURE

In this paper, five tasks have been hypothesized as being important for the successful implementation of innovative financing mechanisms: developing a transportation investment program, selecting appropriate financing mechanisms, attaining political acceptance, developing an implementation strategy, and identifying institutional arrangements. Of these five tasks, two have been found to have sufficient support in the literature to confirm their importance. These include: developing a transportation investment program and attaining political acceptance. The addition of these two tasks is sufficient to reverse unfavorable votes on alternative financing mechanisms, as shown in the Atlanta, Georgia, Pinellas County and Hillsborough County, Florida, urban areas.

The implications of these findings are that: (1) a concise and explicit transportation program, identifying and justifying needed transportation improvements, is a necessary base for seeking public support to implement innovative financing mechanisms, and (2) a concerted marketing/public involvement effort ensures that the public fully understands the need for the improvements, the necessity for implementing innovative financing mechanisms and the consequences for failure.

The importance of the remaining three tasks cannot, with the literature now available, be confirmed. This does not mean, however, that an evaluation of mechanisms for appropriateness to a local area is unnecessary, or that there is no need to consider the fairness issue in strategizing implementation of the financing mechanisms, or that there is no point in considering which agency is more able to administer a financing mechanism. These three elements are rational elements to consider when seeking to implement financing mechanisms because they can be used to structure and package the implementation of financing mechanisms for a local area.

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PROGRAM SCHEDULE

Wednesday, December 11, 1985

- Registration -

- Lunch (individual arrangements)-

WELCOME AND CONFERENCE OBJECTIVES

Lester A. Hoel, University of Virginia

INNOVATIVE FINANCING TECHNIQUES: WHAT ARE THE OPTIONS?

Gary T. Johnson, Virginia Commonwealth University

- Break -

SESSION 1: New Approaches to User Charges

Moderator - Norman G. Paulhus,
U.S. Department of Transportation

POLICIES AND POLITICS OF INDEXED FUEL TAXES

Roger Schrantz, Wisconsin Department of Transportation

PROSPECTS FOR GREATER INTERSTATE COOPERATION IN HIGHWAY FINANCING

David J. Forkenbrock, University of Iowa

INTEGRATED TRANSPORTATION FINANCING IN DELAWARE

John E. Richter, Delaware Transportation Authority

TOLLING CONCEPTS IN HIGHWAY FINANCING

C. Michael Walton, University of Texas

USE OF TOLLS IN HIGHWAY FINANCING: PENNSYLVANIA AND DULLES TOLL ROAD EXPERIENCE

Daniel W. Greembaum, Vollmer Associates

- Cash Bar Reception -

- Dinner -

Speaker: C. Kenneth Orski
President, Urban Mobility Corporation

Thursday, December 12, 1985

SESSION 2: Recent Experiences with Benefit Assessment Financing

Moderator - Robert T. Dunphy, Urban Land Institute

VIABILITY OF WIDE AREA ASSESSMENT DISTRICTS FOR FINANCING STREET, HIGHWAY AND PARKING IMPROVEMENTS

Robert C. Schaevitz, Parsons, Brinkerhoff, Quade and Douglas, Inc.

STRATEGIES TO IMPLEMENT BENEFIT SHARING FOR TRANSIT FACILITIES

Jane Howard, SG Associates, Inc.

FINANCING TRANSPORTATION IMPROVEMENTS WITH DEVELOPMENT ASSESSMENTS

Kenneth E. Dallmeyer, Village of Schaumburg, Illinois

- Break -

CHARGING DOWNTOWN SAN FRANCISCO FOR TRANSIT SERVICE

Bruce Bernhard, San Francisco Public Utilities Commission

A NEW APPROACH TO ANALYZING RAIL TRANSIT BENEFIT ASSESSMENT

Richard Willson, Los Angeles Community Redevelopment Agency

A STRATEGY FOR INCREASING THE LOCAL SHARE OF FINANCING FOR THE DOWNTOWN SEATTLE TRANSPORTATION PROJECT

Lawrence D. Goldstein, RPR Economic Consultants

- Luncheon -

Keynote Address: Richard P. Braun, Commissioner

Minnesota Department of Transportation

SESSION 3: Development Financing and Other Innovative Approaches

Moderator - Erskine S. Walther, North Carolina A&T University

SANTA ANA TRANSIT TERMINAL AIR RIGHTS DEVELOPMENT

Jeffrey P. Ordway, Orange County Transit District and

Larry A. Boatman, Spillman Boatman, Inc.

HOW CITIZENS' ASSOCIATIONS VIEW DEVELOPERS' OFFERS OF INNOVATIVE TRANSPORTATION SOLUTIONS

Frank Spielberg, SG Associates, Inc.

ROLE OF THE BUSINESS COMMUNITY IN DEVELOPING ALTERNATIVE FINANCING STRATEGIES

Peter A. Polk, Applied Resources, Inc.

- Break -

PRIVATE FINANCING OF FIXED GUIDEWAY TRANSIT: ORLANDO AND DULLES

Robert Martin, Urban Mass Transportation Administration

IOWA'S RISE PROGRAM

Gunnar Rorbakken, Iowa Department of Transportation

PRIVATE DEVELOPMENT RELATED MEASURES FOR FUNDING MUNICIPAL ROAD IMPROVEMENTS

Daniel J. Fortier, Rockingham Planning Commission, Exeter, NH

HARTFORD EMPLOYER ACTION PLAN FOR FINANCING TRANSPORTION

Paul Ehrhardt, CIGNA Corporation

- Cash Bar -

- Dinner (individual arrangements) -

Breakout Sessions with Authors to Share Experiences with Innovative Financing Techniques

Friday, December 13, 1985

SESSION 4: Integrating Financing Techniques and Raising Private Capital
Moderator - Gary Brosch, Rice Center

**ALTERNATIVE FINANCING FOR STATE TRANSPORTATION
IMPROVEMENTS IN MINNESOTA**

Randall Halvorson, Minnesota Department of Transportation

**STRATEGIES FOR PRIVATE SECTOR PARTICIPATION IN THE FINANCING
OF TRANSPORTATION FACILITIES**

Edward A. Beimborn, University of Wisconsin-Milwaukee

IMPLEMENTATION CONSIDERATIONS FOR INNOVATIVE MECHANISMS

Arturo Politano, Federal Highway Administration

- Break -

**RAISING PRIVATE CAPITAL TO FINANCE TRANSIT IMPROVEMENTS:
N.Y.C. EXPERIENCE**

Daniel Brand, Charles Rivers Associates

**ADVANCE CONSTRUCTION INTERSTATE PROGRAM: THE ACES PROGRAM
AND POOLED GOVERNMENT LOAN PROGRAM**

Thomas W. Bradshaw, Jr., The First Boston Corporation

- Adjourn -

- Lunch (individual arrangements) -

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