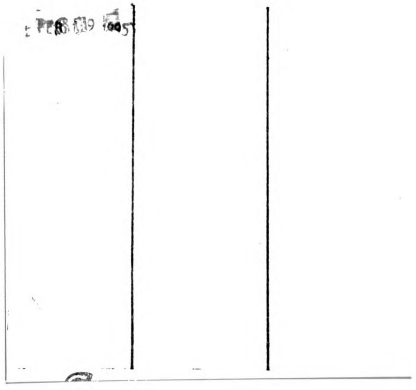

IMPACT OF VALUE CAPTURE POLICY ON SELECTION OF TRANSPORTATION FACILITY ALIGNMENTS

By

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ABSTRACT

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Financing of transportation facilities, such as highways, railroads and rail transit is facing increasingly stiff competition from other sectors of economy at the time of budget allocation. While users of the facility due to the benefit derived by them, have so far, been the largest single source for raising revenues for the transportation funds, a relatively significant number of other class of beneficiaries due to construction of the facility have been usually ignored in the process. Those beneficiaries are the property owners adjacent to the new alignment who obtain windfall profits totally unearned by the owners and created by the society at large. These non-user benefits or unearned profits can be a potential source for recycling into the cost of the facility itself. The thesis examines the feasibility of affecting the selection of the alignment of such a facility by adoption of a value capture policy.

A description of the techniques which create value and those which can be used to capture the created values has been given.

A methodology has been developed and described by which, under different situations of market demand and potentially

developable (or redevelopable) land the impact of Value Capture policy on the alignments can be compared. Mathematical formulations have been developed for computing the required increase in a given period of time due to Value Capture policy in order that a given alignment may become relatively more cost effective than another.

The formulations have been applied to a case study of a highway corridor consisting of three different and unique segments: fully developed central city area with very little potential for creating the capturable windfalls; completely undeveloped rural area with maximum potential for creation of windfall profits; and a transition and fringe area, in between the two extremes, with some potential for creating and hence capture of the created values. The sensitivity of the models established has been demonstrated.

The results indicate that if the enabling legislation and the political climate to capture the unearned profits, created by public moneys exist, the value capture policy can impact the selection of a facility alignment under certain situations of market demand and land development. An undeveloped land with a demonstrated market demand for change in land uses has the highest potential for determination of the impacts of the value capture policy on selection of an alignment. On the other hand a fully developed central city area, with very little potential for redevelopment, has relatively the least potential for creation of different levels of the windfalls due to the different alignments. Under the described set of circumstances, it is shown that the value capture policy can impact the selection process. The significance of impact, however, depends upon the specific situations prevalent in the case under study.

To my dear and respected

Mom and Dad

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CHAPTER I

I. INTRODUCTION

A. Need for Study

A transportation system is the lifeline of a nation's economy. Transportation exerts a dual leverage on the economic system by giving mobility to the factors of production, distribution and consumption and by sustaining and including development and growth as a result of new investment of capital funds. Transportation at once becomes a part of the resource base for economic development, a part of the economic superstructure that rests upon that base and a part of the economic development process itself.[1]

In order to enable the governments to continue the maintenance and improvement of the transportation system efficiently and effectively, heavy and additional investment capital is required. This release of resources has to compete with all other sectors of the economy. More often than others, plans for improvements in the transportation system have to be postponed or even cancelled due to lack of resources.

The share of transportation sector in the total United States budget has been consistently declining from 8.5 percent of total civil/domestic expenditures in 1960 to 4.5 percent in 1979 according to the latest highway statistics published by the United States Department of Transportation.

Although transportation funds have been raised by several sources, the user taxes have been the single most significant source. For example, 63.7 percent of the total funds in 1977 allocated for highways were provided by user tax.

The total expenditure for domestic transportation in 1972 was 26.6 billion dollars of which 19.2 billion dollars was the state and local share and the remaining 7.4 billion dollars came from federal sources. State and local governments have been spending over twice as much as the federal government on transportation systems. This is consistent with the tax sources of revenue for the federal, state and local governments related to the transportation network.

During the year 1977 transportation related taxes account for only a very small portion of the total revenues 1.3 percent at the federal and 4.9 percent at the state and local levels.

The primary sources of funding for the transportation system, at various levels of government are as follows:

Table 1. Primary Sources of Transportation Funding

	Ranks		
Levels	1	2	3
Federal	Motor Fuel and lubricating oil	general fund	
State	Motor Fuel and lubricating oil	registration and licensing	tolls, fare and direct usercharge
Local	Property tax	tolls, fare and direct usercharge	

The overall incidence of the transportation taxes as a financial burden is mildly regressive although some of these are more regressive than others when considered separately.

Inflation: Motor fuel tax, vehicle fees and highway related property tax which together account for a good 75 percent of available transportation funding have not kept pace with the rate of inflation. The effective rates for the first two categories of taxes have, in fact, declined. This is because the motor fuel tax and vehicle fee are flat-rate taxes and not ad valorem taxes to be levied in phase with inflation. As a consequence, the effective revenues have been constantly falling short of the needs.

The question is: should the government continue to increase the rate of taxation on the direct beneficiaries of the transportation system in order to maintain and improve it. The direct beneficiaries are the users of the system who pay taxes when they purchase fuel, oil and parts for their vehicles. There are other direct but non user beneficiaries such as the property owners alongside the new or improved transportation facility that obtain unearned profits. These profits, due to improved accessibility most of the times, are windfalls conferred upon the owners as a result of the public action, that is, transportation improvements. The transportation improvements can be construction of a new highway, railroad, rapid transit, airport, seaport or improvement in an existing facility; such transportation improvements suddenly open up new potential for development.

The windfalls created by the government action and unearned by the property owner can be looked upon as a potential source of revenue for transportation system improvements. An equitable portion of the

created profits in this fashion could be captured by a public agency and dedicated to the cost of improvement of the facility that created the profit in the first place.

This approach has been proposed for public transit improvements under a title of value capture policy by several research groups and writers. Rice University Center for Community Design and Research has conducted detailed studies for many metropolitan areas in this regard. However, a question still remains as to whether and how this concept can be applied in planning for the projects.

B. Objectives of the Study

The essential requirement to enable the public agency to capture value is the creation of value. Obviously, every government action would not create additional value -- at least not to a level worth capturing under a new process.

The study has the following objectives:

1. To examine the situations under which the additional values or windfalls are likely to be created (or not created) by governmental actions related to transportation facility improvements.
2. To examine the various processes and mechanisms available and the most feasible one(s) to capture a portion of the created values.
3. To examine the feasibility of including a factor of windfall capture in the process of selection of an alignment of a transportation facility.

A specific case study shall be utilized to illustrate the complexities, problems, findings and recommendations of the study.

C. Scope of the Study

The study consists of the following chapters:

1. Introduction
2. Literature Review, which will consist of a state-of-the-art summary of work done in the subject area.
3. Theory of Value Capture and Techniques
4. Methodology
5. Case Study: Logan Corridor Joint Development Study in Lansing, Michigan.
6. Results of the Study and Analysis.
7. Summary and Conclusions.

CHAPTER II

LITERATURE REVIEW

This chapter defines windfalls or unearned profits. The definition is followed by state-of-the-art discussions on the capture of unearned profits. The last section deals with the status of alignment selection process for highways. The chapter essentially provides an overview of the literature and introduction to the next chapter which deals with the subject in more detail.

A. Windfalls

Definition: In the context of the Crude Oil Windfall Profit Tax Act hearings before the Committee on Ways and Means in the U.S. House of Representatives, the then Secretary of Treasury Blumenthal was asked by Rep. Schulze of Pennsylvania,"...to describe for me what conditions create a windfall." To that Secretary Blumenthal replied:

> We define a windfall as that revenue which is created purely by virtue of decontrol or, in the instance of the OPEC tax, by an arbitrary action taken by the world cartel but which is not needed to bring forth the additional production that we require.

In other words, windfall is created purely by specific governmental action. This excludes any such increase in profits due to action by the owner. This also excludes any increase in profits due to inflation or normal growth of population, or environmental conditions beyond control.

Scope of Governmental Action. For the sake of this report, the subject cases shall be restricted to real estate related windfalls, and the only cases that will be considered here are the windfalls, or the increase in property value purely due to a specific governmental action.

The specific action can be a planning decision; that is a program or a project proposed for implementation or already initiated, which directly or indirectly affects the basic value of the property under consideration. Examples of the specific actions could be: an approval for change in zoning, a decision in favor of a highway or transit line, a significant public improvement or planned change in the environment to the property.

Also, for analysis in this study the governmental actions will be restricted to transportation related facilities. More specifically, as the case study involves selection of a highway alignment, the governmental action considered will be decisions on highway alignments. However, later on in the analysis and recommendations an attempt will be made to broaden the application to other situations.

Scope of Windfall: The question can be asked: how much profit or benefit is excessive or is a windfall.

Since the purpose of this analysis is to examine the mechanisms for recapture of the increase in property value, there is a need for a threshold below which the administrative effort involved to set up or trigger the recapture mechanism may not be justified. In that case for the purpose of this study, the windfalls will not be considered to be windfalls.

However, once the mechanism is established and legislation is available, the marginal cost to trigger it may not be too much. Nevertheless, communities should be free to exercise their options to pursue or drop the recapture if the difference between the estimated windfall and the administrative effort required to capture it is less than a certain agreed upon percentage, say 10 or 20 on a certain sum, $10,000, for example, or whichever is less.

On the other hand, an argument could be made that a law is a law and once the mechanism is available, it must be followed regardless of the cost involved.

Should the Windfall be Captured

The answer is provided by President Franklin D. Roosevelt in his message on Interregional Highways to the Congress on January 12, 1944:

> It hardly seems fair that the hazard of an engineering survey should greatly enrich one man and give no profit to his neighbor who may have had the right-of-way which was equally good. After all, should the hazard of engineering give one private citizen an enormous profit? If there is to be an unearned profit, why should it not accrue to the government - state or federal or both.

A tax on windfalls implies some given norm of earning level against which windfall will be measured. If the earnings have been more than an accepted standard, they will be called windfall. And if the earnings were earned without any effort by the earner and due to the action taken by the community or the government, the community or the government should have a right to a reasonable portion of the windfall. It would only be equitable because the government action which resulted in the windfall for an individual would cost the public at

large for implementing that action. For example, construction cost of a highway would be borne by taxes drawn from the public at large while the windfalls would go to one person because of sheer luck.

The famous economist , Adam Smith, refers to the concept as 'ground rent' and Henry George calls it 'economic rent' which can be realized as an unearned income due to the action of the community.

One of the famous quotes from Sir Winston Churchill exemplifies the concept as follows:

> The landlord who happens to own a plot of land on the outskirts of a great city...watches the busy population around him making the city larger, richer, more convenient...and all the while sits still and does nothing.
>
> Roads are made...services are improved...water is brought from reservoirs a hundred miles off in the mountains...and all the while the landlord sits still...To not one of those improvements does the land monopolist contribute and yet by every one of them the value of his land is enhanced...At last the land becomes ripe for sale -- that means that the price is too tempting to be resisted any longer.
>
> The greater the population around the land, the greater the injury the public has sustained by its protracted denial, the more inconvenience caused to everybody the more serious the loss in economic strength and activity, the larger will be the profit of the landlord when the sale is finally accomplished. In fact you may say that the unearned increment on land is reaped by the land monopolist in exact proportions, not to the service but to the disservice done...

Hagman[4] lists five reasons for recapturing windfalls:

- Revenues will result.
- The community is asking only for a return of wealth it creates.
- The windfall recapture tax (change, exaction, fee,levy and so forth) would not raise land prices because supply is fixed.

- When the public needs to acquire land it should not have to pay a price increased by its own activities.
- It is a less socialistic scheme than public land ownership.

Regardless of the opinions and views in favor of the capture of the unearned profits "...it has not been common practice in the United States for benefit schemes to be developed and implemented."[4]

One important reason is the rule of society that each owner has the right to enjoy whatever windfall or benefit accrues to his land -- particularly the value of the land -- even though the benefit was created by no action of the owner. The American tradition of private property ownership -- and the right to be lucky (or unlucky) is still strong, even if it is assailable.[9]

The other reasons for lack of enthusiasm in this approach is the absence of a mechanism or enabling legislation. While the decision makers agree that the concept is good, they do not see any precedence that has worked. The perceived political price appears too high to pay.

Apart from the American tradition, however, the concept has found its way to the various stages of implementation in relatively more socialistic countries.

B. Revenues from Windfalls

Numerous terms have been used in the literature within the United States and various other countries to describe what may be called a windfall profit tax, excess profit tax, betterment levy, and value capture. However, the underlying principle is the same: capture of

a portion of the benefits or profits from the few by the public agency for the welfare of the community at large. The windfall profits, unearned profits and excess profits, however, reflect these profits which resulted due to actions taken by the public authorities or the governmental bodies rather than those who earned them. This capture can be for the pursuance of a national goal such as the so-called crude oil windfall profit tax or can be for a limited objective at the local level where a special benefit district is established to recover the benefits conferred upon the property owners.

The excess profits generated or the benefits conferred may be in the production of values in an industry during a wartime emergency situation or by speculation on a piece of land under normal times. The objective of this research is to skim through two of the techniques utilized in the non real estate related areas and dwell more heavily on the real estate related mechanisms. The chart below indicates the division and the techniques covered.

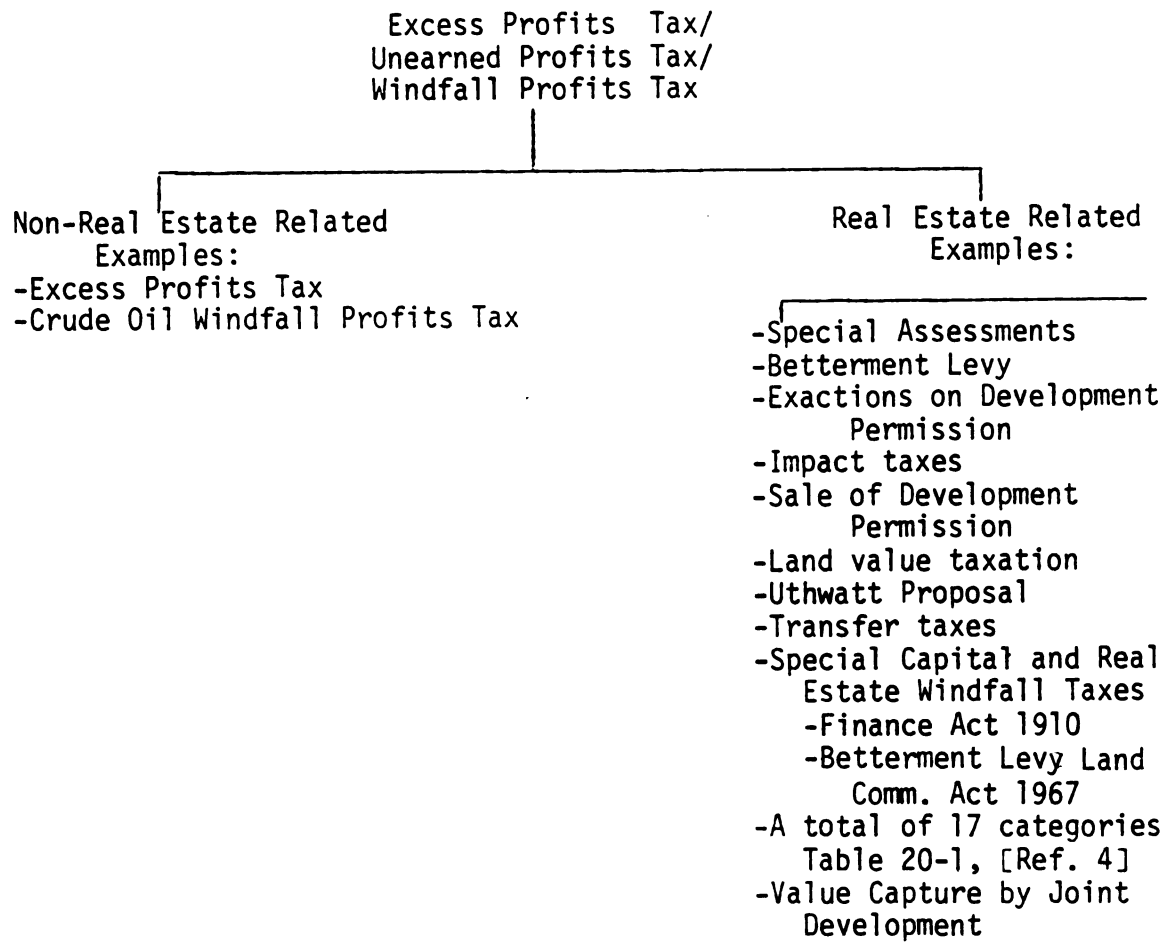


Figure 1. Techniques for Windfall Capture.

A brief description of some of the important concepts follows:

Excess Profit Tax: In both Great Britain and the United States during World War I, excess profit taxes were introduced in response to a widespread public demand for an effective profit control. In Great Britain this demand "rested on a broad foundation which included among other elements the dissatisfaction of consumers with high prices, the conviction of businessmen that the burden of the war should be borne by those making large profits, and the refusal of labor to assist anybody to make money out of the war".[2] This was basically a

tax on war profits. In the United States on the other hand, the 1917 excess profits tax was enacted before the United States was actually engaged in hostilities. At the time, there was more concern about the generally high level of profits that were being earned in the United States' expanding economy than about war profits as such. Consequently, except for the year 1918, when a concurrent war profits tax was also in effect, the United States undertood to tax not war profits but all profits exceeding a certain conventional rate of return on invested capital.[2]

In the First World War, the excess profits tax rate started out with 12.5 percent of the profits and reached the 80 percent level toward the end of the war and was confined to corporations. The tax yield was $2.5 billion in 1918, $4.0 billion in 1920 but fell to $335 million by 1921 due to post war depression. This was also the end of the first federal excess profits tax in the United States.

During the Second World War, the excess profits tax was introduced in 1940. During World War II, the excess profits tax rate was as high as 85.5 percent in the United States. The tax recovered $9.4 billion in 1944 and $35.1 billion during the six years 1940-45, as compared with the total corporate income taxes of $23.1 billion.[3]

The experience gained from previous instances of the imposition of excess profits tax, indicates that while there was less controversy about the concept, the mechanics of realization were simply too complex. Determination of a fair and equitable rate of return, separation of normal from excessive profits, complicated relief provisions to lessen inequities, problems in administration

and availability of other and better alternates for raising the same level of revenues were some of the lessons learned. However, it appears that this tax was a measure of political expediency and was popular with the average citizen.

The Crude Oil Windfall Profits Tax Act of 1979:

The only justification to include this in the report is to emphasize that the concept of capturing windfall profits is very much alive even today.

The Act imposes an excise tax on the increases in domestic crude oil prices resulting from the deregulation of crude oil prices or from excessive increases in world oil prices. The tax would reduce the profits of oil producers and royalty owners; it would not be passed on as higher prices to consumers. Revenues from the tax would be placed in an energy trust fund to finance programs for dealing with the energy problem. Amounts in the trust fund would be available for purposes to be specified by law at a later date, subject to the usual authorization and appropriations process.

The tax applies to taxable crude oil produced in the United States according to its classification in one of three tiers. Essentially, the tax structure is the same for the three tiers except that each tier has a different base price above which, price increases are subject to tax. The tax equals the rate, times the windfall profit. The windfall profit is defined as the difference between the actual selling price of oil and its base price (with a deduction for severance taxes on the windfall profit).

C. Techniques

Special Assessments: have usually been established by local governments to finance all or parts of the cost of a public improvement such as streets, sidewalks, sewers, parking and recreational facilities.

The assumption is that properties being taxed have received or are expected to receive some form of benefit as a result of the public improvement and there is a gain in property value involved.

The tax, usually called special assessment is levied in proportion to the benefit the property is estimated to receive. To make it as equitable as possible at least theoretically, it is proportioned by area of property, length of frontage, distance from an improvement, ad valorem or any other acceptable indicator which can be measured.

The concept has been successfully utilized since the earliest available account in 1250 A.D. in England and 1691 A.D. in the United States. However, special assessments, proposed for major projects such as the major highway projects and even the subway in New York have had little success.

Hagman[4] has listed in substantial detail the complexities and the theory behind the use of special assessments for public improvements. There are basically two ways to look at the special assessment concept:

1. That the property owners should not be taxed more than the cost of the public improvement regardless of the amount of benefits conferred (such as by increase in property values).
2. Completely ignores the cost factor and is essentially a tax on the benefits.

Usually the boundaries of a special assessment district are drawn to include the area and properties which stand to gain most. This task is not easy because of the hazy line between the special benefit the government or authority desires to tax and a general benefit that may be conferred upon the property owners across the line.

As pointed out earlier in this section, usually local government is responsible for administration of special assessments. However, transit authorities, or other levels of government could also do the special assessments either by themselves or in coordination with the local governments.

Special assessment still remains a very significant source of capturing benefits and raising revenues for public improvements. Considerable work and experience however, needs to be gained for its usage in case of larger than ordinary projects.

The concept of special assessments has also been successfully, though not very efficiently, used in recapture of profits and benefits for reclamation projects in the United States. The objectives in such cases were to recoupe the investment of providing reclamation water to attract small farmers and settlers. In this case, 50 percent of the incremental profits over the base price was taxed within the special district. The 1902, 1914, 1926 Acts, the Columbia Basin Project Act, and Tucumcari Porject Act are some of the examples where a windfall under the Federal Reclamation Program was incrementally captured by legislation.

Betterment Recapture - British Experience:

Betterment means any increase in the value of property arising from a governmental action. The British government, in 1909, enacted the Town Planning Act to recapture 100 percent of the increase in property value caused by planning decisions. It was both a master plan and its implementation devices -- zoning control (including provisions for termination of non-conforming uses, subdivision control, designation of lands for public facilities and for governmental purchase. The 100 percent recapture provision was revised down to 50 percent later as a result of protests, but revised again in 1932 to 75 percent of the increase in value.

The government set up an Expert Committee on Compensation and Betterment, also known as Uthwatt Committee, to conduct a study of the betterment recapture and compensation of worsenment cases. The committee submitted its report in 1942 and made several recommendations which were never adopted in England. The Town and Country Planning Act, 1947, ended all betterment levy of the kind prevalent earlier. This Act nationalized all development rights thereby proposing to capture the betterment by the government selling the land. This was during the reign of the Labor Party.

Thereafter:

1951 - Conservatives won the election and the betterment levy was repealed.

1967 - Labor Party came to power in 1964 and the Land Commission Act of 1967 was enacted. The underlying idea was that the land values are community created and should be recaptured in part at least by the

community. It created a commission which acquired and sold land and enacted a betterment levy. The levy rate was to begin at 40 percent and gradually go up to 45, 50 percent and higher.

1970 - Conservative Party won election and the Labor enacted Land Commission Act was repealed.

1974 - Conservatives proposed the Finance Act of 1974 which was enacted by Labor due to the defeat of the Conservatives. But in 1975 a Development Land Tax and Community Land Act of 1975 was enacted which became effective August 1, 1976.

The details of the above three Acts are given in Appendix.

The game of see-saw with the enactment and repeal of successive Labor and Conservative governments indicates that both parties were in favor of some kind of betterment levy and recapture. The differences existed in the modes of operation and details. Conservatives, for example, favored the levy to be called a tax and to be administered as a tax by Inland Revenue rather than by a new Land Commission Department as proposed by Labor.

Under the 1975 Act, there are three phases of implementation:

Phase I: local authorities bring all developable land into public ownership;

Phase II: local authorities make available <u>all</u> land needed for particular types of development and all such lands must pass through community ownership;[4]

Phase III: local authorities can sell or lease the development land at market value.

The windfall recapture will take place, in fact, twice during the three stages of the process: one at the end of Phases I and II and another at the end of Phase III.

It should be pointed out that none of these Acts took inflationary increases into account while computing the betterment.

There are other notable Acts existing or repealed in several areas of the world which are described in Table 20-1; some of them are:

Australian Land Development Contribution Act of 1970, since repealed in 1973, the underlying concept was

> those lands which will derive a very considerable benefit in increased value from rezoning, and will require massive public investment in the provision of essential services should contribute some proportion of this gain towards the public expenditure necessary for their development.

Ontario Land Speculation Tax Act of 1974

> this tax was enacted to recapture 50 percent of the speculative gains in land value. The results of this are yet to be evaluated.

Vermont Land Gains Tax, 1973

> this tax law was enacted to control the rampant speculative market. The income realized from this tax was used to compensate for the loss in revenues due to another Act, which set an upper limit for the prope-ty taxes as a percentage of one's income. The

tax rate varied from 5 percent to 60 percent generally on the change in land value between the present transfer value and prior acquisition cost. The collections have varied from approximately $756,000 to $1,300,000 per year. The tax law is still in force although it was amended in 1976 to add some exemptions.

Following Vermont's example, several other states have initiated efforts to enact legislation. The District of Columbia, Oregon and Montana have attempted to curb speculation and Washington, Virginia and California have tried to raise revenues. The details are given in Table 20-1.[4]

Value Capture Policy for Transit Implementation Funding

Rice Center for Community Design and Research at Rice University, Houston, Texas, has been involved in studies and research on the use of Value Capture Policy for Funding transit improvements. The studies have been conducted under contract with the United States Department of Transportation. The motivation for the studies which have been completed notably for Houston, Chicago, Los Angeles, and Louisville among several others has been:

> ...integrating mass transit and land use projects can yield an opportunity to "create wealth" both financially and in terms of other community benefits. Given the proper set of circumstances, it is possible for both public and private participants to capture these values. Value Capture Policy is a means whereby the land adjacent to transportation facilities is purchased, managed or controlled in order for the public to share in potential financial and community design benefits from the facilities not otherwise possible.[5]

In these studies it has been found, at least for the cities analyzed, that:

- there were no substantial barriers to Value Capture, that is, no situations requiring inordinate effort beyond the normal legislative, political, financial and planning process associated with transit implementation per se.
- Value Capture offers clear opportunities for community design benefits available through public participation in land development related to mass transit implementation.
- public finance benefits are realizable through special forms of taxation and/or financial investment techniques.[5]

The studies basically, have been oriented to mass transit projects and development of land aro-nd the transit stops on the way. The work has been conducted in three concern areas:

Legal Aspects: Study of legal bases upon which to ground the recapture of financial benefits to the community. The issues examined include exploration of proposed solutions based upon supplemental condemnation or excess condemnation, tax assessments, monetary transfers, intergovernmental cooperation and air rights/ sub-surface development.

Financial Aspects:	These have been divided in two tasks: task 1 formulates alternative financial implementation strategies, these include three factors -- Administration Entities, Capital Structure and Income Realization. A sample interrelationship matrix of these factors which have still been subdivided into entities, sources and techniques is given in Report [Ref. 5]. Task 2 includes financial testing and evaluation of the financial efficacy of the Value Capture Policy as a viable tool in transit implementation.
Community Enhancement Aspects:	These use the Transit Action Programs, such as in Houston which had the regional transit corridors, approximate alignments for line haul components, system technologies and approximate stop locations. This aspect of study examines the problems and opportunities for transit stop related development designs. Specifically, the study determined how various transit stop related land development designs perform toward improving mobility, social, employment, environment and service aspects in the community and how they achieve the goals of Value Capture Policy.

A more detailed explanation of the terms, strategies, and techniques used in the subjects study will be given in Chapter III.

Other Techniques

In addition to the major techniques described in the above paragraphs, there are a few others which have been employed as devices to recapture windfalls.

For example, dedications or donations to the local government at the time of granting permissions for development, rezoning approvals, and so forth. The assumption is made that as a result of the permission accorded which was a governmental action there has been an increase in value of the property and hence the community has a right to recover at least part of it. However, beyond the dedication of some part of land for parks or recreation, planting trees, donation for development of a school or things of this nature, this technique has not captured any real "windfalls."

It is more common, however, to use this approach to recover the part or full cost of any infrastructure installed by the government, such as: sidewalks, curb and gutter, minor street improvements, sewer extensions or tappins.

Other examples have been cited where the local government recovers the cost of public improvements by imposing a tax on the residential development at a certain amount for each bedroom in the development.

Still other examples are to tax the property at the time of transfer of property, such as sale. The assumption is that this tax will capture at least some part of the unearned income. The process, however, does not take into account any change in property value but only the total value of the property at the time of transfer, and for whatever reasons, excludes the increase caused by inflation. The

increase does not have to be caused by any specific government action. California is one of the states where the transfer taxes are allowed to the counties and cities.

D. Selection of a Highway Alignment

The process is also termed as route location. In the following pages the current practice(s) of selecting a highway alignment will be reviewed. A perusal of the factors considered, of impacts studied, and of the final decision process followed, indicates that the potential of capturing unearned public benefits or windfalls has not been considered.

According to the Policy on Design of Urban Highways and Arterial Streets published by AASHO,[10] the purpose of highway location is to position a highway within a corridor to best accomplish the broad goals of the transportation system along with the local goals concerned with the immediate environs (p. 139). The Policy lays down a ten step process including determinants of broad route requirements that is type of highway needed, control points, selection of corridors, evaluation of alternative determination and evaluation of the economic and environmental effects of each alternative, preparation, a route location report, conducting a public hearing and finally determination by decision-maker of the route alternate for advancement to the design stage.

Included in the section on "Evaluation" are the following factors:

- interagency coordination
- economic evaluation

- environmental evaluation
- public hearings
- the management decision.

The part most relevant to the present study is that on "Economic Evaluation" which is proposed to be discussed in more detail.

The purpose of economic evaluation, according to the Policy is "to select the best alternative in terms of its monetary benefits in relation to its monetary costs". It further states that in all cases (when there are several alternates) the alternatives should be compared to each other to determine their relative status in monetary terms. The objective of this analysis becomes more clear when the Policy states that "it is the relative monetary status that determines which alternative is "best" in monetary terms." The Policy also states that "a fairly detailed estimate of the total costs and benefits associated with each alternative is necessary to make an economic evaluation."

The direct costs, maintenance and operation costs, and road user costs and benefits are computed to develop an economic ranking of the alternatives based upon one or more methods from the following:

. Equivalent uniform annual cost method
. Present worth of cost method
. Benefit/cost ratio and
. Rate of return.

In each of the above, sufficiently detailed explanations are included to clarify the intent. Elsewhere, (pp. 204-206), while the

Policy recognizes the anticipated economic gains or losses due to the specific highway location, it does not even suggest capturing the unearned benefits created by the highway itself. It does however, point out that new development or intensification of existing development in the vicinity of the new highway have typically offset the local tax losses due to right-of-way acquisition.

In another study,[11] which also follows the traditional approach to highway economic analysis, some sixty eight different factors have been listed under four major categories:

1. Effects of the stationary environment (14 factors)
2. Effects on the transitory environment (11 factors)
3. Neighborhood and community impacts (23 factors) and
4. Traditional factors in highway improvement analysis (20 factors).

The list of factors is fairly comprehensive but does not include the potential for capturing unearned benefits created by the facility. The economic analysis proposed is similar to the AASHO procedures.

The criteria listed by the Committee on Urban Transportation of the American Society of Civil Engineers[13] for location of urban freeways and major streets includes the following factors:

Urban Freeways	Major Streets
Factors	Factors
Planning (several factors)	Planning (several factors)
Traffic Service (several factors)	Traffic Service (several factors)
Design (several factors)	Design (several factors)
Economics -Average total cost/ lane mile -Relative B/C ratio excluding cost to community facilities -Added cost to street facilities -Potential added cost to community facilities -Direct cost to the taxpayer of one alt. compared with another	Cost estimates Benefit/Cost Ratio

Barkan[14] discusses the latest methods of determining urban highway routes. His discussion emphasizes the newly evolving concepts of fitting urban highways into the twentieth century urban setting. The economic analysis concepts in these two works make no reference to the subject under study in this research.

CHAPTER III

THEORY OF VALUE CAPTURE AND TECHNIQUES

In the following sections the subject of value and Value Capture will be explained with emphasis on

A. Theory of Value

B. Categories of Created Value

C. Situations Suitable for Creation of Value

D. Techniques to Capture the Unearned Value

E. Problems in Capturing the Unearned Value

A. Theory of Value

For almost three centuries the world's economists have been developing various theories of value. There are, for example, "direct" value theories which are concerned directly with value and "indirect" value theories concerned indirectly with value. The "direct" theories attempt to explain its nature through one or more of the basic causes of value such as supply or utility and are concerned with analysis of the value of an individual economic good such as a machine or a parcel of real estate.

Among the direct value theories the classical theories of Adam Smith, Malthus, Ricardo, Stuart Mill and Thunen are generally based upon the assumption that cost of production equals value.

These theories ignore the demand or utility side of the value, which is the greatest weakness of this approach. This is the origin of the cost approach used today in value estimation.

On the other hand, the indirect theories concern the much larger picture, such as the nation's economic policies, which only indirectly affect the value of the economic good. Changes in tax regulations or legal or financial systems initiated by institutions are other examples which have indirect implications on the value of the good.

The Marginal Utility Theory, which was developed by the Austrian economists Menger, Von Wieser and Von Bohm Bawerk departs radically from the classic approach in emphasizing the utility or demand side. They say that the utility produced by the last unit of an economic good or service (marginal utility) determines its value. This bears close relationship to the income approach of the value estimation. The marginal utility theory does not consider the cost of production and short run decisions of marginal utility alone govern the theory.[40]

It was left to the English economist Alfred Marshall[41] to develop what is known as a neoclassical theory in which he recognized that the correct approach is a synthesis of the two earlier approaches of supply and demand into one. He introduced the famous scissors analogy of supply and demand operating in the market in his book "Principles of Economics." As each blade of a pair of scissors is necessary for the unit to function, so is supply and demand necessary

for the economic unit - a market - to function. This was the basis of the sales approach of value estimation.

Based upon neoclassical economics,value is a market concept which is the result of the interaction of supply and demand. In a "perfect" market, which meets the following criteria, the price equals value:

1. Homogeneity of products.
2. Many buyers and sellers.
3. No buyer or seller large enough to influence the market.
4. No external influence.
5. Complete knowledge as to possible uses.
6. Agreement as to expectations.

In reality, however, the market is not perfect, as it does not satisfy the above conditions. Price, therefore, becomes a market estimate for value.

The most relevant of the theories which have serious implications in an indirect way upon the value were formulated by the mercantilists, physiocrats, the institutionalists and the Keynesians. Although Ricardo, Veblen, Henry George and several others developed the theories of comparative advantage, evolutionary nature of group behavior and the single tax idea, yet the policy implication of Keynesian theories remain most important even today for study of value. This is because monetary, fiscal and debt management policies are important tools in the Keynesian model for regulating economy and thus in determining prices that occur for all economic goods including real estate.

A definition of market value formulated by the Society of Real Estate Appraising is: The price which a property will bring in a competitive market under all conditions requisite to a fair sale, which would result from negotiations between a buyer and a seller, each acting prudently, with knowledge, and without undue stimulus.

This is a compromise market definition that encompasses the classical, marginal utility and productivity theories of land value. Since the real estate market is less than perfectly competitive, this is the best attempt to define value of a property so far.

This value, according to Brigham[42] is a function of five sets of variables as follows:

$V_i = f(P_i, A_i, T_i, U_i, H_i)$, where:

V_i = the value of the ith site

P_i = the accessibility of the ith site to economic activities

A_i = the amenities, including the neighborhood effects, associates with the ith site.

T_i = the topography of the ith site.

U_i = the present and future uses (residential, commercial, or industrial) of the ith site.

H_i = certain historical factors which affect the utilization of the ith site.

Brigham also maintains that accessibility, amenities, topography, and historical factors will have noticeably different effects upon the value of land in different uses. Thus, there actually will be a family

of land value functions of the form $V_{ij} = f_i (P_i, A_i, T_i, H_i)$ where the j subscript designates the present and future use of the ith site. Empirical results have been presented by Brigham to support these assertions.

Rueter, however, disagrees with the above model and asserts that the above mentioned factors can probably be assumed to be uniform across all properties if these sets of estimates are restricted to a relatively limited geographic area (a specific zoning district within a specific federal census tract). Rueter developed his own model, one which estimates the market value of a site (sale value) and many of the neighborhood characteristics which influence that value, holding constant the location and zoning classification of the property. He found that there is much more independence in urban property markets than the zoning ordinance anticipates. The only variables which might be viewed as having a reasonably consistent influence on property values are the assessed valuation and the Consumer Price Index. Thus, the value of a residential property, according to Rueter, seems to be affected much more significantly by the attributes of the improvements to that property and by aggregate economic conditions than it is by any features of the neighborhood.

B. Categories of Created Value

A created value is an additional benefit due to construction or improvement of a highway or transportation facility. Sloane[9] clearly describes the three categories of non user benefits due to a particular improvement.

1. Land use related benefits -- usually those associated with the use of the land made more accessible by the improvement.

2. Land value related benefits -- those associated with the increase in the monetary value of the land affected by the particular transportation improvement.

3. Benefits derived from the transfer of rights in the land affected by the improvement.

In Case I, several examples have been cited in which the benefit is in kind rather than in monetary terms. In this case, construction of a highway or an interchange can act as a catalyst to develop the adjacent property for the good of the general public. Examples could be development of a park, rest area, or even zoning controls to check traffic congestion in surrounding areas.

Case II includes the situations where a highway (or any transportation facility) results in an increase in the value of an abutting or adjacent property. This increase takes place due to improvement in accessibility. The beneficiary in this case is the owner of the property such as a farmer who has been holding on to his farm land for years with the hope that the highway improvement will make it possible for him to sell his land and retire; the home owner whose home and land suddenly become more attractive for commercial development; and numerous other examples.

The last case refers to the benefits derived from transfer of development rights (TDR). The underlying principle for this is that the development potential of privately held land is in part a community asset that government may allocate to enhance the general

welfare. In concept, TDR severs the development potential from the land and treats it as a separate marketable item. This is essentially a land management device which is viewed by its proponents as a means of providing an equitable return on land investment to property owners whose return otherwise might be lessened by regulatory activity.[4] Conservation and transfer zones are established and a process of density transfer or sale from conservation zones to transfer zones is allowed. Transfer of air rights, water rights or development rights, generally are accompanied with a suitable compensation. The developer in the transfer zone could, for example, compensate the "public" in the form of a direct purchase or lease of the air rights over the highway -- a mechanism to recapture at least part of the created benefits or values.

In this thesis the category 2 is the subject of primary focus, although the other categories have been used in practice to capture created value.

C. Situations Suitable for Creation of Value

All public improvements do not result in enhancement of value of the adjacent property. The factors described earlier in the section on values affect property values in general, but there are also unique situations which have to be considered in predicting the creation of additional values for real estate. These situations are described in the following paragraphs.

1. Demand: Construction of a highway in itself although necessary is not sufficient for the creation of windfalls. One of the most important factors is the market for a change in land use. A

vacant parcel of land with excellent accessibility to a new roadway but located far from any area with a demonstrable market for residential, industrial, commercial or other usage may not show an increase in property value of any significance. While the property may be an excellent location for a highway related use, lack of a market for a specific use would negate any chances for enhancement in property value.

2. Zoning and other Land Use Controls: Zoning can be defined as the regulation of the character and intensity of use of the land and improvements thereon. It is one of the more popular and widely practiced forms of land use controls although other forms such as variances, use permits and contracts are also used as discretionary devices for land use controls.

Zoning has been found to affect property values positively or negatively. It has also been suggested that zoning results in shifting property values: in other words it increases land value of some land and decreases the value of other land but neither creates nor destroys land values. However according to Ohls et al.[4], the impact of zoning on overall land values in a community cannot be predicted and is dependent upon the relative elasticities of demand of the land uses involved. Their analysis assumes a jurisdiction with a fixed area in which no parcel has any relative locational advantage and there is a demand curve for each type of land use. The interaction of the combined demand and the fixed supply of land is the determinant of price for the various land uses. If zoning is introduced, the supply of some land use is restricted and thus increases the supply of others.

The overall effect will depend upon the relative elasticities of demand for various uses.

According to Hagman,[4] a zoning policy in a growing city might have a considerable influence on land values even if excess land is zoned for a particular kind of development.

Crecine, Davis and Jackson[16] among others have also measured the impact of zoning on property values. However the observation that needs to be made here is that the same property can have a different value under otherwise similar conditions if only the zoning was different.

3. Timing for development. There are some benefits that can be retained long after a highway improvement has been made (development of air rights, or use of excess land in a right of way, and so forth) but most of the types of benefits come about during the development of the improvement. It has been urged that the highway planning process be widened in ways that will allow these benefits to be anticipated and methods for retention and realization designed during the development stage. However, there are legal problems in trying to recapture benefits through imposition of special public actions after the issues of land use, taxation, ownership, and so forth are settled and established.

D. Techniques to Capture the Created Value

Given the situation where a highway facility is planned, under construction or has been constructed there are several different techniques that can be applied to capture the additional unearned value, created by the facility. For a specific set of

conditions the selection of the most appropriate technique would depend upon the careful examination of issues involved, the ramifications in the prevailing political environment and available legislative and legal support.

Of the techniques that can be used to capture the unearned benefits, three major sources of research are the most important: Hagman,[4] Rice University[5,6] and Sloan et al.[9] All three have discussed the techniques at length.

Hagman lists nine techniques to capture windfall profits and three more for "windfall capture and wipeouts-mitigation". It is argued that a combination of windfalls recapture with wipeout mitigation would lead to more consistent planning and implementation as it would check the rezoning pressure. In this research, however, only windfall recapture aspect has been examined. Not because wipeout mitigation is of any less importance but it was considered a little farther removed from the main though of the thesis. Rice University Center for Community Design and Research lists nine different techniques, and Sloan et al. under three basic categories lists fourteen techniques. As pointed out by Sloan, the techniques may be merged and combined in various ways so that the distinctions between the categories are often blurred. The techniques are a function of the entire setting for the benefit scheme (recapture of value).

Basically from an implementation perspective, all the value capture techniques can generally be classified in two situation categories:

1. Land in Private sector
2. Land in Public sector.

I. Land in Private Sector

In this situation, a highway is planned or is under construction while the adjacent land in private ownership gains in value because of the improved accessibility. The authority (or authorities) financing the highway do not own any part of the subject land. The authority still has the option of exercising its taxing power to realize a portion of the value it helped create.

This can be done in several different ways:

A. Special assessments: This has been discussed on page 14 in Chapter II. The State of California is a pioneer in this area. In 1968 California enacted a "special benefit assessment" feature which enabled the local authorities to create special benefit districts along a mass transit line. This legislation gives flexibility to the transit district in apportioning costs in direct proportion to benefits. Care needs to be exercised in differentiating the special benefits proposed to be taxed from the general benefits that are diffused throughout the community. For a highway improvement a typical district would be linear, along the highway, with the increase in property value declining with distance from the highway.

Generally, local governments have exercised the power of special assessments, under enabling state legislation. However, in the case of a state-federal highway project whether local government will still be authorized to collect the assessment is not yet clear. Also if the highway runs through multiple contiguous jurisdictions, various governments may have different tax philosophies which may complicate the tax administration. This is especially true if those government units are competing with each other for development and/or tax revenues.

The approval of the special assessment project by a majority of the affected property owners is normally required under law. In case of a highway project passing through multiple jurisdictions, there may be some areas where the majority may turn it down. A state appointed commission authorized to decide the rates like that in Massachusetts disallowed majority dissent.

Special assessments for major highway projects have yet to be tried at a sufficient scale to gain experience in the legal, political and technical ramifications.

B. Development Permission exaction: This is a mandatory contribution of a psecified percentage of the assessed valuation of a subdiviser's land paid by the subdivider to the municipality for the right to subdivide his land.[9] This attempts to allocate the public cost of new development to the development itself. The developers are asked to provide public improvements and/or facilities such as streets, sidewalks, curbs, gutters, sewers, storm drains, parks, schools, etc. to be provided (or a fee to be paid in lieu of them) toe the municipality. This mechanism recaptures the costs of improvements and not unearned profit.

C. Impact Taxes:[4] There are taxes on new development to defray the cost of public services or even to increase the source of general revenue. Examples are bedroom tax or business license tax. They are usually a flat fee per given unit as defined in the ordinance. This device also recaptures costs and not unearned profits.

D. Sale of Development Permission:[4] This is a revolutionary concept proposing transition from our present system of development

permission through regulation to one in which development permission is sold. Hagman[4] points out that windfall recapture upon rezoning has not been recognized by the courts as a valid exercise of the zoning power. The courts still hold a traditional view of the function of zoning: to regulate land use uniformly, based on a comprehensive plan which is itself based on the police power criteria of public health, welfare and safety. Sale of development permission such as by auction would make it more convenient for large firms and businesses to outbid the smaller enterprenuer thus accelerating the inequities between rich and poor. Moreover, this mechanism will encourage speculators. The suggestion has also been made by Dr. Marion Clawson of Resources for the Future Inc.[16] that it is an incorrect contention that property owners have an inherent right to major gifts in property values, at public expense.

E. Land Value Taxation (or single tax): A single tax system is one in which there are no taxes on income, sales, or any other kind of tax, only a property tax, with land as the only property in the base. A land value tax system is one in which there are other taxes, but the property tax is only on land, and comes in two varieties, an unimproved land value and a land value tax. The first is a "purer" form because the base of the tax is the value of the land in its raw state surrounded by its milieu. For example, land located in the center of New York City and fenced off since time immemorial with nothing done to it would still have considerable value accrued over time as the city developed. A land value tax, on the other hand, is a tax on unimproved land plus invisible improvements. The least pure form of land value taxation is known as

graded tax, where land is assessed at a higher ratio to market value than is used in assessing structures.[4]

Seligman in his classic work explains that taxes levied on buildings are shifted as they are paid not by the landlords but by the tenants. A tax on land on the other hand reduces the market price of the land by the capitalized amount of the tax.

The concept of land value taxation is based upon the premise that it recaptures the unearned profits. The tax on land which is being held undeveloped by a speculator would be so high under this system that he will be encouarged to develop it to the best and highest use to defray the taxes. There are strong arguments in favor and against the land value taxation as a device directly physical development and capturing unearned profits.

Bryant[17] points out (p. 302) that there is no evidence that this or any other kind of change in the tax system can play more than a marginal role in directing physical development. Sydney, Australia is often pointed out as a city which has enjoyed the advantages of site value taxation for a couple of generations but it has the same sort of difficulties and problems as any other great metropolis. Pittsburgh, Pennsylvania is the site of the most signfiicant land value tax experiments in America. However, a study by Richman shows that after the tax was introduced in 1913, the tax was gradually reduced on buildings; consequently, the tax has had no important economic effects. It has not precluded blight and slum areas.

F. Transfer Taxes: A transfer tax on real estate is required to be paid at the time of transfer of property from one owner to

another. It is a flat rate tax proportional to the value of the real estate. The transfer taxes differ from capital gains tax which are based upon the change in value but resemble the concept of sales tax.

The transfer taxes are characterized by many as a mechanism to capture the unearned benefits or increase in value. However these taxes do not apply to change in value, which is really the unearned increase. A property which changed hands three times in a year at a price of $3,000 will be paying transfer tax on $3,000, three times that year -- even without any increase in property value. It is therefore more like a sales tax.

The transfer taxes were first introduced in the United States in 1765 after a similar tax in England. That they have stood so long attests to their relative political acceptability. The transfer tax has proven a significant revenue producer in several states. On the other hand, numerous proposals for using transfer taxes in California to finance open spaces acquisition and regional planning have been defeated.[4]

G. Special Capital and Real-estate Windfall Taxes (SCREWTS):[4] The key feature of SCREWTS is their tax base, which is the increase in the value of real estate between specified taxable events. Historically several attempts have been made in the United States and other countries to impose special capital and real estate windfall taxes. A chart summarizing the important features is reproduced from Hagman[4] who very eloquently analyzes the pros and cons of the SCREWTS. Some of the points are:

i) SCREWTS have not been limited to the increases in property values caused by governmental or public actions alone rather they tax

all increases in property value, or some part thereof, however caused.

ii) SCREWTS are payable on an event only such as a change in ownership of land or status of land, rather than on a regular periodic basis as in the Uthwatt proposal.

iii) SCREWTS are typically national or state taxes.

iv) SCREWTS have been controversial whenever and wherever and whatever form introduced. However none have been broad enough to end all speculation in real estate; they may have changed its nature, amount or direction, and actually increased the amount of speculation in some types of property.

v) Only a few SCREWTS were motivated by a desire to recapture windfalls more broadly. When revenue is not a goal, a tax is not a tax at all.

vi) SCREWTS are more similar to capital gains taxes than they are to capture value taxes. A capital gains tax on a sale of capital asset is taxed because the gain is considered income. To the extent that a capital gains tax applies to gains from the transfer of real estate, it does have windfall recapture features.[4] In the United States, however, capital gains have been considered taxable since the beginning of income taxation. With the exception of a modest increment recapture experiment under the reclamation laws, specific land betterment has never been recaptured in the United States.

Since 1965, experience in England, Ontario, New Zealand and Vermont (U.S.) has indicated that both can coexist, as they have in these places. One major reason why both taxes should coexist where one exists already is that while capital gains tax is applicable only

at transfers or sales, SCREWTS can be levied on events other than transfers to ensure that a portion of all windfall is recaptured. Some of these events, development, for example, are simply not applicable to other capital assets. Hagman also discusses various options to separate the two kinds of taxes.[4]

II. Land in Public Ownership

The techniques to capture the created value when the land which increased in value due to public improvements belongs in public ownership are different. The realization of a share of unearned profits from real estate in this case would depend upon whether the taking of land is within the power of the government. Under most circumstances excess condemnation beyond the highway right of way is not allowed. However, some developments in the field of supplemental condemnation and air and subsurface rights are worth looking into as devices for recapture of the created value.

The basis of acquisition of land by a public agency is eminent domain, which is defined as: the inherent power of the sovereign to take private property for public use upon payment of just compensation thereof.[18] The key word is public-use. A reasonable legislative mandate on public purpose is generally acceptable to most courts. The touchstone of the exercise of the power of eminent domain is "necessity". No private property may be taken unless there is a justifiable necessity for the taking. Of course, property may be acquired on a voluntary basis without a requisite public purpose.

In conjunction with construction of a highway, for example the specific "highway purpose" for which land may be acquired is set

forth in Michigan Compiled Laws Annotated 213.361 enumerated here:

a. property necessary for the right of way

b. material necessary for construction

c. property necessary for clear view

d. property necessary for a water course

e. abutting property necessary for storage

f. property necessary for parking

g. property necessary for air traffic

h. property necessary for construction, landscaping, parks, test areas, scenic area and look outs, and so forth.

i. non-residential properties necessary for rehabilitation or redevelopment under the Blighted Area Rehabilitation Act [MCLA 125.71 to 125.84]

j. property necessary for water or sewer systems.

The Michigan Constitution, Art. 10, §2 prohibits the government from condemning property in excess of that which is actually needed for the specified public use.

However, the government has an affirmative duty under MCLA §213.365(d) to take unused and unusable remnants:

> The right and duty to acquire and take the fee to a whole of a particular parcel of land whenever the acquisition of the portion thereof actually needed would destroy the practical value of utility of the remainder of such parcel...

As pointed out earlier, Supplemental Condemnation or excess property condemnation is possible, if the property owner requests that it be acquired on a voluntary basis. There is ample evidence that the courts have accepted such acquisition is such schemes have had their bases in either a constitutional or a statutory provision.

These provisions roughly fall in four categories:[19]

a. Supplemental condemnation essential to the successful operation of a district or the operation of a public facility.

b. Supplemental condemnation for future use and disposition of surplus property. Essentially the future expansion and use are permitted. Also permitted are temporary use of the property for income and later even to sell the land outright if not needed.

c. Protective theory of supplemental condemnation. In this case, the acquiring authority preferably should have a plan to develop the proposed excess land to protect or preserve the public use of a facility or district.

d. Remnant theory of supplemental condemnation. The acquiring authority could be permitted by the legislature to acquire the remnant portion of the required lots, otherwise not needed for the public facility.

Air Rights Utilization: With proper legislation it is possible to utilize the air rights and/or sub surface rights of the highway right-of-way for selling or leasing to prospective developers at a fee or price. This use of air space above and below the highway can contribute to a reduction in right of way acquisition costs.

However, lack of state enabling legislation remains as an obstruction to the utilization of air space in numerous states. Where comprehensive legislation has not been adopted, the highway agency may

be uncertain as to the full extent of its powers in joint development activities.

Possibilities of improvement of joint development within the air rights can be enhanced if the states take action to enact legislation on the lines of the Model Air Space Act. This Act was proposed by Dr. Robert R. Wright of the University of Oklahoma in conjunction with a committee of the Real Property, Probate and Trust Law Section of the American Bar Association. The Act defines Airspace as that space which extends from the surface of the earth upward and outward and states that it is real property.

Air rights are very expensive to utilize and high density and high land value are required to support them. A National League of Cities staff report involving a study of 54 questionnaire responses noted that 28 cities reported the existence of public or private air space projects, that 13 more reported plans to develop air space in the future, and that three cities were considering the development of air space plans.[9]

Other possibilities are Urban Renewal Areas which are essentially the blighted, deteriorated or deteriorating areas designated for thorough replanning and redevelopment. The possibility of a government acquisition of land adjacent to a highway as part of an urban renewal area and the subsequent sale of that land after the highway improvement has increased its value, suggests a method of recapturing some of the windfalls accruing from highway development. If the original acquisition was justified in terms of the prevention of the development of blighted areas or in furtherance of sound

community growth, there should be no real constitutional issues. The acquisition cannot constitutionally be based upon the sepculation of making a profit; regardless of whether the income was generated by the government's own improvement.[9]

These techniques have been derived from Ref. 6 in concept and modified to the highway situation from transit stops. These can be used after the land has been brought under public ownership.

A. Develop/Lease or Sell: The administrative authority may undertake the development of land adjacent to the highway and hold the property for lease, rental or subsequent sale. The development of various uses, of course, and especially in air rights utilization, should be in public purpose such as parking structure, institutional uses, high density or subsidized housing.

B. Hold/Lease or Sell: After fee simple interest and other development rights have been acquired, at some future date when the development of these parcels meets an appropriate public purpose,the rights of land are leased or sold to recapture the value. This will apply to ground air and subsurface rights.

C. Participation: Interest in the subject land parcels or development rights are ceded to other private or public parties for development. Under some circumstances the development entity may participate in a portion of the income stream produced.

Land Banking: Land Banking is defined rather broadly as public, or publicly authorized, acquisition of land to be held for future use to implement public land use policies. The policy of land banking generally had two objectives 1) providing a mechanism by which public agencies can direct where development can take place and the nature of that development, and 2) exerting an influence on land prices in order to keep them at "reasonable" level. However in Sweden and Netherlands, where the policy has been more successful, there is an implicit belief that landowners are not entitled to unearned increments in land values[38] and that society as a whole should share the increment in land values resulting from planning decisions. In both the countries, land banking continues to be desirable on the grounds of efficiency and equity.[38] In France also, where land banking has been an accepted national policy since 1958, the belief is that windfalls may be avoided by public purchase of sites intended for intensive development. The land banking programs in France are considered to be worthwhile and important and have been well conceived in legal and administrative terms.

In the United States, public-private ratio of land ownership is 42 percent to 58 percent; and of the public ownership, 34 percent is federal, 6 percent state and local, and 2 percent Indian. Most of the public land is remote from major urban concentrations, far from the pressure of land use change and, therefore, of limited suitability for incorporation into a land bank system. The land banking will have to be authorized by legislative appropriations.[38] Due to lack of a national land use policy, the decisions made on investments, tax investments and program aims are often inconsistent.

Strong[38] suggests that the major policy issue that must be faced is whether land banking is compatible with current American attitudes toward public land ownership and public capture of unearned increments in land value. The American Institute of Architects says in "Plan for Urban Growth" that

> We favor public acquisition and preparation of land in advance of development. We believe that the appreciating value of urbanizing land should be recycled into the cost of developing, serving and maintaining it.

The Douglas Commission (National Commission on Urban Problems) says

> Where actual purchase will result in the government's recapturing increases in land values for the public, government should deem this a legitimate function and an added incentive for direct action.

Kamm,[39] however, cautions that due to differences in tradition of public ownership of land, municipal fiscal autonomy, effectiveness of planning, secrecy of planning and central city dominance of suburbs, a simple transfer of experience from European success stories to United States may not be feasible. He points out that because the Swedish programs were closely tailored to peculiar circumstances, any American approach will have to be tailored to its own institutions.

E. Problems in Capturing the Unearned Value

Implementation of any of the techniques described in the above paragraphs or some suitable modifications of them may be dependent upon a complex set of factors such as the prevalent political philosophy, social traditions, attitudes towards land ownership and

right to profits. Some of the major issues are discussed in the following pages.

1. Private and public interests: Every society must have its own equilibrium between private rights and social responsibilities. There is a broad zone of interaction between private and public interests. Even within the general framework of Western democracy, the line of demarcation within this broad zone varies enormously as between Sweden and Texas. In the Netherlands, for example, it is normal and acceptable for the public authorities to intervene in the use and disposition of land, to an extent that would be considered unthinkable in the United States -- yet both are democratic countries in the generally accepted sense of that term. The point is, of course, that the mental climate in each country is the product of history and conditions.[17] In some other nations, the accumulation of the benefits solely by private property owners is looked upon with disfavor, while in the United States this is the standard practice.[9] The 'rules' of the society affecting private property, which either accept or deny the right of the private owner to be lucky, play an extremely important role in capture of benefits. Sloane[9] says further:

> While there are police power restrictions on how property may be used, there are few restrictions on how much an owner can profit from sale of his property. While property can be "condemned" by a public authority and purchases at "fair market value" for a public purpose, most state legislatures have restricted the use of this power for programs and purposes that are clearly public ...as they involve public benefits coming from something that happens on private property.

2. Legislative restraints: The transportation authorities do not have the power to acquire any land outside of that which is required for the transportation facility. The prime role of the transportation agencies has been recognized to be just that and not land development or real estate management. It is widely recognized, however, that plans and actions of the transportation agencies play the key role in determining when, if, and how the benefits are manifested even if the agency does not play the prime role in owning or controlling the benefitted land.[9]

3. Local political dynamics: The benefits and the created values are usually area-specific and fall within the domain of local governments. If the local government favors private development and economic and tax base expansion, the public benefits by way of increased tax revenues may be the farthest the local government may like to go. The local political and power dynamics play the most important role in realization of benefits (as they very often do in the location of a specific highway facility).[9]

4. Some unanswered questions: Besides the above difficulties, there are questions in the minds of people, which do not have definite answers. This is partly because of lack of research and experience and partly because of fear of the unknown. Such a state evidently is not very reassuring to those who are presently against any concept of capture of unearned profits. One question is of incidence and is very important: Who ultimately pays the windfall profit tax? The law in each case designates the payer of the tax, the seller for example, in this situation. However, according to

Hagman[4], the economic incidence of a tax may be quite different from its legal incidence. If the unearned increment tax gets passed forward to the new home buyers or backward to the developers and construction workers, it is no longer an unearned increment levy -- for the ethical nexus is lost. The land owner would then be able to keep his unearned increment and the public's effort to recapture it would victimize the hapless bystanders.[4] There are no clear cut answers to this question. The research is contradictory, at best, to indicate whether the taxes have resulted in increase of property values.

The other question is how the system can be designed to be the most equitable and efficient both at the same time. Again Hagman[4] dwells upon both the concepts and say that efficiency is the easier of the two words to define; one can be almost scientific about it. Equity, on the other hand, is a slippery conceptl the thinking of social scientists, lawyers, planners and politicians about equity is often sloppy. But, he later says that one should not expect much more of contemporary efficiency and equity analysis. Even the best of it does not yield really convincing answers to very many difficult public policy questions.

However, there is an optimistic trend developing here in the United States which may be a good sign of the things to come, that is, the attitude towards land management. The gradual strengthening and acceptance of zoning and other "police power" measures, the process of review of development plans by local planning commissions, and in recent years, the rise in number of legislative acts on coastal zone protection, and restrictions on wetland development, are signs

that indicate that land is being recognized as a critical public resource. Even in the United States, the management of private land and its development is becoming an accepted public-private negotiation process. In other words, the decision on what a private owner can do on his own land is no longer totally in his own hands but is subject to the constraints of public interest.

CHAPTER IV

METHODOLOGY

A. Process

The objective of the research, as stated earlier, is the determination of the impact of value-capture policy on the selection of transportation facility alignments. The analysis was carried out in the following sequence:

1. Definition of the corridor: The Corridor is the strip of land wide enough to include all the feasible alternatives and the zone of impact of the alternatives. The width of the corridor is based on the local conditions. The width of the corridor can be different in different sections depending upon the alignments and zones of impact.

2. Identification of alignment alternatives: Once the corridor is generally defined, a conceptual set of alternative alignments is drawn for a preliminary evaluation. While the list may include every possible alternate, a detailed technical evaluation should be conducted for a relatively more practical list of alternatives. Again, local factors, community goals, public reaction, environmental social and economic impacts are considered in this evaluation.

3. Identification of "Soft" areas of development: The land adjacent to each of the alignments can be broadly classified as "hard" or "soft" depending upon the potential for change in its usage.

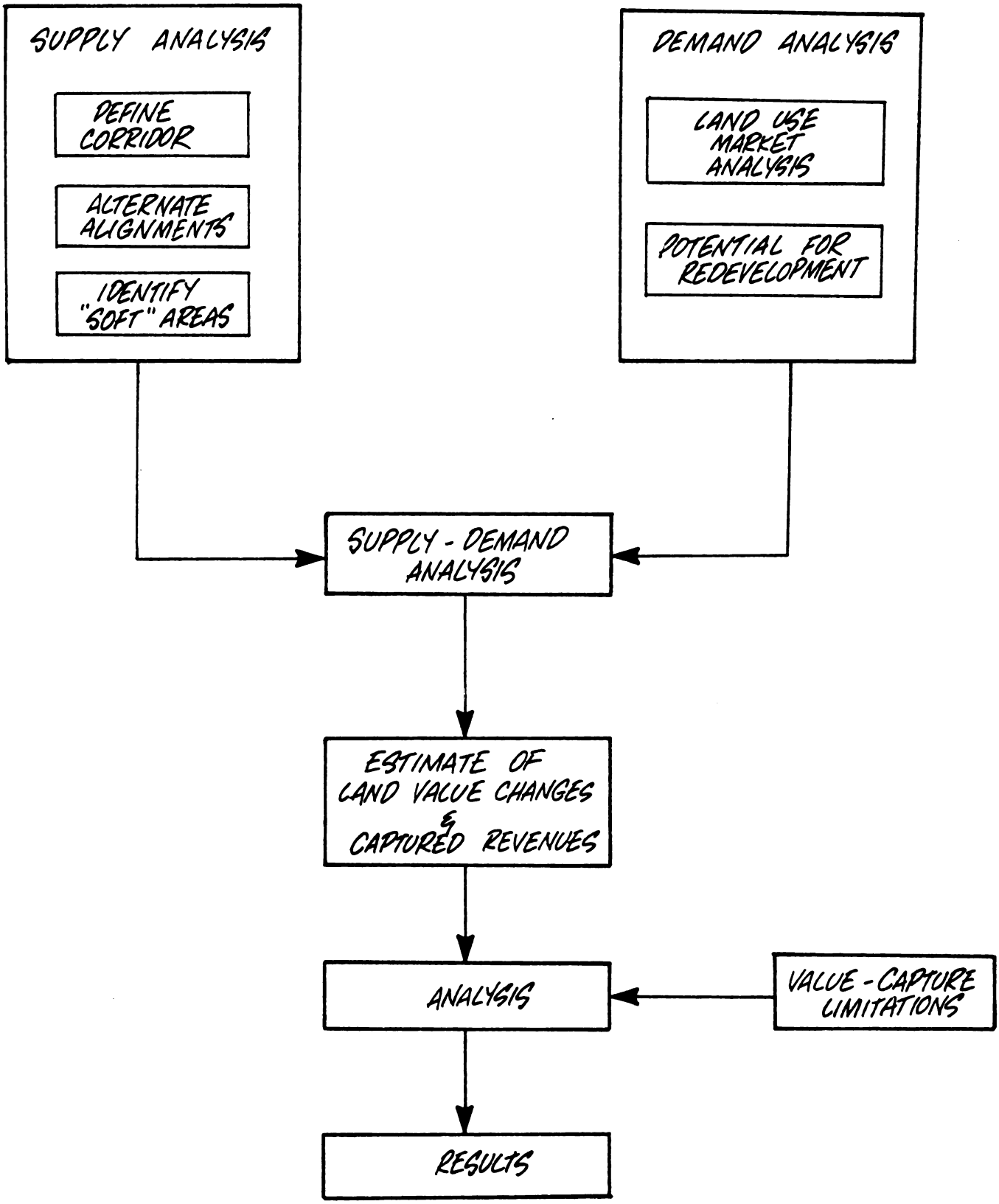


FIG. 2 ANALYSIS PROCESS FOR STUDY

For example, a completely developed area with no vacant parcels of land and committed by the local government for continuation in its existing use can be termed as "hard", while another area with several vacant parcels of land and/or deteriorating in its existing land use may have relatively more potential for development and hence can be called "soft".

4. Land use market analysis: A market study is conducted to determine the demand for various land uses such as commercial, industrial, office or residential. This study shall be conducted from top-down that is from a wider and regional level to the corridor level. Care shall be exercised not to examine the corridor in isolation from the rest of the region but a part of it. The end product shall be the estimated market demand for the various developments within the corridor. A time horizon can be assigned to such a study.

5. Potential for redevelopment: For each of the soft areas, based upon the market analysis, a set of land development options is assigned. This is done on the basis of land area, location, accessibility, local policies and similar factors.

6. Supply-demand analysis: At this stage, there should be a list of soft areas with various developmental possibilities associated with each alignment alternative. The soft areas and the developmental possibilities for them may in many cases be the same for several or all the alignments.

7. Value Capture options: A study of various techniques available that can be applied in the area of study needs to be made. Enabling legislation is an extremely important factor. The array of

techniques described in Chapter III needs to be evaluated for applications, possibly with modifications tailored to suit the local situations.

8. Estimation of property value changes and captured revenues: The present assessed values can be easily obtained from the assessors records. If the records are not current, appropriate multipliers can be used based upon past sales to determine the realistic value of the property "before" the impact of the alignment. Any impact on the property value due to some other public improvement needs to be added to the value to obtain the base value.

As a result of the improvement in the transportation facility such as construction of a highway or transit line the soft areas identified in the above steps are likely to attract and thus benefit by the new land developments for which market demand has been established.

B. Changes in Property Values and Captured Revenues

The most important entity in this research is the change introduced or estimated to be introduced by the highway alignment. Unless there is an element of change, created by the alignment, value capture is not possible. Even if there is a change in the positive direction created by the alignment, unless the extent of the change exceeds a minimum threshold to be defined, value capture may not be worth the effort.

If P_1 and P_2 represent the value of a property before and after the impact of the alignment alternate A_k is considered, the essential conditions that must be satisfied to capture a part of the

increase are:

i) $(P_2 - P_1) > 0$

ii) $(P_2 - P_1) > \Phi$, which is a minimum threshold change in property value that would be able to impact the alignment selection. In other words, the essential condition is

$$h_k = (P_2 - P_1) > \Phi > 0$$

where h is the change in property value due to A_k. Generally, it would be more than one property, say n, involved for which the change in value is being considered for potential recapture. In that case, the condition becomes,

$$H_k = \sum_{1}^{n} (P_2 - P_1) > \Phi > 0$$

where H is the sum of the changes in property values due to an alignment A_k.

In case the change in value is expected to occur over a finite period of time (t) instead of in one step and $H_k = f(t)$, the condition becomes

$$H'_k = \int_0^t \{\sum_{1}^{n} (P_2 - P_1)\}dt > \Phi' > 0,$$

where dt is a small interval of time and Φ' is the changed threshold and H' the total change due to alignment A_k in property values over the same period of time t.

So far, the development of the conditions have taken into account the change brought about by one alignment A_k. Given, that

the change in property values due to one alternate alignment, either in one step or over a period of time t is more than a certain minimum Φ, the question now becomes: how should the different values of the H_k for $k = 1,2.3,...$ be utilized to effect the decision on selection of one of the alignments A_k.

We have thus far generated one H_k for every A_k. These values can be plotted on a graph which would look like the one in Figure 3.

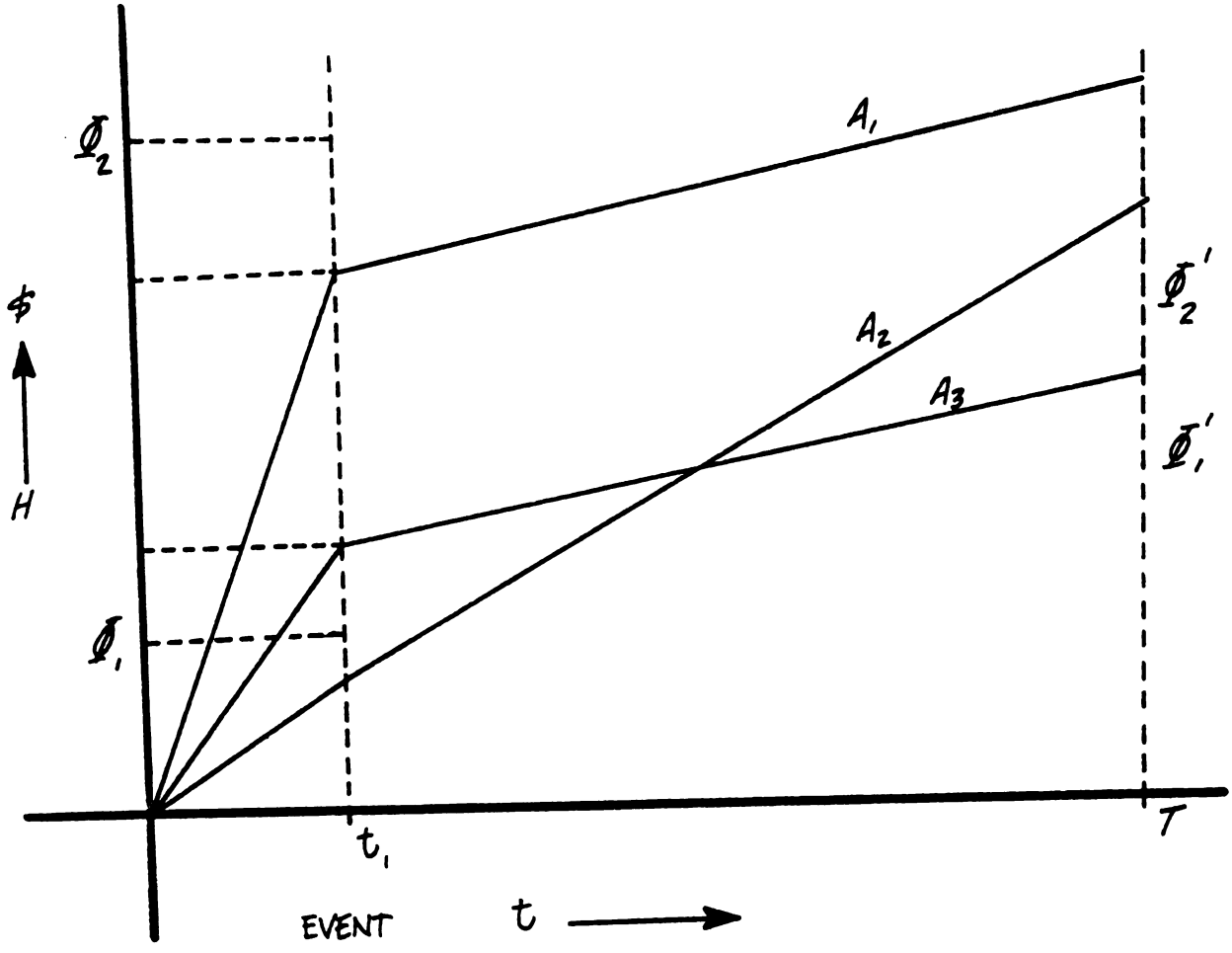


FIG. 3 GRAPHICAL REPRESENTATION OF H, THE CHANGE IN PROPERTY VALUES DUE TO VARIOUS ALIGNMENT ALTERNATIVES A_k (=1,2,3)

In the graph, at $t = 0$ change in property values due to the alignment A_k is zero. It is assumed that H_k the "change" is a linear function of t.

At $t = t_1$, the first change in the property values is anticipated and estimated. This event may be the selection of the alignment with a firm commitment for construction. Intuitively, if the commitment for construction is uncertain, there would be no change due to the alignment. However, uncertainty is often the most fertile environment for speculation, the effect on property values may start even under those situations.

$t = T$, is the period over which the change in property values is proposed to be estimated.

The different lines represent the plots of $H = f(t)$ for different alignment alternates A_1, A_2 and A_3.

Φ represents the minimum threshold limit established, which must be exceeded for the consideration of value capture as a factor for evaluation of alignment alternates. Φ_1' and Φ_2' are the arbitrary thresholds at time $t = T$ and Φ_1 and Φ_2 at time $t = t_1$.

In the illustration represented on the graph, at $t = t_1$, alignment A_2 falls short of the minimum change Φ_1 in property value. In such a case, either the decision makers may lower Φ or assign a relatively lower score for this factor in the evaluation process. However, if the threshold was set at Φ_2, more of the alignments is able to generate enough change in property values and the factor for value capture would not be worth consideration in the evaluation process.

An interesting, but hypothetical case could arise, if the change in values H is a different function of t for an alignment, for example, A_3 than for A_2. If that happens, the alignment A_2 which was the lowest in score at time $t = t_1$ may score higher at a later time $t = T$ over a period $(T - t_1)$.

C. Estimation of Revenues

The preceding discussion dealt with the expected change in property values created by an alignment. In reality, the main thrust of the research is one step further then the estimated change and that is: the estimated revenues that can be captured from the change in values.

Several factors affect the change in values between the times they are created and captured.

Inflation: The argument for capture of the values created by an alignment (or by a public improvement at expenses paid by the public) is that the private owner otherwise would be entitled to profits he did not earn. However, the alignment or the public improvement did not create the additional value if it was due to general inflation. The increase is purely due to inflationary reasons. It will be unfair to capture any part of the increase, therefore, which the alignment did not create in the first place.

Risk protection: An individual, who purchased property at a location which happened to be adjacent to a highway alignment several years later was holding on to this property as an investment. This action was evidently totally at his own risk. The highway alignment or a public improvement may never have been selected in the

vicinity and the investment of the individual may never have brought those high returns. Moreover, a land development in the vicinity with negative impacts could have resulted in a substantial loss in value for the property. The owner, during all this time was in fact paying some price to cover the risk to which he is entitled in all fairness. It could be 25 percent, 50 percent or any other such percentage of the profits as decided by the appropriate authority.

Administrative cost of value capture: The expense involved in setting up a mechanism, support staff, probably litigation and additional unforeseen activities are included in this item. This cost may be negligible and can be ignored if so desired after the initial time and effort involved to set up the mechanism.

Then, the anticipated revenues R_k can be represented by the following expression for an alignment A_k and total number of properties involved for the alignment to be n.

$$R_k = [\sum_{1}^{n} \{P_2 - (H - \frac{r}{100})P_1\}](1 - \frac{a}{100})(1 - \frac{g}{100})$$

where r = % rate of inflation

a = % risk protection allowed

g = % administrative cost for the value capture mechanism

The formula can be used in practice in a rather simple set up illustrated below:

Project Name:

Assume inflation rate $r = \%$; $(1 + \frac{r}{100}) = \alpha$, say

Risk protection factor $a = \%$; $(1 - \frac{a}{100})$

Administrative cost factor $g = \%$; $(1 - \frac{g}{100})$

$(1 - \frac{a}{100}) \times (1 - \frac{g}{100}) = \beta$, say.

The formula for R_k can be rewritten as

$$R_k = (\sum_{1}^{n} P_2 - \alpha \sum_{1}^{n} P_1)\beta$$

Alignment A_1			Alignment A_2			Alignment A_3		
Property #	P_1	P_2	Property #	P_1	P_2	Property #	P_1	P_2
Sum	ΣP_1	ΣP_2		ΣP_1	ΣP_2		ΣP_1	ΣP_2
$\Sigma P_2 - \alpha \Sigma P_1 =$ $(\Sigma P_2 - \alpha \Sigma P_1)\beta =$ $= R_1$			$\Sigma P_2 - \alpha \Sigma P_1 =$ $(\Sigma P_2 - \alpha \Sigma P_1)\beta =$ $= R_2$			$\Sigma P_2 - \alpha \Sigma P_1 =$ $(\Sigma P_2 - \alpha \Sigma P_1)\beta =$ $= R_3$		

Figure 4. Computation of Estimated Revenues by Value Capture

Determination of P_1: P_1 has been defined earlier to be the base price -- before the impact of alignment is considered. This is the base, computed from the assessed value of the property for its highest and best use on the day before the alignment decision is announced. Subsequent changes in property values will be measured with P_1 as

the datum. Recent appraisals of the property if available and acceptable to the administration would be a better indication of P_1 than the assessment for tax purposes because the assessments, usually lag behind the real market value by several years.

An interesting but complicated case could be considered where the subject property has appreciated in value due to some public improvement other than the transportation facility alignment. The base price in such a case would be the appreciated price due to those public improvements.

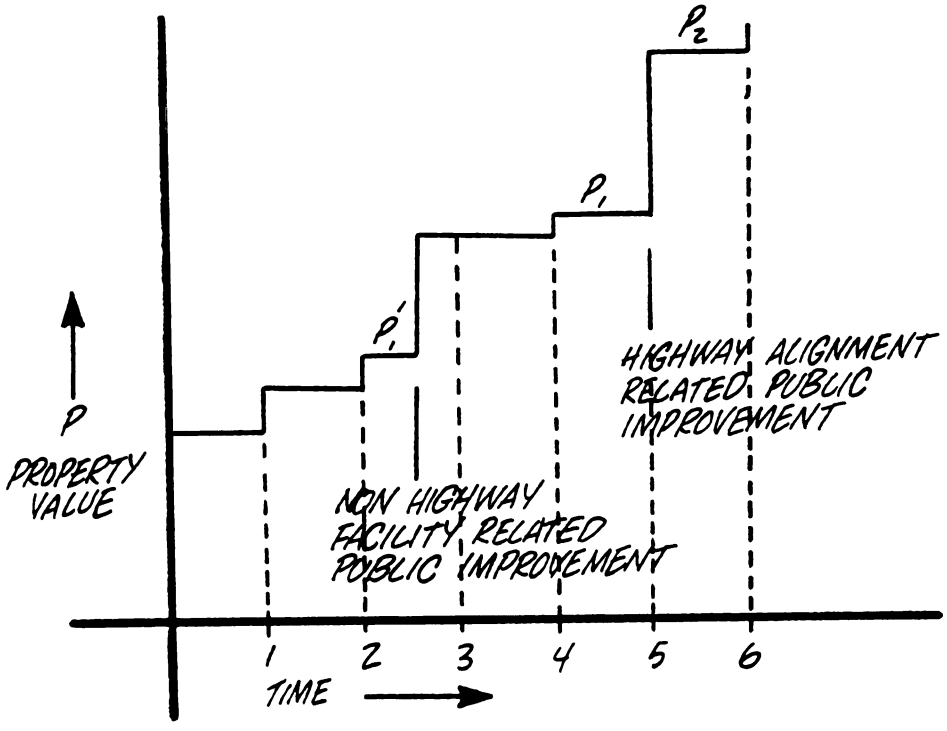


FIG. 5 CHANGE IN PROPERTY VALUE WITH PUBLIC IMPROVEMENT (THE CASE OF A POSSIBLE DECLINE IN VALUE NOT SHOWN)

Determination of P_2: P_2 is far more complicated and difficult to determine than P_1 or any other factor in the formula. As previously listed in Chapter IV, there are numerous factors which affect the property

values. Some additional factors[4] will be:

a) permissive zoning and market demand

b) land use relationship to CBD, public transportation, parks, landfills, shopping centers, factories, employment centers

c) open space policy of the city

d) boundary, point linear or ubiguitous externalities

e) land assemblage possibilities

f) interaction with the city's economy

g) interaction with contiguous cities

h) time of development and whether there is a partial or full moratorium

i) interest rates

j) prevalent system of assessment

One of the difficulties encountered in determining assessed value is a measurement of the increase in property value of unsolved and probably also undeveloped parcel due to a specific future action such as building a highway. This is particularly true for one of a kind downtown corner lots near freeway off ramps, transit stops, or strategic important public and private buildings.

The appraisal would be much more reliable if there were several comparable sales, which are generally not available. Hagman[4] points out that the quality of assessment depends on the political and other motivation of the appraiser or assessor. He says that in many jurisdictions, property tax assessments for example, are reportedly very low on at least some kinds of property because local

politics deem that it should be so. The appraisers in general use one or more of the following approaches to assess the property values:

a) market comparison method

b) capitalization of income method

c) replacement cost method

d) regression analysis

The selection of a method would depend upon the resources and data available and the degree of accuracy desired. Any standard text book on appraisal would provide details of the techniques listed above.

A compilation of results of some important studies conducted in various geographical areas illustrates a wide range of $(P_2 - P_1)$ due to highway alignments. Evidently there are special factors in each case which make the range of increase in property value so wide.

Gabmel et al.[29] in their study of the effects of I-495 in Washington, D.C. estimate that the highway induced benefits that property owners realized in North Springfield, Virginia totaled about $5 million compared to the adverse environmental impacts due to the highway of only $303,000.

Rams[22] describes the study of the impact of a new subway in New York where the increase in property values above 135th Street was $39.2 million while the cost of building the subway was $7.3 million or about 15 percent of the actual rise caused by the line. Similarly, the increase in the Bronx land values of more than $30 million was caused by subway construction costing $5.7 million.

Numerous additional examples can be cited to indicate the wide range of the impact of highway and other transportation facilities' alignments on property values.

Table 2. Impact of Highway Alignments on Property Values

Project	Source	Increase in Property Value	Any Comments
US-167 Louisiana	Rives et al. Reference 25	8.28%, 36%, 146%, 350% per year	excluding the general inflation increase in values
I-94, Michigan	Mich. Dept. of Highways, Ref. 27	Service Stations 3232% for major city interchange 2089% secondary land and city interchange 2179% small town interchange 9740% rural interchange Other uses 424% for major city interchange 115% for secondary and city interchange 104% for small town interchange 90% for rural interchange Note: 1) some of the sites sold up to $170,000 per acre 2) these increases took place between 1959 and 19 3) the increments probably include inflation and general increase also as no mention was found to that effect.	
Northeast expressway Atlanta, Georgia	James H. Lemly Ref. 23	From a decline of 4.5% in one area to an increase ranging from 113.0% to 159.2% in the other three areas.	During the period of 1941-56. over a selected control area, approximately 44% showed a rate of increase in land value from 12% to 1370%. The rest showed a decline from 194 17%. These numbers are exclusive of inflation.

Table 2 (continued)

Project	Source	Increase in Property Value	Any Comments
Highway improvements in Los Angeles, Cal.; Atlanta, Ga.; Dallas, Houston and San Antonio, Texas	Bureau of Public Roads, Ref. 28	Median annual percentage changes in property values: 17% for industrial 10.5% for commercial 8.5% for residential 12.5% for unimproved land	
I-80 Bogata, N.J. I-95 Rosedale, MD I-695 and I-83 Towson, MD I-495, North Springfield, VA	FHWA, Ref. 21	+9% (one time effect)	
I-45 Dallas, Texas	FHWA, Ref. 21	+10.6% over 17 years or 6% per year for unimproved land	

9. Analysis: The analysis will consist of evaluation of value capture policy on the different alignments. The end product will be a determination of the additional value that one alignment can capture over another alignment.

The analysis, in the case study described in the next chapter assumes that the impact of land use development, size and geometry of the parcels, and the distance of the parcels of land in "soft" areas from the alignment on the change in property values is negligible. However, as demonstrated and discussed in that chapter, these factors could have an impact on the property values and hence the captured revenues due to an alignment.

The complete process is shown in the flow chart in Figure 2.

D. Introduction of the Time Dimension

In the analysis discussed in the preceding paragraphs, the value that can be captured in one step for various alignments has been formulated. However, one may desire to capture the value over a given period of time, say t years. The static case discussed above would not permit one to do that. It is necessary to consider the time factor.

Let the following notation be defined for two sets of developable properties A and B such that the set A is related to alignment 1 and set B to another alignment 2.

Δ = difference in the base values of the properties A and B, say $B > A$

R = the value required to be captured over a given time t. This, usually will be the difference in the total cost

of the two alignments 1 and 2, including acquisition of right-of-way, relocation and construction costs. The amount R, expressed in dollars is the total value that is required to be captured exclusive of the factors of inflation and risk protection discussed earlier in this chapter.

Q_1 = the slope of the line for the set A on the value-time graph, expressed in percent per year

Q_2 = the slope of the line for the set B on the value-time graph expressed in percent at the end of time t

P = base value of property set A.

The problem can be stated thus:

Given: P, Δ, R, Q_1; find Q_2 at a desired time t.

In other words, given the base values of the sets of properties related to alignments #1 and #2, and the amount that needs to be captured to make #2 preferred to #1, at the end of a desired time period t years, can be estimate the required increase in the value of the set of properties A?

The slopes Q_1 and Q_2 are expressed in percentage at the end of the time period given. If Q_1 = 10%, it means an increase of 10% each year.

Two cases are generally possible. Case I, when $\Delta = 0$, i.e. the property values related to both the alignments being compared are the same. This is likely to happen in the situation where the alignments are close enough to impact either the same or similar properties

equally. The differences in the property values due to permissible land use, size and geometry of the parcels and distance of properties from the alignments, in such a case is negligible, or A = B in value.

Case II, when $\Delta \neq 0$, i.e. when there is a difference in property values of the sets A and B equal to Δ; B > A in value.

The expressions for both the cases are as follows:

Case I, $\Delta = 0$,

$$Q_2 = \frac{R}{P} + Q_1 t = \frac{R + Q_1 Pt}{P}$$

Case II, $\Delta \neq 0$

$$Q_2 = \frac{(R - \Delta) + Q_1 Pt}{(P + \Delta)}$$

A special case can arise for the situation $Q_1 = 0$ when the values of property in set A are not expected to increase due to saturation of development in that area. Thus

Case IA, $\Delta = 0$, $Q_1 = 0$

$$Q_2 = \frac{R}{p} \; ; \quad \text{and}$$

Case IIA, $\Delta \neq 0$, $Q_1 = 0$

$$Q_2 = \frac{(R - \Delta)}{(P + \Delta)}$$

Tables 3 through 10 have been constructed with assumed values of the variables for both the cases and subcases. Also, geographical representation in Figures 6 to 9 for each of the four situations have been shown.

From the tables, values of Q_2, can be read in percentage at the end of the time t. It can be seen that in several cases, an

increase of several thousand percent over the base price is required.

Locus of Q_2: It can be seen from the graphs that the locus of Q_2 points is always a line parallel to Q_1 line and at a distance equal to R.

Table 3. Values of $Q_2(\%)$ with $\Delta = 0$, $P = 50{,}000$. Formula: $Q_2 = \frac{R}{P} + Q_1 t$

Q_1	t (yrs.)	R: $50,000 R/P = 0.1	$100,000 R/P = 0.2	$500,000 R/P = 1.0	$1,000,000 R/P = 2.0	$2,000,000 R/P = 4.0
0.1	1	110	210	1010	2010	4010
	2	120	220	1020	2020	4020
	5	150	250	1025	2050	4050
	10	200	300	1100	2100	4100
0.2	1	120	220	1020	2020	4020
	2	140	240	1040	2040	4040
	5	200	300	1100	2100	4100
	10	300	400	1200	2200	4200
0.5	1	150	250	1050	2050	4050
	2	200	300	1100	2100	4100
	5	350	450	1250	2250	4250
	10	600	700	1500	2500	4500
1.0	1	200	300	1100	2100	4100
	2	300	400	1200	2200	4200
	5	600	700	1500	2500	4500
	10	1100	1200	2000	3000	5000
2.0	1	300	400	1200	2200	4200
	2	500	600	1400	2400	4400
	5	1100	1200	2000	3000	4000
	10	2100	2200	3000	4000	6000

Note: In all these tables, Q_2 is the total required % increase in P, at the end of t years.

Table 4. Values of Q_2 (%) with $\Delta = 0$; P = \$500,000. Formula $Q_2 = \frac{R}{P} + Q_1 t$

Q_1	t	$Q_1 t$	R: \$50,000 R/P = 0.1	\$100,000 R/P = 0.2	\$500,000 R/P = 1.0	\$1,000,000 R/P = 2.0	\$2,000,000 R/P = 4.0
0.1	1	0.1	20	30	110	210	410
	2	0.2	30	40	120	220	420
	5	0.5	60	70	150	250	450
	10	1.0	110	120	200	300	500
0.2	1	0.2	30	40	120	220	420
	2	0.4	50	60	140	240	440
	5	1.0	110	120	200	300	500
	10	2.0	210	220	300	400	600
0.5	1	0.5	60	70	150	250	450
	2	1.0	110	120	200	300	500
	5	2.5	260	270	350	450	650
	10	5.0	510	520	600	700	900
1.0	1	1.0	110	120	200	300	500
	2	2.0	210	220	300	400	600
	5	5.0	510	520	600	700	900
	10	10.0	1010	1020	1100	1200	1400
2.0	1	2.0	210	220	300	400	600
	2	4.0	410	420	500	600	800
	5	10.0	1010	1020	1100	1200	1400
	10	20.0	2010	2020	2100	2200	2400

Table 5. Values of Q_2 (%) with $\Delta = 0$; P = \$100,000. Formula $Q_2 = \frac{R}{P} + Q_1 t$.

Q_1	t	$Q_1 t$	R \$50,000 R/P = 0.5	\$100,000 R/P = 1.0	\$500,000 R/P = 5.0	\$1,000,000 R/P = 10.0	\$2,000,000 R/P = 20.0
0.1	1	0.1	60	110	510	1010	2010
	2	0.2	70	120	520	1020	2020
	5	0.5	100	150	550	1050	2050
	10	1.0	150	200	600	1100	2100
0.2	1	0.2	70	120	520	1020	2020
	2	0.4	90	140	540	1040	2040
	5	1.0	150	200	600	1100	2100
	10	2.0	250	300	700	1200	2200
0.5	1	0.5	100	150	550	1050	2050
	2	1.0	150	200	600	1100	2100
	5	2.5	300	340	750	1250	2250
	10	5.0	550	600	1000	1500	2500
1.0	1	1.0	150	200	600	1100	2100
	2	2.0	250	300	700	1200	2200
	5	5.0	550	600	1000	1500	2500
	10	10.0	1050	1100	1500	2000	3000
2.0	1	2.0	250	300	700	1200	2200
	2	4.0	450	500	900	1400	2400
	5	10.0	1050	1100	1500	2000	3000
	10	20.0	2050	2100	2500	3000	4000

Table 6. Values of Q_2 (%) with Δ = \$10,000, P = \$25,000. Formula $Q_2 = [\frac{R - \Delta}{P + \Delta} + \frac{Q_1 Pt}{P + \Delta}]$

			R				
Q_1	t	Q_1Pt	\$20,000 (R-Δ)=10,000	\$50,000 (R-Δ)=40,000	\$100,000 (R-Δ)=90,000	\$500,000 (R-Δ)=490,000	\$1,000,000 (R-Δ)=990,000
0.1	1	2,500	36	121	264	1407	2835
	2	5,000	43	129	271	1414	2842
	5	12,500	64	150	293	1436	2864
	10	25,000	100	186	329	1471	2900
0.2	1	5,000	43	129	271	1414	2842
	2	10,000	57	143	286	1426	2857
	5	25,000	100	186	329	1471	2900
	10	50,000	171	257	400	1543	2971
0.5	1	12,500	64	150	293	1436	2864
	2	25,000	100	186	329	1471	2900
	5	62,500	207	293	436	1579	3007
	10	125,000	386	471	614	1757	3185
1.0	1	25,000	100	186	329	1471	2900
	2	50,000	171	257	400	1543	2971
	5	125,000	386	471	614	1757	3185
	10	250,000	743	829	971	2114	3543
2.0	1	50,000	171	257	400	1543	2971
	2	100,000	314	400	543	1686	3114
	5	250,000	743	829	971	2114	3543
	10	500,000	1457	1543	1686	2826	4257

Table 7. Values of Q_2 with $\Delta = 50{,}000$, $P = 250{,}000$. Formula $Q_2 = \frac{R - \Delta}{P + \Delta} + Q_1 Pt$.

Q_1	t	Q_1Pt	R: \$50,000 (R-Δ)=0	\$100,000 (R-Δ)=50,000	\$500,000 (R-Δ)=450,000	\$1,000,000 (R-Δ)=950,000	\$2,000,000 (R-Δ)=1,950,000
0.1	1	25,000	83	25	158	325	658
	2	50,000	166	33	166	33	66
	5	125,000	415	58.3	191	358	691
	10	250,000	833	100	233	400	733
0.2	1	50,000	166	33	166	333	666
	2	100,000	332	50	183	350	683
	5	250,000	833	100	233	400	733
	10	500,000	166	183.3	316.6	483.3	816.6
0.5	1	125,000	415	58.3	191	358	691
	2	250,000	833	100	233	400	733
	5	625,000	208.3	225	358	525	858
	10	1,250,000	416	433	566.6	733	1066.6
1.0	1	250,000	83.3	100	233	400	733
	2	500,000	166.6	183.3	316.6	483.3	816.6
	5	1,250,000	416	433	566.6	733	1066.6
	10	2,500,000	833	850	983.3	1150	1483
2.0	1	500,000	166	183	316	483	816
	2	1,000,000	333	350	483	650	983
	5	2,500,000	833	850	983	1150	1483
	10	5,000,000	1666	1683	1816	1983	2316

Table 8. Values of Q_2 (%) with Δ = \$250,000, P = \$250,000. Formula $Q_2 = \frac{(R - \Delta) + Q_1Pt}{P + \Delta}$.

Q_1	t	Q_1Pt	R			
			\$200,000 R-Δ=(-)50,000	\$500,000 R-Δ=250,000	\$1,000,000 R-Δ=750,000	\$2,000,000 R-Δ=1,750,000
0.1	1	25,000	-5	55	155	355
	2	50,000	0	60	160	360
	5	125,000	15	75	175	375
	10	250,000	40	100	200	400
0.2	1	50,000	0	60	160	360
	2	100,000	10	70	170	370
	5	250,000	40	100	200	400
	10	500,000	90	150	250	450
0.5	1	125,000	15	75	175	375
	2	250,000	40	100	200	400
	5	625,000	115	175	275	475
	10	1,250,000	240	300	400	600
1.0	1	250,000	40	100	200	400
	2	500,000	90	150	250	450
	5	1,250,000	240	300	400	600
	10	2,500,000	490	550	650	850
2.0	1	500,000	90	150	250	450
	2	1,000,000	190	250	350	550
	5	2,500,000	490	550	650	850
	10	5,000,000	990	1050	1150	1350

Table 9. Values of Q_2 with $Q_1 = 0$ when $\Delta = 0$, $P = 100{,}000$. Formula $Q_2 = \frac{R}{P}$.

t	R 50,000	100,000	500,000	1,000,000	2,000,000
1	50	100	500	1000	2000
2	50	100	500	1000	2000
5	50	100	500	1000	2000
10	50	100	500	1000	2000

Table 10. Values of Q_2 with $Q_1 = 0$ when $\Delta = 50{,}000$, $P = 100{,}000$. Formula $Q_2 = \frac{R - \Delta}{P + \Delta}$.

t	R 50,000	100,000	500,000	1,000,000	2,000,000
1	0	33.3	300	633	1300
2	0	33.3	300	633	1300
5	0	33.3	300	633	1300
10	0	33.3	300	633	1300

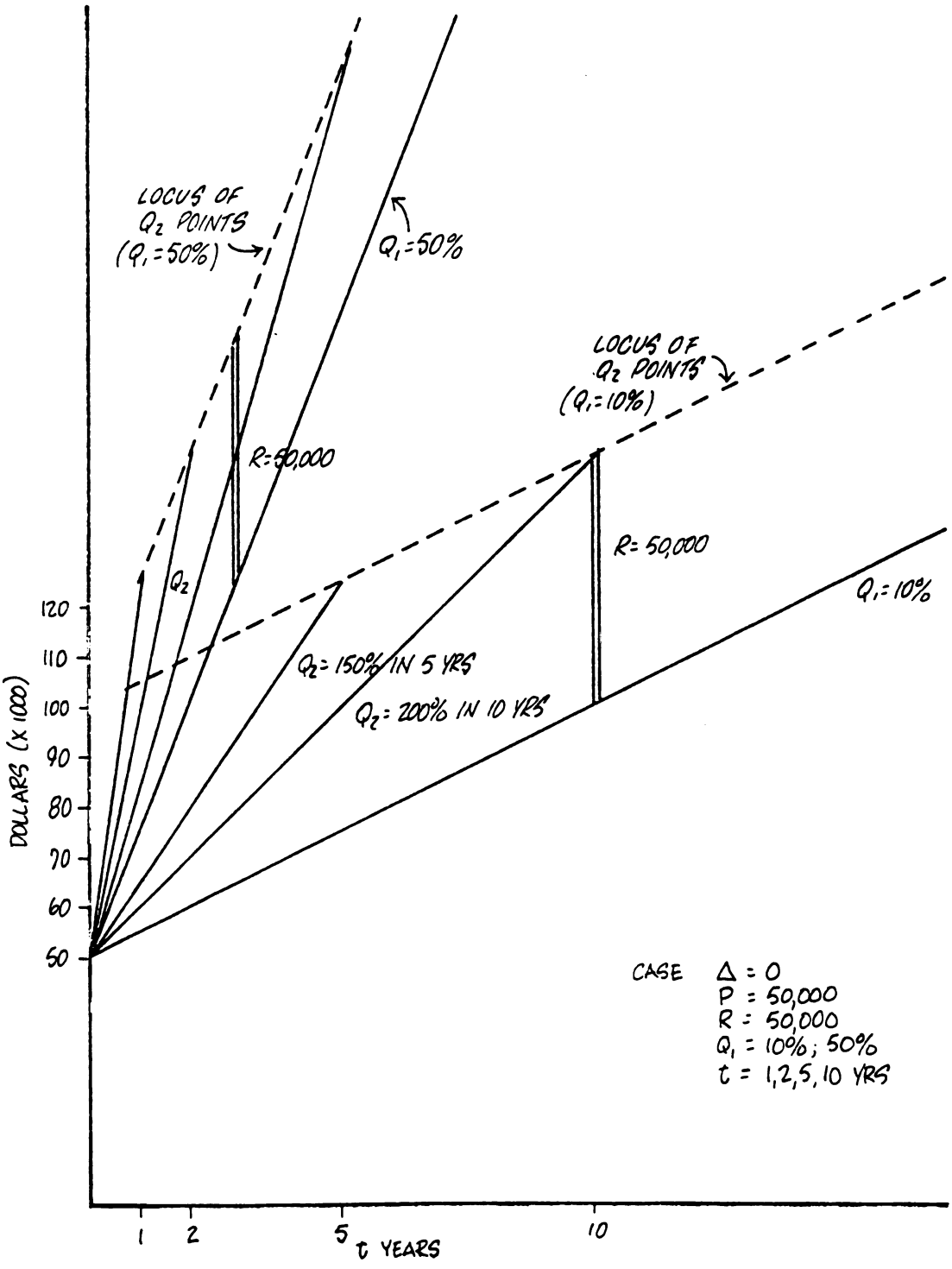


Figure 6. Graphical Representation of Table 3.

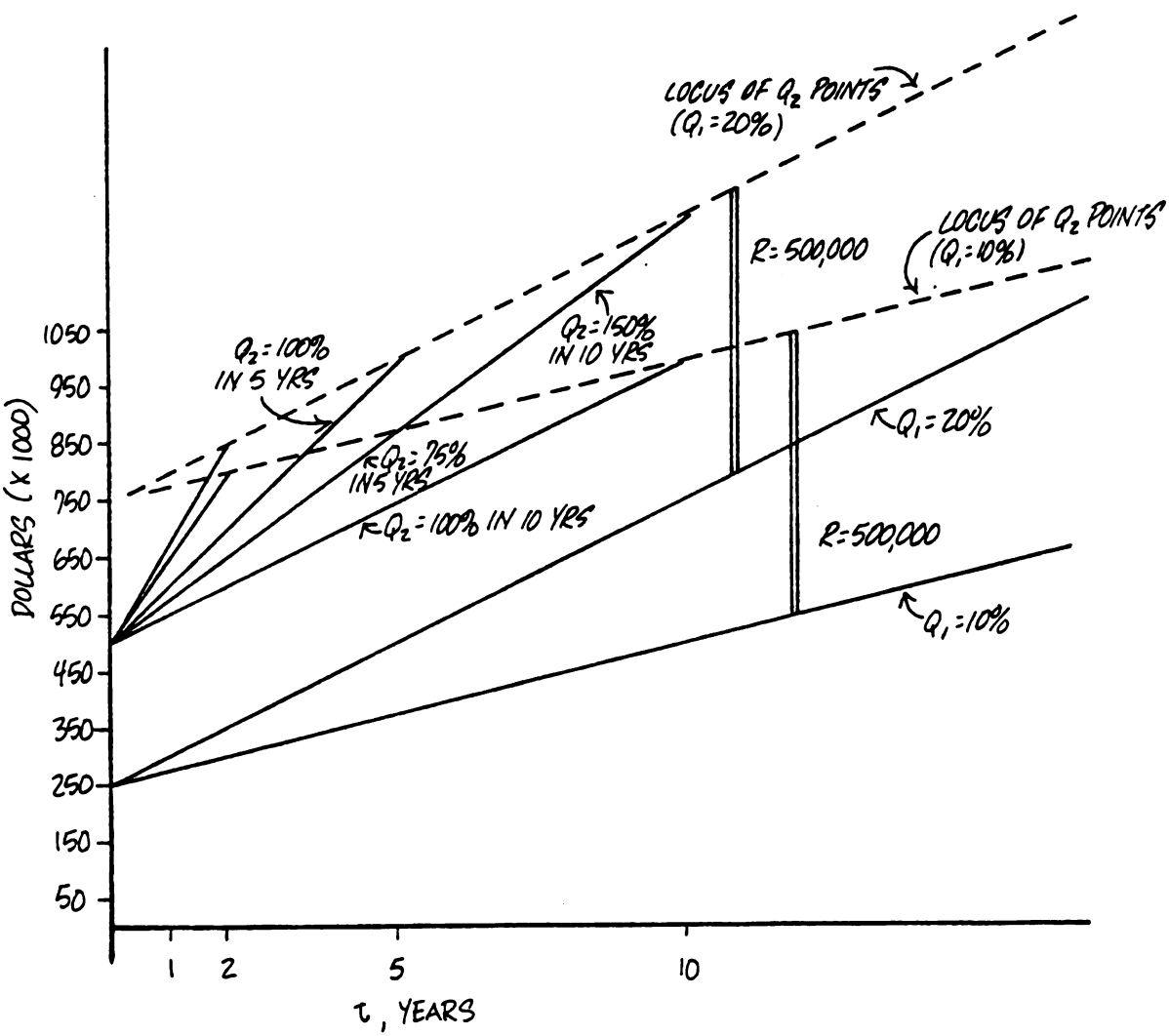


Figure 7. Graphical Representation of Table 8.

CASE $\Delta = 0$
$P = 100{,}000$
$R = 50{,}000 ; 100{,}000$
$Q_1 = 0\%$
$\tau = 1, 2, 5, 10$ YRS

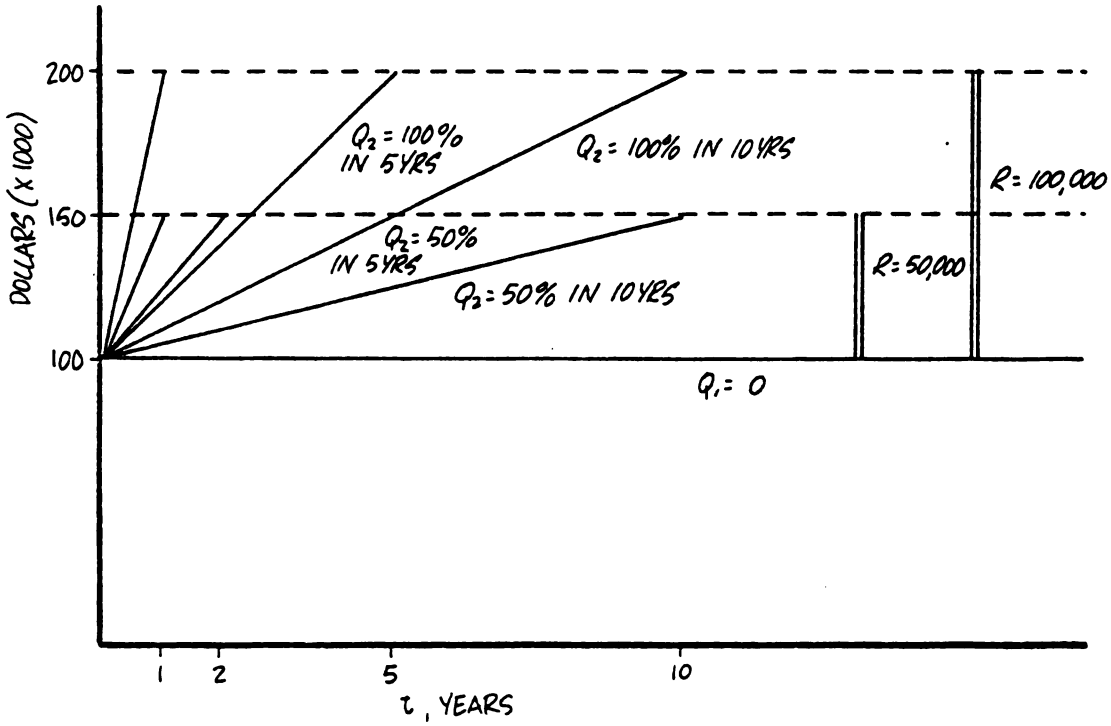


Figure 8. Graphical Representation of Table 9.

CASE $\Delta = 50{,}000$
$P = 100{,}000$
$R = 50{,}000$
$\tau = 1, 2, 5, 10$ YRS
Q_1 0%

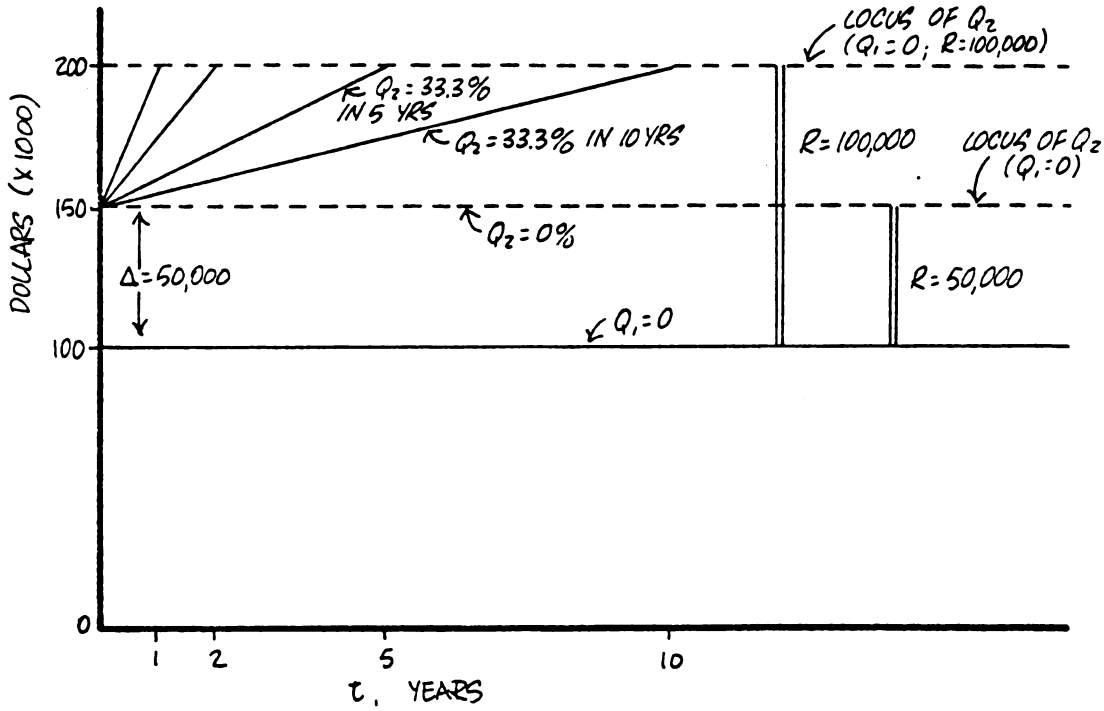


Figure 9. Graphical Representation of Table 10.

CHAPTER V

CASE STUDY: LOGAN CORRIDOR IN LANSING, MICHIGAN

An overview of the area selected for the case study is presented. A rationale for selection of the corridor, description of the study area, outline of the study process, prevalent land uses in the corridor design of alternate alignments and the selected alignment are described in this order.

A. Why Logan Corridor as the Case Study

The Logan Corridor project in Lansing/Dewitt Township provided an excellent setting for a case study for the following reasons:

1. The mix of land uses within the corridor was diverse which provides a good range of possible impacts of the options pertinent to this research. The land uses included well developed, residential areas as part of the central city; industrial areas, such as Oldsmobile and Fisher Body; major governmental offices; the State Capitol Complex, and the Health Complex. All these land uses offered a distinct (lack of) possibility for redevelopment as compared to the unique potential for redevelopment, induced by the transportation facility in the rural and undeveloped acres of land in the last

segment. The middle segment was typically a transition area between the well developed central city and the undeveloped agricultural land and with the gradual and somewhat linear change in the potential for redevelopment.

2. The opportunity to examine the potential application of Value Capture policy from the very initial stages of the project when alternate alignments were being conceived.
3. Availability of data for research and analysis with relatively little difficulty.

The objectives of the study were defined as follows:

1. To determine the best possible treatment and alignment for solving the present and future transportation problems on Logan Street.
2. To conduct a Land Use Market Analysis for the corridor and recommend a land use plan.

B. The Study Area

The whole study area which fell into two political jurisdictions was divided into three segments for study purposes (Figure 10):

Political Jurisdiction	Segment	North-South Boundaries From	To	Length (miles)
City of Lansing, Ingham County	A	Kalamazoo St.	The Grand River	1.75
City of Lansing, Ingham County	B	The Grand River	Sheridan Road	0.96
DeWitt Township, Clinton County	C	Sheridan Road	Proposed I-69	3.00

Figure 10. Segments of Study Area

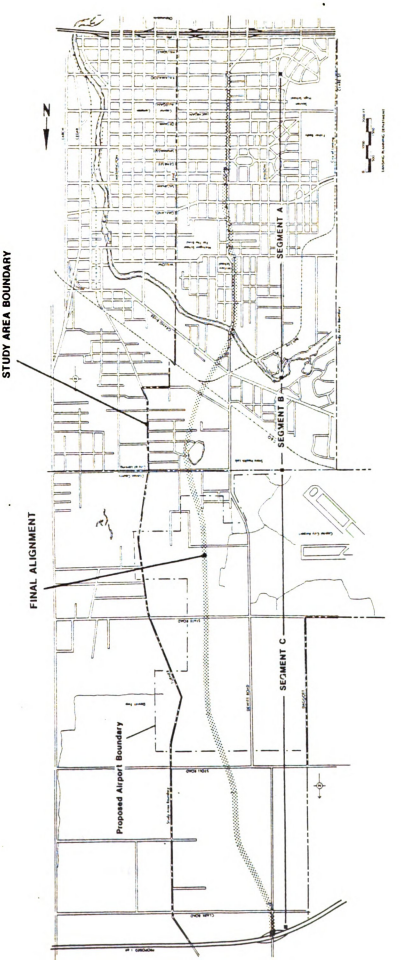


Figure 11: Study Area

The rationale behind this division was based upon the land use in the respective areas. Segment A is predominately residential, Segment B is industrial and commercial and Segment C is predominantly agricultural.

The Study Area boundaries for the Corridor were chosen as follows:[30]

Kalamazoo Street on the south.

Proposed I-69 on the north in Dewitt Township, Clinton County.

Clare Street extended to Daggot Road on the west.

Pine Street extended to Turner Street on the east.

Kalamazoo Street is the northern most terminus for the state trunkline M-99 (Logan Street) which has already been reconstructed. This was therefore the beginning point for the present study. Similarly, the northern limit of the study area was chosen to be the proposed I-69 as this was the farthest limit to which any change in land uses and the induced developments could be meaningfully predicted.

The eastern and western limits were set at the extent at which the impacts of improvements were expected to be significant.

C. The Prevalent Land Uses

The study area encompasses many of the City's existing and proposed major land uses. Each of these is discussed below.

Central Business District

The Central Business District of Lansing, at the time, was the primary retail center in the Lansing Metropolitan area. With

the development of several shopping malls in the area, however, the importance of the Central Business District of Lansing as a retail center has declined. Even so, over 90,000 trips per day are made into the downtown.[32]

Lansing's Mayor and City Council have recently initiated several efforts to bolster the status of the Central Business District. These methods include the creation of a built-in market around the C.B.D. by increasing the number of housing units close to it; improving and increasing the convention facilities in the C.B.D. in an effort to increase the convention industry; rehabilitation and/or redevelopment of deteriorated retail structures in the C.B.D.; and the construction of the pedestrian mall.

Oldsmobile

Oldsmobile currently employs approximately 19,000 people at three plants.[32] All three plants are located relatively close to Logan Street. The main assembly plant which employs 15,000 persons is located on South Logan Street. It has been five years since Oldsmobile constructed the last building addition at the Logan Street plant. However, the corporation has been acquiring land to the west since then for expanded employee parking and possibly future expansions. Industrial Welding also occupies space in this area. There are over 180 persons employed there.

State and Local Government

There are in excess of 13,000 state employees working downtown.[32] Money has been appropriated for two new office buildings which will house approximately 5,500 employees. One of these, at Ottawa

and Pine, housing 2,500 employees is ready for construction in 1980. In addition, there are plans for two more office buildings, a State Court House and a new State Capitol. This is compatible with a 1973 Doxiadis study calling for 22,000 state employees downtown. The main access to a large number of existing employees and a majority of employees in the new buildings on the State Complex would be on Logan Street.

In addition to the State employees, there are approximately 2,000 Federal and Local workers working downtown at the present time. These government offices generate not only worker traffic, but other traffic that has business to do with these various agencies. Our figures, for instance, do not include legislators or lobbyists.

Capitol Commons

Abutting the southern periphery of the State of Michigan property is the Capitol Commons residential rehabilitation project. The site is 32 acres in area and when completed will contain 800 dwelling units of various types and sizes. The City is now screening developers' proposals. Ground breaking for the project is scheduled for Spring 1980.

Riverfront Towers

Currently 200 units of elderly housing are being constructed in the block bounded by Cedar Street, Shiawassee Street, the Grand River and Saginaw Street. An additional 100 units of regular townhouse and garden apartments are also scheduled for this site.

Kingsley Place

This school-park-community facility is two blocks west of Capitol Commons. It is designed to be a focal point for the residential neighborhood bounded by Logan Street, St. Joseph Street, Clare Street and Oakland Avenue. Ten to thirteen thousand (10 to 13,000) persons living in the service area have access to intensive social, recreational and educational services.[30]

St. Lawrence Hospital

This facility, located just west of Logan Street between Saginaw and Oakland, is changing its emphasis from inpatient to outpatient services. A new facility has just been completed adjacent and west of the present building. The portions of the old building are being phased into the new one. Once the transition is completed a reduction of 100 beds will be realized. The reduction in bed numbers will not mean, however, a reduction in services. Outpatient services will be expanded considerably. This will mean a substantial increase in outpatient visits. Outpatient visits now number 83,000 per year including 50,000 emergency room visits. Present staff levels, around 700 full time, 300 part time and 140 associated physicians, will remain the same.[30]

Once the old facility is vacated it will be renovated and used for elderly housing (estimated at over 100 units). The rest of the area west of Comfort Street will remain residential according to the River Island Comprehensive Plan adopted by the Planning Board in October of 1978.

Fisher Body

Fisher Body is located on the western edge of the corridor just north of Michigan Avenue. Over 4,600 persons are employed there building bodies for Oldsmobile Division of General Motors.[32]

Michigan School for the Blind

This facility occupies a 2.8 acre area bounded by Willow, Pine, Maple extended and Princeton and has 140 resident students and a total of 180 students. In addition, there are 200 staff members. There are no expansion plans at the present time.[32]

Sunset Industrial Area

This area is located at Willow and Sunset and extends north to Melvin Street. It contains three small manufacturers, a large scrap metal processing yard, a sewerage treatment plant and several other commercial and quasi industrial uses. In total 280 persons are employed in the area.[32]

Lansing Community College

Lansing Community College is located downtown at the northern end of the Washington Square promenade. According to 1978 figures, there were 18,000 students enrolled at the College. These students attend classes at all hours of the day (from 7 a.m. to 10 p.m.). In addition there are 474 persons employed full time and 826 to 1,526 persons employed part time by the College. The variance in part time employment is due to reduced summer enrollment.

State Health Complex

The State Health Complex straddles Logan Street and DeWitt Road at the Dewitt Township/City of Lansing boundary. About 20

Figure 13: Existing Land Use, Segment C

Figure 12: Existing Land Use, Segments A and B

buildings occupy approximately 20 acres leaving 80 acres available for future development. A new laboratory building is expected to be under construction within a year and employment will expand an estimated 400 persons -- from 1,100 to 1,500 persons within the next five years. Parking lots in the complex can accommodate in excess of 2,000 cars.[32]

Capital City Airport

Immediately north of the Health Complex is the Capital City Airport. Plans call for its doubling in size. The acquisition of land for expansion of the Airport began in 1975. A major reorientation to DeWitt Road will have taken place by 1990. Projections of demand indicate a growth to 500,000 enplanements by 1995 from a 1972 level of approximately 150,000.[32]

I-69 Intersection

In the planning stages of I-69, provision was made for an interchange with DeWitt Road north of the airport. It was anticipated that the projects listed in conjunction with normal growth factors, would generate a demand sufficient to warrant an improvement in the Logan-DeWitt Road Corridor. Of great significance is the fact that each of the situations described is quite likely to occur regardless of any programmed improvements to Logan Street.

The study was initiated on July 1, 1975. A Draft Environmental Impact Statement was circulated in June of 1977; public hearings were held in July of 1977; the DeWitt Township Board recommended the final alternative in August of 1977; the City Council of Lansing selected

the final alternate in July of 1978; and the Final Environmental Impact Statement was completed in 1979.

During the study which followed, the "3c" process there had been significant involvement by the public and technicians and it generated, at times, lengthy discussions at the political and media level. Finally, the political jurisdictions decided in favor of the major improvements alternative.

D. Design of Alternatives

The State of Michigan prepared an Action Plan which described the processes to be followed in the development of the Transportation projects in the state. The Action Plan was approved by the Federal Highway Administration and signed by Governor Milliken in 1974. According to the Action Plan on page IV-3:

> Michigan's approach to alternative development is designed to be a hierarchical, sequential decision making process in which each sequential phase reduces the number of potential alternatives in a manner that takes into consideration a hierarchy of values from the national and state level, to the regional, area, and community level and, finally, neighborhood and individual interests.
>
> Also, the basic planning methodology and the modified methodology are designed to handle the process of alternative development and impact analysis throughout the various subphases to insure that an adequate range of alternatives have been evaluated in an objective manner. This objective is achieved by providing a two step approach directed toward first uncovering a set of illustrative alternatives that represent the full range of issues; and objectives inherent in the particular transportation problem being considered.

The process of selection of an alignment alternative is preceded by an almost similar process for selection of a corridor

alignment. In the case under study, however, the corridor was already defined to be the Logan Street Corridor. The beginning was therefore, to be made with designing of illustrative alignment alternatives within the Logan Street Corridor. In other words, the study was limited in scope to preparing and studying alternatives associated within the Corridor approximately 1 1/6 mile in width and 6 miles long. The existing Logan Street is located almost centrally within this width of the Corridor.

One of the constraints for not going any wider than this was the finalized plans for Logan Street widening as M-99 south of the Kalamazoo Street. The plans had been finalized for a six lane boulevard in the southern portion with a 60 foot median at the time the present study was being initiated. Therefore, any alternate for improvement of Logan Street, north of the Kalamazoo Street could not sway more than a few blocks on either side of this Terminus.

Preliminary Evaluation:

To arrive at the list of feasible or practical alternates, a screening process was designed to be applied to the Preliminary set of alternates. The factors shown in Table 11 were used in the evaluation of these alternates. Table 11 also indicates the relative weights assigned to the factors on a scale of 1 to 10 with 10 being the most important. These weights were assigned on the basis of a survey of citizens, agencies and technicians.

Table 11. Evaluation of Alternates.

Factors for evaluation	Relative Weights		
	Segment A	Segment B	Segment C
1. Preservation of houses	8	No	8
2. Preservation of schools	8	R	6
3. Preservation of industry	8	E	4
4. Preservation of neighborhoods	8	S	6
5. Preservation of agricultural lands	8	P	6
6. Preservation of air quality	8	O	8
7. Reduction of noise	10	N	6
8. Preservation of trees/ woodlots	8	S E	6
9. Preservation of surface water quality	8		8
10. Preservation of parks and open space	8		6
11. Safety	8		10
12. Access to schools	8		8
13. Historical preservation	NA		6
14. Conformance with Master Plan	6		4
15. Lower relocation acquisition, construction costs	10		10

The survey does not indicate a wide spread of weights between different factors. However, one interesting, clear and extremely important conclusion was that cost was one of the two most important factors in the minds of the citizens, agencies and technicians who assigned these weights.

It may be pointed out that there was no factor for evaluation of the alternatives such as: Increased potential for value capture. It is believed that such a factor, if included, would have earned the 'most important' ranking because this could significantly impact the cost of the facility. At the initial stages of screening and evaluation, inclusion of a factor to explore the extent of value that can be captured would be of paramount importance. In fact, consideration of out of pocket and indirect costs without considering the dollars that can be pumped back into the facility to change the cost would be an incomplete analysis.

E. The Selected Alternate[37]

However, as a result of the 3-c process, involvement of citizens, agencies and governmental units, public hearings and environmental impact statement process, a final alternate was selected for each of the three segments. The selected alternates were approved by the respective governmental jurisdictions and planning commissions. The selected alternate is shown in Figure and is briefly described below:

Segment A: (Kalamazoo Street to the Grand River)

Alignment A-6 which includes:

.Acquisition of homes on both sides of existing Logan Street except that no acquisition will take place on west side between Saginaw and Oakland and no acquisition from the Willow School playground which is on the east side of Logan north of Willow Street.

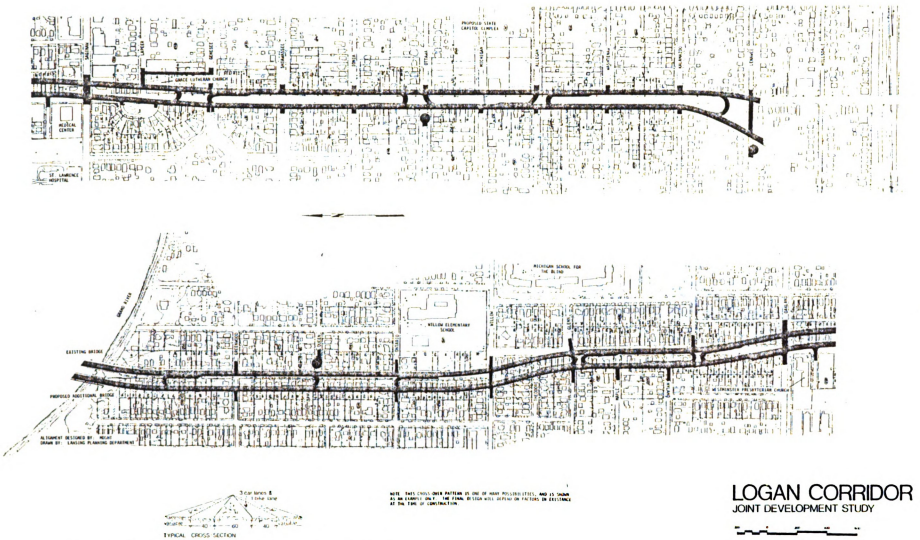


Figure 14: Selected Alignment-Segment A

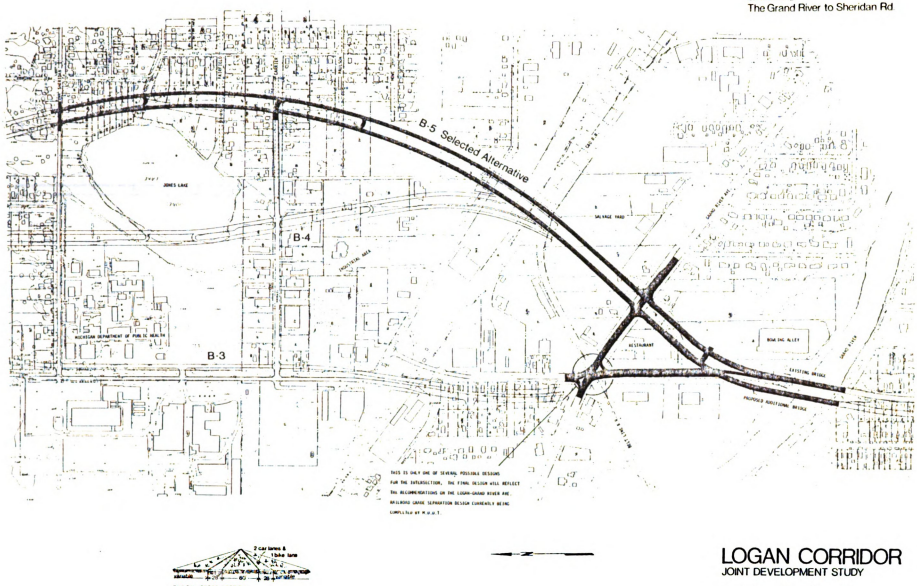


Figure 15: Selected Alignment-Segment B

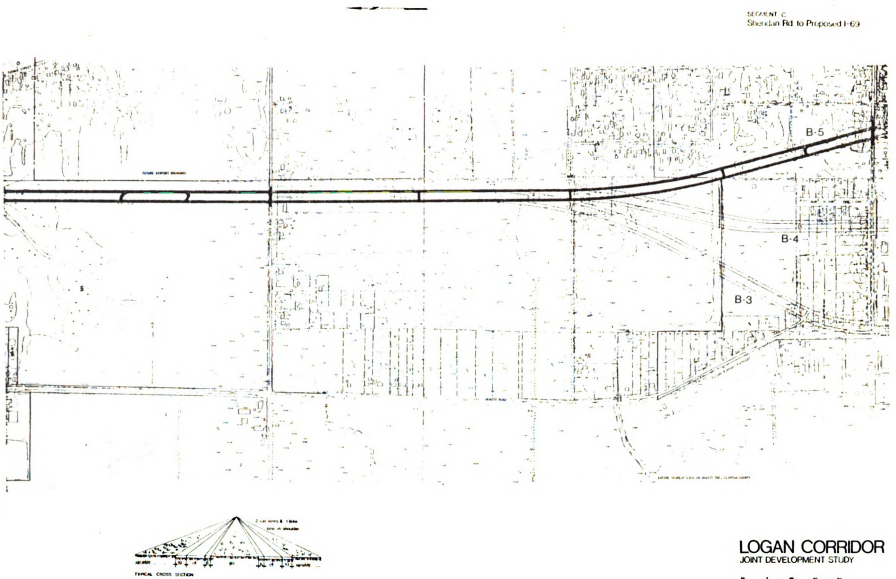


Figure 16: Selected Alignment-Segment C

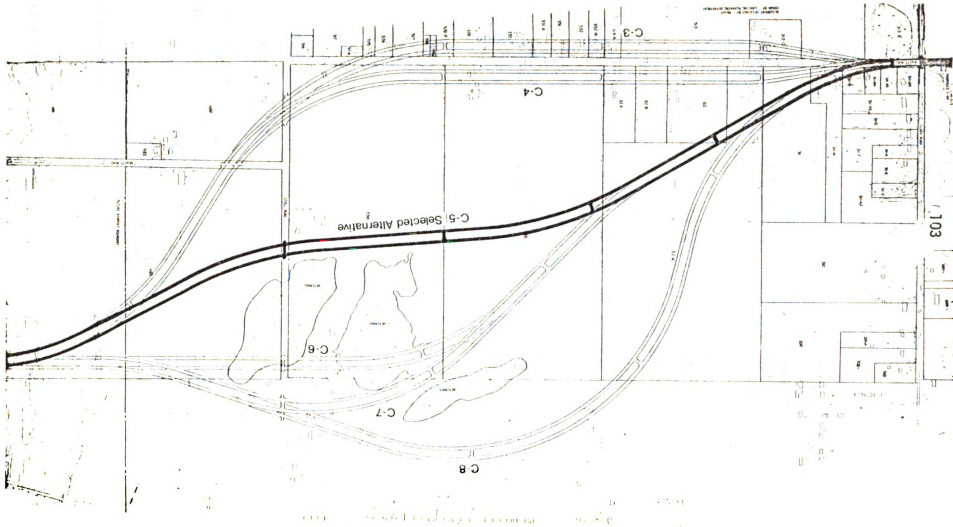


Figure 16 Continued

.Six lanes of pavement (presently it has four) with 60 foot landscaped median.

.A 16 foot right hand lane in each direction to accommodate a four foot bicycle lane.

.Bus turn outs, pedestrian overpasses.

.Almost continuous and landscaped noise berms to protect the remaining homes adjacent to the new roadway. There would be no berms between the roadway and the Medical Center, two blocks of State Government Complex and the Willow School playground.

Segment B: The Grand River and Sheridan Road

Alignment B-5 (East of Jones Lake) which includes:

.Four lanes of pavement (presently it is two lanes) with 60 foot median.

.Noise barriers to protect residential areas on the north-east quadrant of Logan-Grand River Avenue intersection.

.Development of Jones Lake Park as a linear recreational facility as a joint development project on the lake front.

Segment C: Sheridan Road to the Proposed I-69

Alignment C-5 which includes:

.Relocation of DeWitt Road south of Stoll Road 1600 feet to the east.

.Westward return on the alignment to the location of the I-69 interchange at DeWitt Road.

CHAPTER VI

STUDY RESULTS

The results of this project are presented under four sections: the supply of "soft" areas for each alignment; the demand for land uses in the corridor; a supply-demand analysis; and the estimated change in land values and revenues.

The four sections are part of a process which links all these steps as depicted in the block diagram (Figure 2).

The first section describes various alignments considered during the study and identifies existing land use developments as "hard" or "soft". Hard areas are those which have been fully developed into stable land uses and for which there is apparently no potential for transition into a different land use. Soft areas are either vacant or unstablein regard to present land use and provide potential for redevelopment. For each alignment considered in the study, a list of soft areas was prepared as if the other alignments did not exist. This indicates the extent of supply of the potentially redevelopable areas.

The second section describes the market analysis made for various land uses in the area in order to provide an estimate of demand. A regionwide analysis was then "screened" through the corridor to determine the demand for those land uses within the corridor studied.

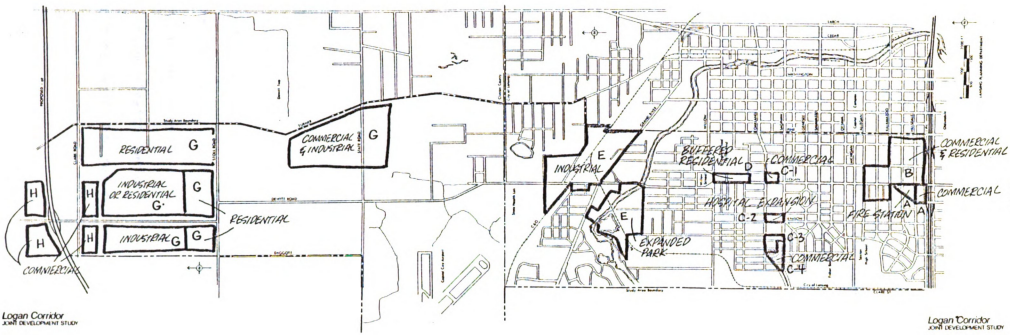


Figure 17: Soft Sites

The third section attempts to develop a correlation between each alignment's soft areas and the land use market for the corridor. This provides an analysis of the supply and demand situation. The outcome is essentially a series of potential land uses for each alignment.

The last section deals with the impact of the new developments on future land values and, consequently, on the potential revenues that can be captured by any of the techniques described in Chapter IV.

Supply of Soft Areas

Figure 17 shows the study corridor, alternate alignments considered during the study, and potential development of soft areas.

As briefly discussed earlier, soft areas can be defined as locations or areas which have a potential for redevelopment into different land uses. Identification of these sites was based upon the following factors:

- adopted city policies for the area;
- the political environment for change in land uses;
- the master plan;
- citizens' participation';
- normal growth in the area; and
- induced growth due to special plans and projects.

The areas listed below as the soft sites were approved by the City of Lansing, Dewitt Township, and the project's Technical Steering Committee, which had representatives from federal, state,

and regional transportation agencies, the county road commission, and the airport authority. The areas included essentially the following:

(1) vacant parcels,

(2) land with deteriorated housing that could be redeveloped, and

(3) land that may experience induced growth due to improved accessibility provided by the new roadway.

The soft areas thus agreed upon are listed below.

Area A. Logan-Birch triangle, approximately 4 acres.

Area B. Bounded by Riddle School, Allegan, Butler, and I-496, approximately 24 acres.

Area C. Bounded by Jenison, Oakland, Butler, and Saginaw, approximately 20 acres.

Area D. Bounded by Willow Street, School for the Blind, Daleford Street, and Logan Street, approximately 6 acres.

Area E. Between Grand River and Sheridan, basically the industrial area and the newly opened land parcel, approximately 150 acres.

Area F. Near Jones Lake, approximately 20 acres.

Area G. Near Capital City Airport, approximately 720 acres.

Area H. Interchange with the proposed I-69 with Dewitt Road, approximately 80 acres.

Area I. Right-of-way proposed alignments (for multiple uses thereof).

These areas are indicated in Figure 17. A brief description of each follows.

Area A is bounded by Logan and Birch (now renamed South Logan). It was acquired as a result of a lawsuit by residents following a proposal that it be left in the median created by the two legs of the new Logan Street. The cause of the lawsuit was environmental effects such as noise, air pollution, and safety.

Area B has extremely poor housing conditions. There are

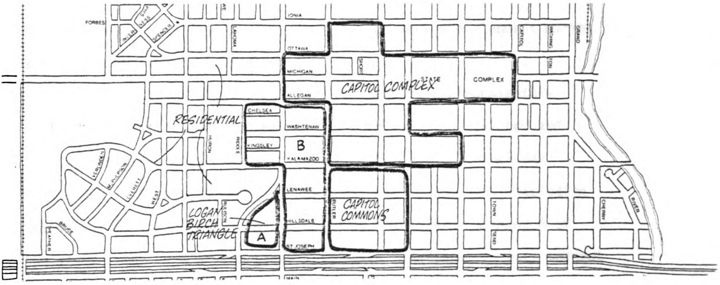


Figure 18: Development Near the State Complex

several boarded up houses, especially west of Logan Street. Most of the area is presently zoned two family. The population density is high: 35 to 41 persons per acre according to the 1970 census. The area is bounded by the two major developments proposed on the north and east side, a new school on the west, a major roadway cutting through the middle, and a vacant undeveloped parcel on the southwest corner.

Area C is bounded by M-43 on the north and south. It has been put to mixed use, including the Medical Center, St. Lawrence Hospital,

business and commerical agencies, and housing. On the east it is bounded by Butler Blvd., which is predominately residential, and on the west by the divided roadway, Saginaw-Oakland.

Area D is a long narrow residential strip sandwiched between busy Logan Street and the Michigan School for the Blind. Almost half the land, if split north-south, will have to be acquired for construction of Logan Street, and one row of houses backing on Logan will be left. This parcel was included to determine whether any redevelopment market exists for the strip of land.

Area E is in transition. In the south is a predominately residential portion, and in the north a completely undeveloped and agricultural area above Sheridan Street. The mixed use includes residences, industry, commercial buldings, and vacant land, including the state health complex. This portion is essentially segment B of the study area. Two of the three alignments considered in this segment are entirely new alignments of roadways, opening up possibilities of new development due to realigned accessibility.

Area F consists of the existing residential area to the east of Jones Lake, which the alignment of Logan Street east of the lake would abut. This area has been far removed from any major roadway traffic so far. It consists of low quality and deteriorating housing stock.

Area G contains the most undeveloped land. It is part of segment C and is mostly in agricultural use, although no portion is of prime arable quality. On the west side it abuts the airport, which is in the process of expanding and reconstructing its runway and terminal. A large portion of the existing Dewitt Road and even the

alternate alignment of the newly proposed roadway would lie on the property currently being purchased for the expansion of the airport. In the master plan for the airport it is proposed to relocate access to the airport from the present North Grand River Avenue to the new Dewitt Road (extended Logan Street). This portion will also have direct access from the proposed I-69 at the northern terminus, as there is an interchange planned at Dewitt Road on I-69. This land may have the best potential for redevelopment, as the area is completely undeveloped.

Area H, around the interchange of I-69 and Dewitt Road, will have excellent accessibility and hence will have enhanced potential for redevelopment. To the immediate north of the interchange is the city of Dewitt (population 2500).

Area I is proposed for exploration of the potential of multiple use of the highway right-of-way throughout the length of the roadway.

Market Analysis

This section deals with the market for development of various land uses in the area. It is extremely important to point out that any potential for recapture of land or property values is dependent upon the existence of demand to create the value. Projections of enhanced land and property values without a careful study of the market would be absurd.

The market for the corridor will be considered as a subset of the Tri-County region. The market for the region will be examined for major categories of land uses, and then the market for the corridor will be derived. The categories of major land uses considered here are

residential, commercial, industrial, and public.

Harland Bartholomew Associates, consultants, were retained by the City of Lansing to conduct a land use and marketability study for the Logan corridor. They made recommendations on potential land uses based upon their analysis. Although the consultants allocated the share of the market to the Logan corridor from the Tri-County region , they did not adequately recognize the major forces of attraction acting on the corridor. Their findings, while fairly realistic for the corridor to the north of the Grand River, need to be modified for segment A, in the central city area. The present analysis makes those modifications.

Regionwide analysis: To determine the demand for various land uses translated into terms of areas for those uses, projections of employment were analyzed. Total employment is expected to grow in the Tri-County region according to the estimates made by the Regional Planning Commission. For the decade ending in 1990, the employment picture probably will change as shown in Figure 20.

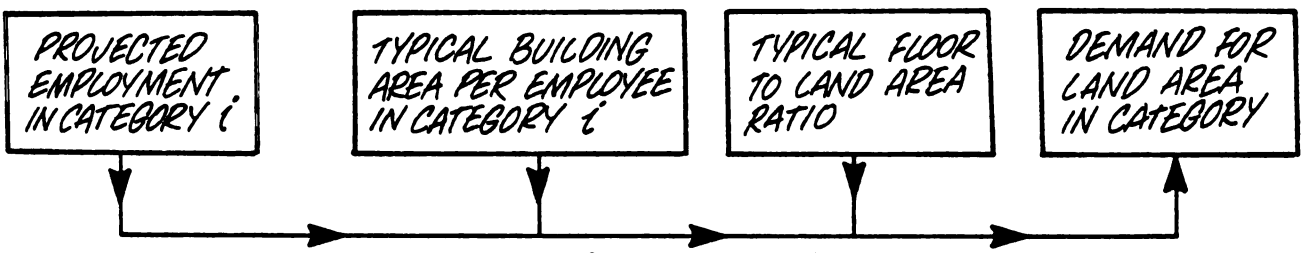


FIG. 19 PROCESS FOR MARKET ANALYSIS

	1980	1990	Change
Total employment:	164,960	194,190	29.230
Manufacturing	40,310	43,350	3,040
Non manufacturing	124,650	150,840	26,190
Government	56,510	70,280	13,770
Other*	41,560	50,240	8,680
Retail	26,580	30,320	3,740

Source: Ref. 20

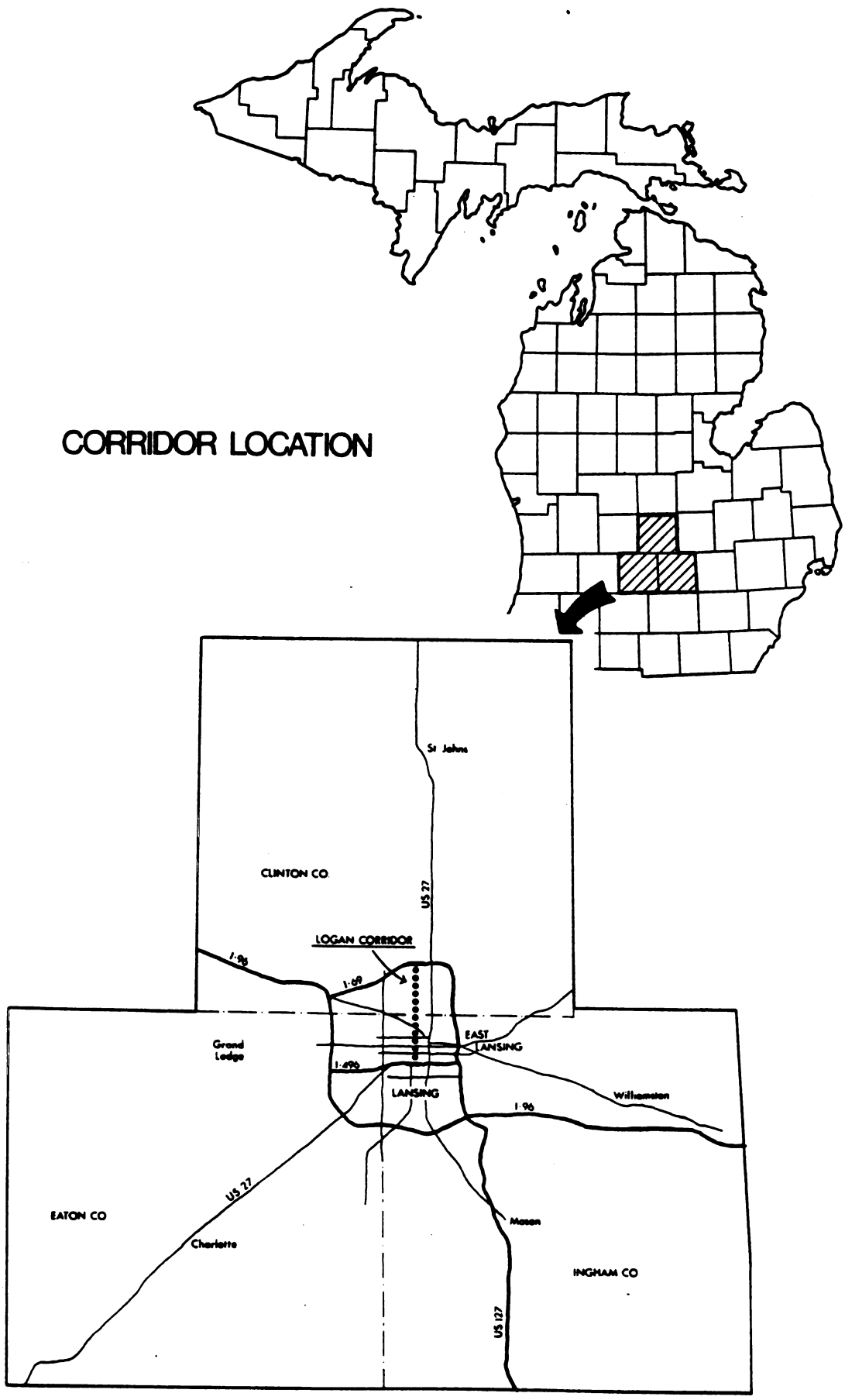
*Includes selected services and wholesale employment.

Figure 20: Employment change 1980-1990

Based upon the additional demand of the employment categories projected in Figure 20, additional land area required was computed for each category. This process in Figure 20 is indicated in which accepted norms for the areas have been used in columns 3 and 5.

The numbers given in Figure 20 suggest that the region will have a demand for 86 acres of retail, 166 acres of services and wholesale, 47 acres for government, and 251 acres for industrial expansion in the next decade.

The total market was then divided into three categories. The first, the CORRIDOR MARKET AREA, is the same as defined in Logan corridor study area. The second, or PRIMARY AREA, expands the corridor south to I-496 and east to the Grand River, or essentially adds downtown Lansing, state government, and L.C.C.


CORRIDOR LOCATION
St Johns
CLINTON CO.
US 27
LOGAN CORRIDOR
I-96
I-69
I-496
Grand Ledge
EAST LANSING
LANSING
Williamston
I-96
US 27
EATON CO
Charlotte
Mason
INGHAM CO
US 127
LANSING PLANNING DEPARTMENT

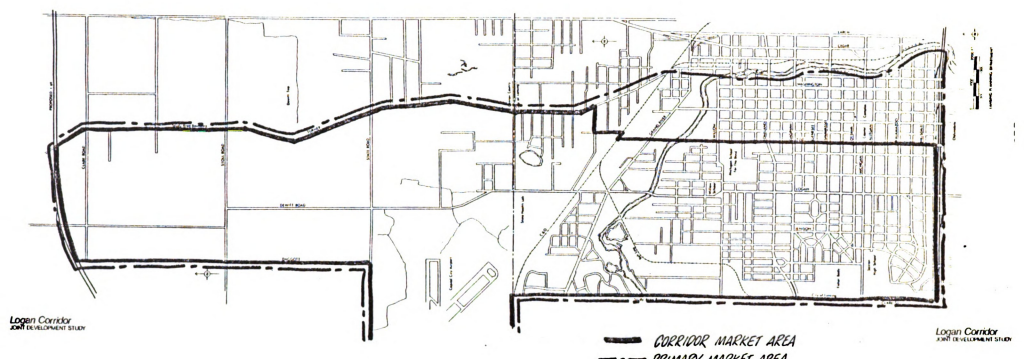


Figure 22: Primary and Corridor Market Areas

Table 12: PRELIMINARY LAND USE NEEDS - 1990

TRI-COUNTY AREA

Employment Category	Projected Employment Change 1980-1990	Typical Gross Square Feet of Building Per Employee	Required Building Space for Projected Employment	Typical Floor to Land Area Ratio	Total Additional Land Required for Projected Employment Change
Non-Manufacturing					
Retail	3,740	300	1,122,000	0.3	3,740,000 square feet (86 acres)
Other (Includes selected services)	8,680	250	2,170,000	0.3	7,233,333 square feet (166 acres)
Government	13,770	200	2,754,000	1.35*	2,040,000 square feet (47 acres)
Manufacturing	3,040	3,600 square feet of land per employee			10,944,000 square feet (251 acres)

*Government space needs are typically around 1.0 FAR, however, an earlier study ("Central City Development Plan", Doxiades Associates, 1973) state that State government policy would, by a FAR of 1.43, thus, a FAR of 1.35 is employed to account for the large proportion of government growth that is projected to be State government.

Source: Ref. 20

The third is the SECONDARY AREA, the whole Tri-County region estimates given above in F.

The Harland Bartholomew study estimated that there existed a market for each category of land use in each of these market segments. Their estimates are shown in Figure 23.

	Market demand				
	Land Use Categories				
Market Segment	Industrial	Retail Commercial	Office*	Residential	Public (Parks)
Secondary	251 acres	3,740,000 sft	2,170,000 sft	-	-
Primary	200 acres	-	651,000 sft	1,700-2,000 units	90 acres
Corridor	200 acres	719,000 sft	75,000 sft	1,700-2,000 units	90 acres

*For nongovernment, such as services, wholesale, and so forth.

Figure 23. Market Demand

Harland Bartholomew made several recommendations. First, all industrial use will be restricted to vacant parcels in Segment C. Second, retail/commercial usage is marketable in the corridor as follows:

Soft site A:	175,000 sq. ft.
Soft site B:	75,000 sq. ft.
Soft site C:	55,000 sq. ft.
Soft site H:	414,000 sq. ft.
Total	719,000 sq. ft.

Third, office space is marketable in the corridor in soft site B to the extent of 75,000 sq. ft. (The 50-50 split between commercial and office usage at soft site B was assumed to divide the total of

150,000 sq. ft.) Fourth, almost all the residential units are projected to be in Segment C, with the exception of a limited number of townhouses on the west side of Logan Street in soft site B.

In making these projections, the Bartholomew study, especially for retail/commercial and office usage, completely ignored the variable of downtown Lansing. This is an extremely important factor which would attract a major part of the retail and office space projected by Bartholomew for soft sites A, B, and perhaps C. This statement is supported by the City of Lansing's adopted policy that such uses will be concentrated in the downtown area.

The other factor that the Bartholomew study could not consider was the effect of the design of the selected alternative on the potential market for development. The selected alignment includes construction of noise berms on both sides of the new roadway, except in areas which now are residential. Such berms are part of the selected alignment in all of segment A and a very small portion of segment B. While these berms would enhance liveability in the residential areas behind the berms in segment A, they would also limit the potential for development of roadside land into higher and more intensive use. By coincidence, however, Bartholomew made no recommendations for the marketing potential along the roadside which may be affected by this factor. He did recommend the multiple use of right-of-way land for parking from Kalamazoo Street to Shiawassee Street on the east side of Logan Street.

Based on the above discussion, it is proposed to remove the 75,000 sq. ft. for office and 75,000 sq. ft. for retail projected by

Bartholomew for soft site B. It is proposed, instead, to merge three (#1,2,3) blocks of this area with capital commons for expansion of the housing project, the rest of the northern two blocks to be traded with the state government for their complex. In return, the state could give the city the block south of Ionia that was purchased for a state museum, no longer planned for that location, Figure 24.

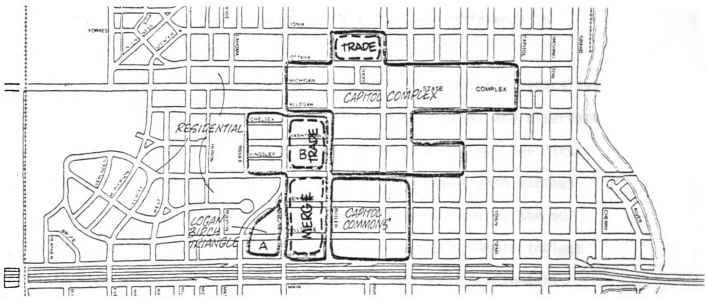


Figure 24. Modification in development plan.

Supply-Demand Analysis

The gound work has now been laid for this section, in which the interface among alignments, soft areas, and marketable categories of land use will be established. This analysis will be presented according to the three segments, for each has unique characteristics and can be treated somewhat independently. A few points need to be considered before proceeding.

First, for each segment, a large number of preliminary or illustrative alternatives were conceived in the early phases of the study. These were reduced to a few more feasible or practical alternatives after initial screening for obvious anomalies. The subsequent social, economic, and environmental impact analysis was conducted in detail only for the final set of alternatives. In what follows, only the practical alternatives or alignments have been considered. Application of Value Capture techniques to the conceptual alternates since rejected would not have made any difference in the selection of the final alternate.

Second, all the practical alignment alternatives, regardless of the segment, include do nothing, minor improvements, and alternate modes, in addition to the major improvement alternative. The first three options would maintain the existing environment with various degrees of change from minor to none at all. For example, the do nothing option means normal maintenance; minor improvements include intersectional traffic signals and similar low cost improvements, with little or no property acquisition and relocation; alternate modes could include anything from improvement in bus service to a heavy, capital-intensive rail system. In each of the three segments, all these options were studied and rejected, for they did not provide the required traffic capacity, environmental improvements to the residents on the road, and a resolution to the problem of traffic in the neighborhoods.

A purist in the field of Value Capture may argue that, for any of the first three options, upzoning in selected areas would open the door for creation of unearned value which can then be captured.

However, such actions would lead to such developments as commercial strips, office or multiple housing units at undesirable locations, and more traffic chaos. The results would be blight and would be counterproductive to the adopted policy of preservation of residential areas and quality housing stock.

It appears, then, that one cannot take a purist's view of matters and make Value Capture "the goal." The situation must be looked at in conjunction with several other factors. With this in mind the three options will not be examined here.

Third, there is a list of soft areas for each segment, discussed earlier in the chapter. These have the greatest potential for change in land use development. However, in addition to the soft areas there are hard areas. Although they have very little or no potential for redevelopment, they may experience an increase in land and property values due to the construction of the roadway. For example, a neighborhood adjacent to the highway, classified as a hard area, will remain residential even after the highway is built, but it may increase in value due to an improvement in the quality of life as neighborhood through traffic is reduced, thereby improving safety, accessibility, and quality of the environment.

Last, each of the soft areas may have a market for more than one possible land use under different alignments. Alignments would qualify for differential credit for Value Capture potential during the process of the evaluation of impacts.

The above discussion is reflected in the following analysis. In general, let the following notation be used:

A_k = k^{th} alternate alignment under consideration, where

k = 1,2,3;

D_j = j^{th} soft or potential development areas, where

j = 1,2,3,4,5,...; and

M_i = i^{th} marketable land use for the corridor, where

i = 1,2,3,....

Specifically, in the three segments, the parameters as presented in Table 13 exist.

The next step is to match the feasible pairs of M's and D's before examining the impact of alignments on an M,D pair, this pairing essentially means a feasible combination of a marketable land use at a potentially developable soft site. The feasibility can be tested by a simple "throttling" process, in which the throttle is the set of adopted or prevalent policies of the local, regional, or state jurisdiction. For example, pair $[M_1D_2]$, which is an industrial use at soft site D_2 in segment A, when run through the "throttle" of accepted plans, policies, and prevalent community goals may not be feasible. At the same time, another pair $[M_1D_7]$ may be welcome to the community.

The feasible (M,D) pairs can be assigned a notation of 1 and the others 0 in a binary system. Thus, a feasibility test of [M,D] pairs could be made:

$[M_i,D_j]$ = 0, 1 for different values of i and j.

In the case of the Logan corridor under study, based on the city's adopted polices of not encouraging industrial usage in the area, not permitting

commercial strips along Logan Street, and not allowing development of office space along Logan Street, instead of downtown,

the following pairs are feasible:

Segment A		Segment B		Segment C
$[M_2, D_1]$	;	$[M_1, D_5]$	;	$[M_1, D_7]$
$[M_2, D_3]$	;	$[M_1, D_6]$	;	$[M_2, D_8]$
$[M_4, D_2]$	;	$[M_4, D_5]$	;	$[M_4, D_7]$

Expressed mathematically,

$M_iD_j = 1$ for $(i,j) = (1;5,6 \text{ or } 7), (2; 1,2 \text{ or } 8), (4; 2,5 \text{ or } 7)$

$= 0$ for $(i,j) = (1; 1,2,3,4,8), (2; 3,4,5,6,7), (3; 1 \text{ to } 8), (4; 1,3,)$

Determining the market feasiblility of a particular land use at a given location, as discussed in the preceding paragraphs, leads to the next step: evaluation of the strength of the impact exerted on this market by various highway alignment alternatives. The strength or weakness of the influence of an alignment on $[M_iD_j]$ can be measured by the change in property value due to the highway alignment. A parcel of land with agriculture as its present use may be affected by creating windfall profits by an alignment as a new $[M_iD_j]$ becomes imminent. In other cases, there may be no measurable change in property value, although that $[M_iD_j]$ is feasible, but too far from the zone of influence of any alignment.

In some cases the impact on an $[M_iD_j]$ pair exerted by the alignment alternates would be the same. Such is the case in segment

Table 13: Market Potential for Alignments

Item	Segment A	Segment B	Segment C
Alternate Alignments A_k	A_3 (East side Acquisition) A_4 (West side Acquisition) A_5 (Both sites Acquisition) A_6 (Blend Acquisition)	B_4 (Existing Logan Street) B_5 (West of Jones Lake) B_6 (East of Jones Lake)	C_3 C_4 C_5 C_6 C_7 C_8
"Soft" or Potential development areas D_j	D_1 (Logan Birch Triangle A) D_2 (Logan-Butler-Allegan-I-496, B) D_3 (Saginaw-Oakland-Butler, Logan, C) D_4 (Blind School-Willow-Daleford, Logan, D)	D_5 (Industrial Area, E) D_6 (Near Jones Lake, F)	D_7 (Near the Airport, G) D_8 (At the I-69 interchange, H)
New Marketable Land Uses M_i	M_2 M_4	M_1 M_4	M_1 M_4 M_2

Key

M_1 = Industrial
M_2 = Retail Commercial
M_3 = Office
M_4 = Residential
M_5 = Public

A, where the alignment for all the four alternates A_k is the same, the only difference being the acquisition pattern of the properties. However, of the three $[M_iD_j]$ pairs feasible in segment A, none appears to have a significant differential advantage over another in inducing a change in the property values of the three $[M_iD_j]$'s. For example, $[M_2,D_1]$ and $[M_2,D_3]$ are retail/commercial highway oriented uses, and regardless of the side acquired, these will have the same impact.

$[M_4,D_2]$ is a new residential use for location D_2 (on both sides of Logan Street), south of Allegan but excluding the Logan-Birch triangle. For these areas to be viable residential areas with high property value, it will be preferable to have residential development buffered and screened for traffic noise, dust, and vibration. The only alternates which can do this are A_5 and A_6, as they acquire properties on both sides, making it possible to build berms. Alignment A_3 for the residential development to the east of Logan and Alignment A_4 for the development west of Logan would also permit construction of one berm.

This can be expressed as follows:

$A_k[M_2,D_1] = 1$ for $k = 3,4,5,6$

$A_k[M_2,D_3] = 1$ for $k = 3,4,5,6$

$A_k[M_4,D_2] = 1$ for $k = 3,5,6$ for west side development of land

$= 1$ for $k = 4$ for east side development of land

Segment A

Alignments: There are four different alternatives for final analysis in segment A, but all have the same alignments, the present location of Logan Street. In fact, in all the alternatives conceived in the earliest part of the study, Logan Street played an essential part. The final four alternatives simply differ in how the widening of Logan Street should take place:

A_3 - east side acquisition;

A_4 - west side acquisition;

A_5 - both sides acquisition;

A_6 - blend acquisition.

SOFT AREAS:	D_1	Logan Birch Triangle;
	D_2	Logan-Butler-Allegan-I-496;
	D_3	Saginaw-Oakland-Butler-Logan.
MARKETABLE LAND USE:	M_2	Retail/Commercial;
	M_4	Residential.

Analysis: The analysis consists of examining the feasibility of the application of recapture policy to the potential increase in value of the properties, due to the alignment. As pointed out earlier, to capture a certain portion of the created value, the first and foremost requirement is creation of value. If the alignment does not confer windfall profits by creating an unearned value, there is no value to capture.

Segment A, which is the inner city area, is fully developed: 96.1 percent residential, 2.3 percent commercial, 0.9 percent institutional,

and 0.7 percent other usage along Logan Street. While segment A does contain soft areas, and thus offers potential for redevelopment, there is no unearned profit of a windfall type or even a created value for anyone due to the alignment.

Let us consider the seven-block area bounded on the west by Logan Street, on the east by the proposed Capitol Commons housing project, on the north by the state government land purchased and cleared for the state capitol complex, and on the south by St. Joseph Street (Figure 18). The area has been recommended for residential redevelopment in the future, possible an extension of the Capitol Commons. The area, in several aspects, is similar to that proposed for the Capitol Commons. Some of the characteristics of the area are deteriorated and poor housing, predominately rental properties (more than 80 percent) with low rents, declining property values, and combined storm and sanitary sewers.

The concept of the capitol complex was developed by the City of Lansing to provide a greater and diversified choice in housing opportunities in the central city, close to employment and businesses. A secondary benefit was the redevelopment of a deteriorating area by converting it into a stabilizing force. It was decided to acquire the six block (32 acres), relocated the residents, clear the land, and place it on the market for redevelopment as a housing complex. The cost-revenue equation of the project is of interest here, as the area is similar to soft area D_2 which has been shown to have a market for residential development. The costs and revenues are shown below.

Capitol Commons Project

Total Area: 32 acres (approx.); 6 blocks

Land Use: 403 housing units and 2 commercial units

Cost		Revenue	
Acquisition	$3.00 million	By sale of land to developer	
Relocation	0.80 million		
Demolition and clearance	0.30 million	(expected)	$562,000
Other, miscellaneous	0.97 million		
Total	$5.0 million		

For this area, the cost of bringing the land to a point where redevelopment can begin far exceeded the returns obtained from the sale of the land. The high cost could not be recovered despite the demonstrated strong market demand for the land.

The above discussion applies equally to soft area D_2 due to the obvious similarities in land use before and the potential market after redevelopment. Using the assessed values of the blocks as a base, the cost of acquisition of the properties alone would be approximately $600,000 to $700,000 for each of these blocks. To this, the cost of relocation, clearance, and other items to prepare the land for redevelopment must be added. If we accept the existence of a market for redevelopment of the soft area, it does not seem to make any significant difference which of the alternatives is selected. For the four options, there will be only a 19 percent difference in the area available for redevelopment. The total area would have to be acquired in all cases, considering that the right-or-way acquisition is part of the scope of the project.

In A-3, A-5, and A-6, the cost of the redevelopment project would be approximately 19 percent less than in the case of A-4, but the revenues expected by sale of the cleared land would also be proportionately reduced. Thus, the selection of the alignment alternative is not affected by the redevelopment value, and a value capture policy is not applicable in this area.

Soft area D_1, or the Logan-Birch triangle, will not affect potential value because the Michigan Department of Transportation has recently completed the reconstruction of the two legs of the new Logan Street, which created the triangle. The properties within the triangle have all been cleared. Moreover, the study area for the Logan corridor project begins north of the vertex of the triangle at Kalamazoo Street, and the alignment for Logan Street on both sides of the triangle has already been estiablished.

The only other soft area in this segment is D_3, bounded by Saginaw, Oakland, Chicago, and Logan Street. There are three blocks in this area containing 70 parcels of land. The distribution of current uses among these parcels is:

Residential	50	Appraised value approx. $1.10 million
Commercial	12	Appraised value approx. $0.65 million
Other	8	
Total	70	

The land use market potential for the area is for shopping center/retail. This area is on the east side of Logan Street. On the west side is the six-story Medical Arts bulding with double the assessed value of approximately $1.0 million. The alignment, in this portion, will remain to

the east side due to the tremendously high cost difference in acquisition of property ($1.0 million compared to $173,600).

The problems in this area are similar to those discussed for the southern portion of the segment. There are no windfalls or unearned values created for the property owner. An overview of the situation, as given below makes it clear that the value capture policy will not affect the decision to select an alignment in this location. To influence the selection of an alternateive, the value capture policy would have to rise substantially over $2.0 million more than the other alignments. The possibilities of achieving this are extremely unlikely.

Alternate	Approximate R-O-W Acquisition Cost*	Approximate Land Assemblage Cost	Total Cost
A-3: East Acquisition	$ 175,000	$3,500,000	$3,675,000
A-4: West Acquisition	$2,000,000	$3,675,000	$5,675,000
A-5: Both Sides Acquisition	$2,175,000	$3,500,000	$5,675,000
A-6: Blend Acquisition	$ 175,000	$3,500,000	$3,675,000

*Does not include relocation and equipment appraisal wherever applicable.

Figure 25: Comparative costs of acquisition for various alternatives; Segment A.

Segment B

This segment is characterized by its diversity of land uses. Approximately one-third is occupied by single family detached housing, one-third is occupied by services and trade, and the remaining one-third

is underdeveloped The residential areas are separated by a complex configuration of railroad tracks and major street rights-of-way. The railroads, the river, and the major streets intersect to create land parcels that are not very conducive to orderly development. The segment has a total land area of 702 acres, divided as follows:

Industrial use	242 acres	
Exempt	172 acres	(84 acres owned by the state health complex)
Undeveloped	60 acres	
Residential and other	228 acres	
Total	702 acres	

The potential development for this area includes industrial and service related uses. For each alignment, different sets of parcels have relatively different potential for development. Some that can be developed for better uses relative to one alignment will have to be purchased for right-of-way for another alignment.

The alignment for this segment, a list of vacant parcels that can be developed, and their present assessed values are given in Table 14.

The redevelopment of existing parcels already put to residential, commercial, or other use will not be included here for the same reasons discussed for segment A. The sequence of listing is from south to north.

Alignment. This is the first segment discussed in which the alternatives call for different alignments. The alignments in this portion are:

B3: existing Logan Street alignment;

B4: west of Jones Lake alignment; and

B5: east of Jones Lake alignment.

The cross-section for each of the alignments consists of a four-lane road with a median 60 feet wide. For each of the alignments there are grade separations at railroad crossings. This aspect of design, while improving the accessibility to the area across the railroads, would reduce access to several parcels of land due to the embankment and the structure.

In Table 14, two items are shown: the present value of the developable parcels of land and the costs of construction of the three different alignments. The differential cost of one alignment over another (rounded off to the nearest million) is:

B3-B4: \$9.6 - 7.6m = \$2.0 million

B3-B5: \$9.6 - 7.5m = \$2.1 million

B4-B5: \$7.56 - 7.54m = \$0.02 million

The difference in present value of the developable parcels are: (rounded off to thousands) is:

B3-B4: \$341 - \$273 = \$68,000

B3-B5: \$341 - \$261 = \$80,000

B4-B5: \$273 - \$261 = \$12,000

From a cost viewpoint, alignment B5 is the most attractive. Of course, environmental factors are not considered here, as they would be in any project evaluation. Here, the impact of the value capture policy is the only consideration.

For B4 to be economically preferable to B5, property values would have to increase due to the alignment B4 by 1.67 times (20,000 ÷ 12,000).However, the real increase will have to be more than

Table 14 Values of developable properties relative to each of the three alignments. Segment B

Alignment B-3		Alignment B-4		Alignment B-5	
Parcel	Present assessed value	Parcel	Present assessed value	Parcel	Present assessed value
3301-05-476-111	$37,600	476-111	$37,600	476-111	$37,600
121	2,600	451-124	24,800	451-124	24,800
031	4,300	427-051	1,200	427-051	1,200
427-051	1,200	-031	800	-031	800
		-022	14,800	-022	14,800
-031	800	276-251	2,600	276-251	2,600
-022	14,800	-241	4,800	-241	4,800
-075	1,200	-021	5,000	-021	5,000
-141	18,600	-031	5,000	-031	5,000
-201	10,300	-121	2,300	-091	5,000
		109-191	1,700	-101	4,200
276-241	4,800	-031	1,600	-121	2,300
-021	5,000	151-015	1,600	-381	7,400
-031	5,000	-181	2,300	109-191	1,700
-091	5,000	-192	1,800	-031	1,600
-101	4,200	-161	1,400	151-015	1,600
-121	2,300	-261	3,800	-181	2,300
-381	7,400	-262	9,300	-192	1,800
-361	7,800	-281	2,700	-261	3,800

Table 13 (continued)

Alignment B-3		Alignment B-4		Alignment B-5	
Parcel	Present assessed value	Parcel	Present assessed value	Parcel	Present assessed value
04-109-191	1,700	101-111	2,000	101-001	2,000
-031	1,600	-011	1,500	-011	1,500
04-151-015	1,600	101-021	1,400	101-021	1,400
-181	2,300	-031	2,400		
-192	1,800	-041	1,500		
-161	1,400	-051	1,300		
-261	3,800	-071	1,300		
-262	9,300				
-281	2,700				
04-101-001	2,000				
-011	1,500				
-021	1,400				
-031	1,500				
-051	1,300				
-071	1,300				
Total	$170,500	Total	$136,500	Total	$130,570
Market value (x2) of Parcels	$341,000		$273,000		$261,140

Alignment B-3		Alignment B-4		Alignment B-5	
Total Cost estimate for construction	$9,601,521	Total cost estimate	$7,562,594	Total cost estimate	$7,542,106

1.67 times to take into account inflation and risk protection so that the cost difference of $20,000 may be captured. For example, with 20 percent inflation and 50 percent risk protection for the owner, the increase in the value of the property should be as follows from the formula in Chapter IV.

$$\text{Captured Value } R = (P_2 - \alpha P_1)\beta$$

where α and β are the inflation and risk protection factors. We need to make up the difference by capturing the desired increase of $\$20,000 = (P_2 - 1.2 \times 12,000)0.5$, which gives $P_2 = \$54,400$. In other words, property values should rise by a factor of 4.53 (54,400 ÷ 12,000), or 353 percent!

Similarly, it can be shown that for B3 to be preferred over B5, property values should rise 27.45 times, or 2645 percent.

Application of the time series equation of Chapter IV to this case will indicate the required increase in property values in a given number of years. Case II, where $\Delta \neq 0$, is applicable, and the formula

$$Q_2 = \frac{(R - \Delta) + R_1 Pt}{(P + \Delta)}$$

will be used.

The data are as follows, using the notation of Chapter IV:

For B_3, B_5	For B_4, B_5
R = \$2.10 m	R = 0.020 m
P = \$0.261 m	P = 0.261 m
= \$0.080 m	= 0.012
Q_1 = 0.10	Q_1 = 0.10
t = 1, 5, 10 yrs.	t = 1, 5, 10 yrs.

For t = 1 year

$$Q_2 = \frac{(2.10-.08) + .1X.26|X|}{.261 + .080}$$

= 600% in 1 year

$$Q_2 = \frac{(.02-.012) + .1X.26|X|}{.261 + .012}$$

= 12.45% in 1 year

For t = 5 years

$$Q_2 = \frac{2.02 + .13}{.341}$$

= 630% in 5 years or

126% in 1 year

$$Q_2 = \frac{.008 + .13}{.273}$$

= 50.5% in 5 years or

10.1% in 1 year

For t = 10 years

$$Q_2 = \frac{2.02 + .26}{.341}$$

= 669% in 10 years or

66.9% in 1 year

$$Q_2 = \frac{.008 + .26}{.273}$$

= 98% in 10 years or

9.8% in 1 year

The results show the sensitivity of the formulas discussed in the methodology section (Chapter IV) remarkably well.

These computations assume that the values of properties associated with the preferred alternative, B_5 in this case, increase in value at a constant rate of 10 percent, which is Q_1. Thus, for B_3 or B_4 to

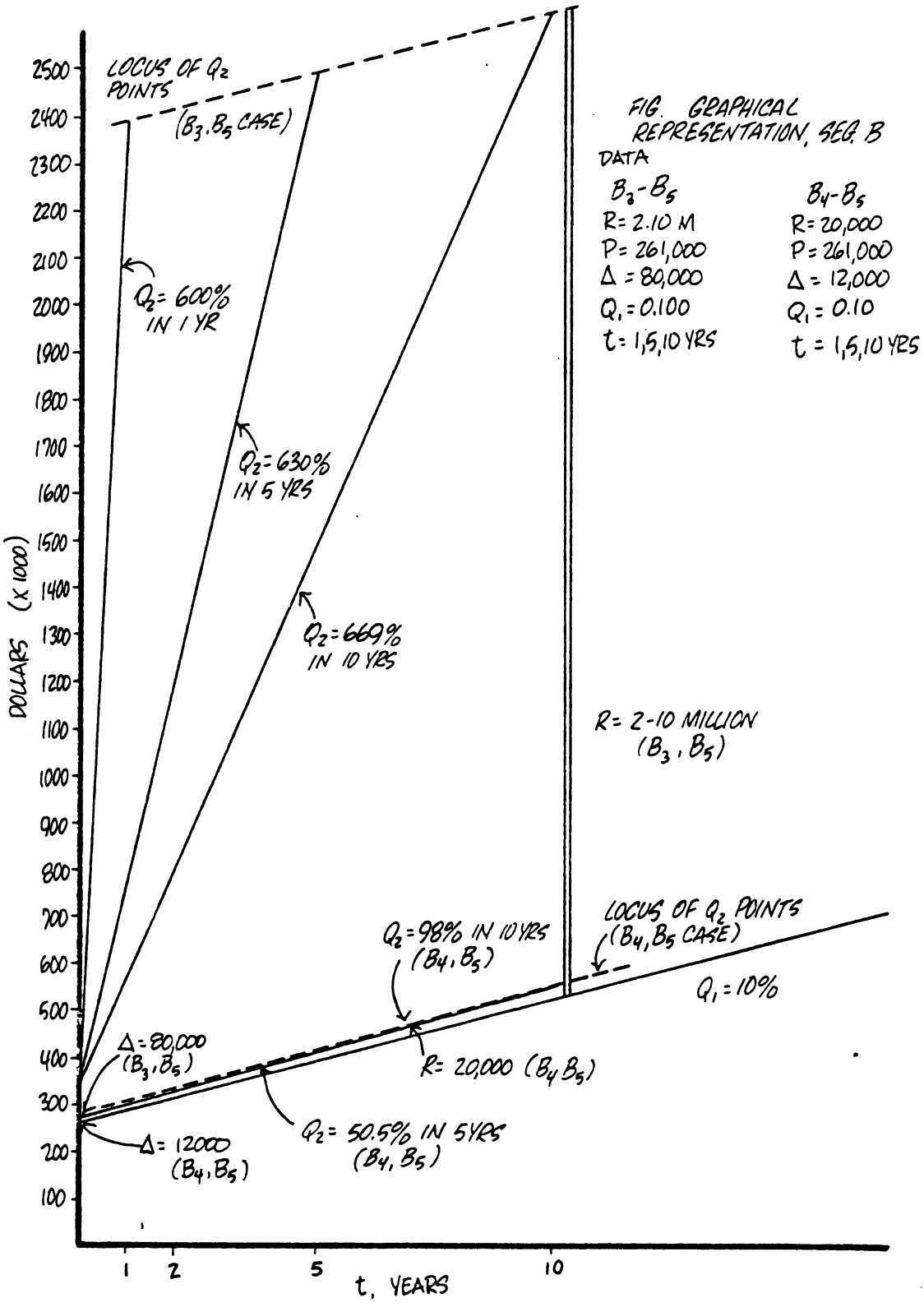


Figure 26 Graphical Representation of Segment B

become preferable over B_5 from a value capture standpoint, the properties associated with them should appreciate at the calculated rates. In one year, B_3 should increase 600 percent and B_4 12.45 percent. Similarly, if the values need to be captured in five or ten years, the percentage increases, normalized on an annual basis, for B_3 and B_4 should be 126 percent and 66.9 percent and 10.1 percent and 9.8 percent respectively.

Segment C

This segment lies in Dewitt Township and is bounded by Sheridan Road on the south, the proposed I-69 on the north, and portions of land owned by the Capital Regional Airport Authority for airport expansion on the west and east.

The master plan for Capital City Airport recommends the acquisition of additional land and also includes some major changes in the airport's orientation. These (if and when implemented) would have significant ramifications on the location of the new roadway. The master plan recommends relocating the terminal building to the north of its present location, building a new access road off the new Logan Street (Dewitt Road portion between State and Stoll Roads), and, most important, relocating Dewitt Road to an alignment approximately 1600 feet to the east of its present alignment. This relocation of Dewitt Road within the proposed boundaries of the airport property was recommended to provide the required vertical clearance for landings and takeoffs on the extended runway.

The alignment for the southern length of the segment, which lies almost entirely within the airport property, was thus kept 1600 feet to the east of the present Dewitt Road. By doing so, acquisition of additional land for a length of almost 1.4 miles will be saved.

In the segment north of the airport boundary, there were six possible alignments, C_3 to C_8.

The segment is zoned single family residential south of Stoll Road and agricultural north of Stoll Road. All the land north of State Road is currently used for agricultural purposes. South of State Road, is a mixture of residential and undeveloped land. The density of development is rather low, averaging almost two acres per dwelling unit, compared to 0.2 acres per dwelling unit in Lansing. The approximate distribution of land in the segment, excluding the present and proposed airport land, is as follows:

Total land area	779 acres
Agricultural	587 acres
Residential	179 acres

Included in the agricultural land area are 38 acres of a woodlot and 17 acres of a sand and gravel extraction area north of Stoll Road.

In this predominately agricultural area there are six different alignments, all emanating from one alignment and converging into one, but bulging out in between. The unique configuration was necessitated by the fixed location of the Dewitt Road interchange on I-69, at which all the alternate alignments must end.

Alignments:

C_3 - follows the existing alignment of Dewitt Road north of Stoll Road, with acquisition of properties on the west side only;

C_4 - same as C_3, but with acquisition of properties on the east side only;

C_5, C_6, C_7, C_8 are shown in Figure 16. C_5 generally bisects the large parcels of land in the middle. C_6 crosses through the wet and marshy lands to the north of Stoll Road. C_7 passes between two rather large marshy land areas. C_8 completely avoids the marshy lands and swings to the east near Turner Road before returning to the proposed I-69 interchange.

The cross-section for each alignment is four lanes of roadway with a median 60 feet wide, as in Segment B.

Marketable Land Uses:

M_1 Industrial

M_2 Retail and commercial

M_4 Residential

Soft Areas

D_7

D_8

The soft areas are more precisely defined in the following table of developable parcels. The parcels inside the present and proposed airport land boundary are not included in the analysis, as there is only one alignment in that protion.

The cost of construction of each alignment is as follows:

Alignment	Cost (construction and right-of-way)
C_3	$7,209,205
C_4	$6,994,530
C_5	$6,747,600
C_6	$7,672,212
C_7	$7,094,687
C_8	$6,223,686

The difference in the cost of the selected alternate (C_5) and the others is as follows:

$C_3 - C_5 = \$ \ 462{,}000$

$C_4 - C_5 = \$ \ 247{,}000$

$C_6 - C_5 = \$ \ 925{,}000$

$C_7 - C_5 = \$ \ 347{,}000$

$C_8 - C_5 = (-)524{,}000$

The developable parcels of land are the same for each alignment. This is because of the generally large parcels, which means a significant area will be left for development even after acquisition of the strip for right-of-way. The land between Turner Street on the eastern boundary and the properties on the west side of Dewitt Road is generally homogeneous, except for some localized marshy lands, woodlots, and a gravel pit.

Three large parcels of land of 60 to 80 acres each are in the central portion of the segment. In the eastern portion there are three medium sized parcels of 17 to 26 acres. On the west there is a wide range of parcel sizes, including one of 58.6 acres. South of Stoll Road there are portions of three parcels outside the proposed airport boundary ranging from 7 to 15 acres.

The total area can be generally categorized as follows from the land development market point of view.

- Area to the west of Dewitt Road
  and south of Stoll Road: For Industrial use

- Central area north of Stoll Road and

  immediately east of Dewitt Road: For industrial or office use

  Next eastern strip: For residential use

- Far eastern parcels toward Turner Street: For residential use

The northern portion of the segment is the land surrounding the interchange with I-69. The land there will develop to the fullest extent for commercial and other highway related uses, and it could be the most valuable land in terms of a value capture policy. However, as all the alternative alignments converge at the same point at the interchange, the land would develop in the same pattern regardless of the alignment selected to the south of the interchange. As we are interested in the differential effect due to the alignments, the land development around the interchange will not be included in the analysis.

In estimating the potential increase in land values, the effects of factors such as size of parcel, distance from the highway, and land use market for the parcel (such as industrial, commercial, or residential) have not been taken into account. It is assumed that the increase in value would be the same for any parcel within the area of impact of the roadway, which is the corridor width. The differential effect of these factors will be dealt with in more depth later in this chapter.

As in segment B, assuming an inflation rate of 20 percent and risk protection of 50 percent, from the formula in section 4 of this chapter we have:

$$\text{Captured value } R = (P_2 - \alpha P_1)\beta.$$

By substitution in the above formula to find P_2;

Table 15 Values of developable properties relative to alignments, Segment C

Parcels	Assessed value	Parcels	Assessed value
489	12,364	311A-1	31,400
489A	10,000	310	10,000
480	17,000	309	23,900
482	10,300	312A	16,600
466	3,855	346E	14,100
466E	3,212 (est.)	346	17,900
316	7,000	312	12,500
317	1,995	312B	17,700
318	8,600	312A	16,600
318A	1,300	335	25,700
319	5,400	336	56,000
320	5,400	349A	23,200
321	13,000	351	6,300
323	10,700	347	12,000
324	10,200	350	10,500
325	8,200	349	13,900
326	12,300	351D	12,400
327	17,115	351E	9,300
328B	7,200		$616,641
328A	5,300	Multiply by 1.12 for 1980 value	$692,858
328	2,900		
329	14,500	Multiply by 2 for Market Value	$1,385,716
300	14,600	say	$1,386,000
331A	1,800		
331	19,500		
332	12,600		
332A	15,100		
313A	14,900		
313C	12,700		
313	13,400		
311	4,200		

For C_3 to be preferred, H_3 = \$462,000;

P_1 = 1,386,000;

α = 1.2;

β = 0.5.

Hence 462,000 = (P_2 - 1.2 × 1,386,000)0.5, so P_2 = \$2,587,200, or 1.86 times the present value.

For other alignments, the value are as follows:

C_4, R_4 = 247,000, P_2 = 2,157,200 or 1.56 times;

C_6, R_6 = 925,000, P_2 = 3,513,200 or 2.53 times;

C_7, R_7 = 347,000, P_2 = 2,357,200 or 1.70 times; and

C_8, R_8 = (-1)524,000, P_2 = 615,200 or 0.44 times the present value.

These differences in the increased property values in the order given above amount to 86 percent, 56 percent, 153 percent, 70 percent, and for C_8 an interesting (-)56 percent. This is because the cost of C_8 is less than the selected alternate C_5, and for it to remain a preferred alternate the property values can drop 56 percent.

As shown at the end of the analysis for segment B, these data can be used in the time series equations of Chapter IV. The results from would show what percentage increase at the end of a given time is required for one alignment to become preferable over another due to value capture policy.

In this case, as the properties are all the same in value for each alignment, Case I will apply, where $\Delta = 0$. The formula used will be:

In the above computations, it is assumed that the property along alignment C_5 increases at the rate of 20 percent per year and

Table 16. Computations of Q_2, Segment C

$$Q_2 = \frac{R}{P} + Q,t \quad \text{for} \quad 1, 5, \text{and } 10 \text{ years of } t.$$

The computation can be tabulated as follows:

Alignment Pairs	R	P	Q_1	t	R/P	Q,T	Q_2	Comments
	0.462	1.386	0.20	1	.333	.20	.533	53.3% per year
C_3,C_5				5		1.0	1.333	133% in 5 yrs. or 26.5% per yr.
				10		2.0	2.33	233% in 10 yrs. or 23.3% per yr.
	0.247	1.386	0.20	1	.178	.20	.278	27.8% per year
C_4,C_5				5		1.0	1.178	117.8% in 5 yrs. or 23.56% per yr.
				10		2.0	2.178	217.8% in 10 yrs. or 21.78% per yr.
	0.925	1.386	0.20	1	.667	.20	.867	86.7% per year
C_6,C_5				5		1.0	1.667	166.7% in 5 yrs. or 33.34% per yr.
				10		2.0	2.667	266.7% in 10 yrs. or 26.67% per yr.
	0.347	1.386	0.20	1	0.250	.20	.450	45.0% per year
C_7,C_5				5		1.0	1.250	125.0% in 5 yrs. or 31% per yr.
				10		2.0	2.25	22.5% in 10 yrs. or 33.5% per yr.
	-0.524	1.386	0.20	1	-.378	.20	-.178	may even decline
C_8,C_5				5			-.338	
				10			-.358	

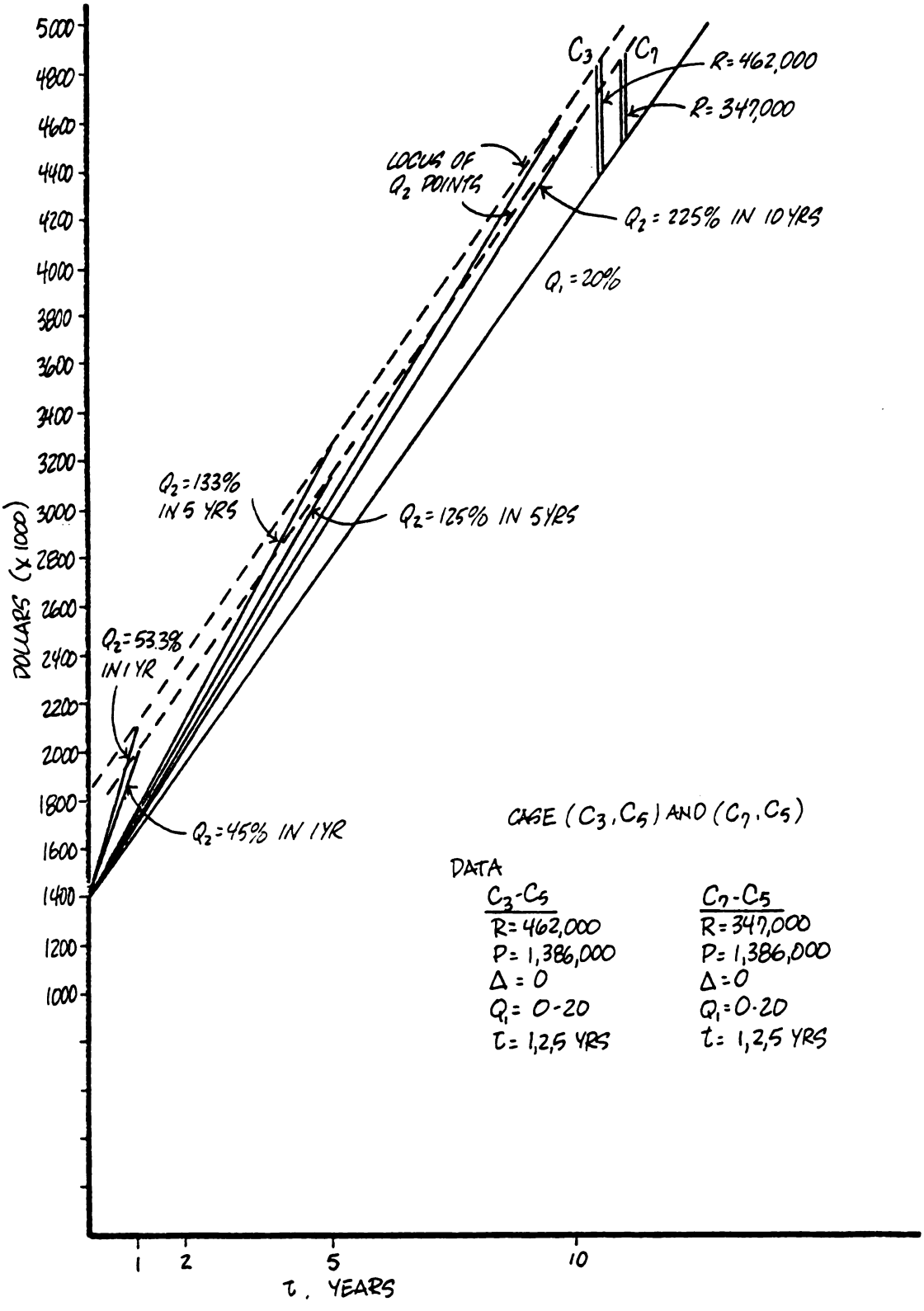


Figure 27: Graphical Representation of Segment C

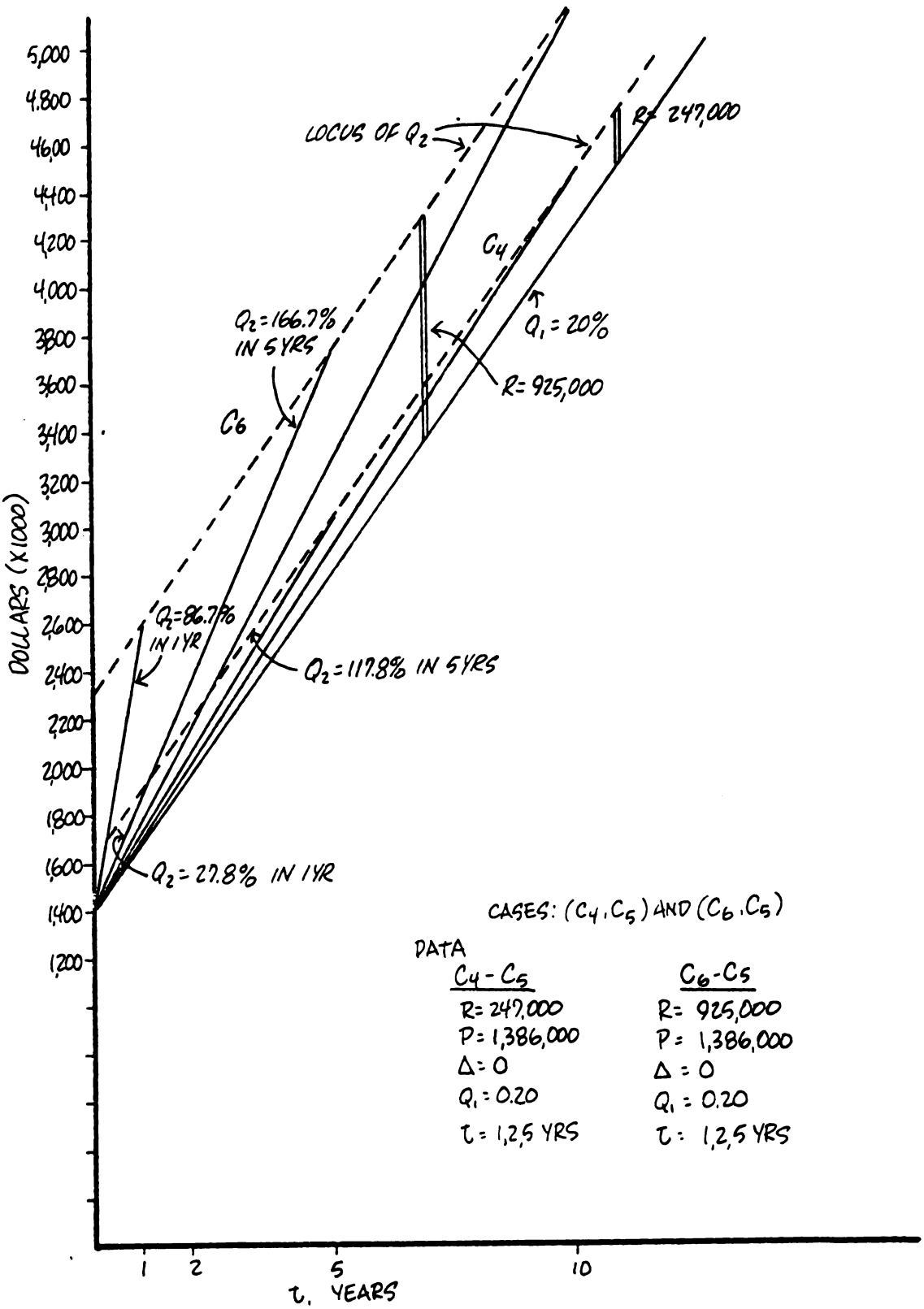


Figure 28: Graphical Representation of Segment C (continued)

constantly does so. The difference in the increase in property values should then be captured in a given number of years to make any of the other alignments preferred over C_5. For the three assumed values of t, that is, one, five, and ten years, the required increase in the difference of the increases is computed. To capture value in any period, C_6 must increase most and C_4 least.

Effect of Soft Area Characteristics on P_2

In the preceding discussion, it was assumed for the calculation of P_2 that all developable parcels of land in the vicinity of an alignment increase in value at the same rate due to the highway facility. In practice, however, one would expect to see somewhat different results. For example, a parcel closer to the highway would be expected to increase at a different rate than one farther away. The increase would also depend upon land use permissible on the parcel, with greater values for industrial as opposed to residential, for example. The change in value would depend on the size of the parcel as well. For a larger parcel, so 80 acres, the potential for development is greater flexibility than for a parcel of 0.3 acres, and hence the increase in property value would be expected to be much higher.

For a developable parcel of land, it appears that the increase in property value due to the impact of a highway alignment would depend upon three factors:

permissible and planned land use	ℓ
distance from the alignment	d
size and shape of the parcel	s

Thus, $P_2 = f(\ell,d,s)$. The variation of P_2 with d and s can be predicted relatively simply as

$$P_2 \propto s$$

$$P_2 \propto \frac{1}{d}$$

Let γ represent a multiplier constant with specific values for different land uses for which the parcel is planned. It could, for example, have the following values:

for commercial development, $\gamma = 3$;

industrial development $\gamma = 2$; and

residential development $\gamma = 1$.

The relationship can be expressed as:

$$P_2 = \frac{C\ s\ \gamma}{d}$$

where C is a constant of proportionality for a given area. This constant would depend upon factors such as the growth potential for the area, inflation rates, the state of the economy in the region, and so forth.

The expression indicates that for a parcel of land of developable characteristics, large size, proportionate geometrical shape, access to the highway, and potential for commercial development, if the market exists, would have a property value that would increase at the fastest rate due to the improved or new alignment of the highway. Similarly, the value would not increase as rapidly for a parcel farther away and with a size and shape unsuitable (or less suitable) for development.

For a given alignment, the parcels of land under consideration would have a set of ℓ, d, and s values. For every parcel, with reference to a given alignment, there will be specific ℓ, d, and s values. It

can be further argued that, for a given ℓ, d, and s, the value of P_2 can be plotted against time for a dynamic situation. Although there may be a one-time increase in the property value of a given parcel (ℓ_1,d_1,s_1), the increase may continue at rates different than those for another parcel (ℓ_1,d_1,s_1).

However, for the sum of the parcels available with an alignment (A), there will be a unique (ℓ_1,d_1,s_1) which will give a change in P_2. This rate of increase can be represented by the slope of the line on the (P_2,t) graph, shown in Figure 29.

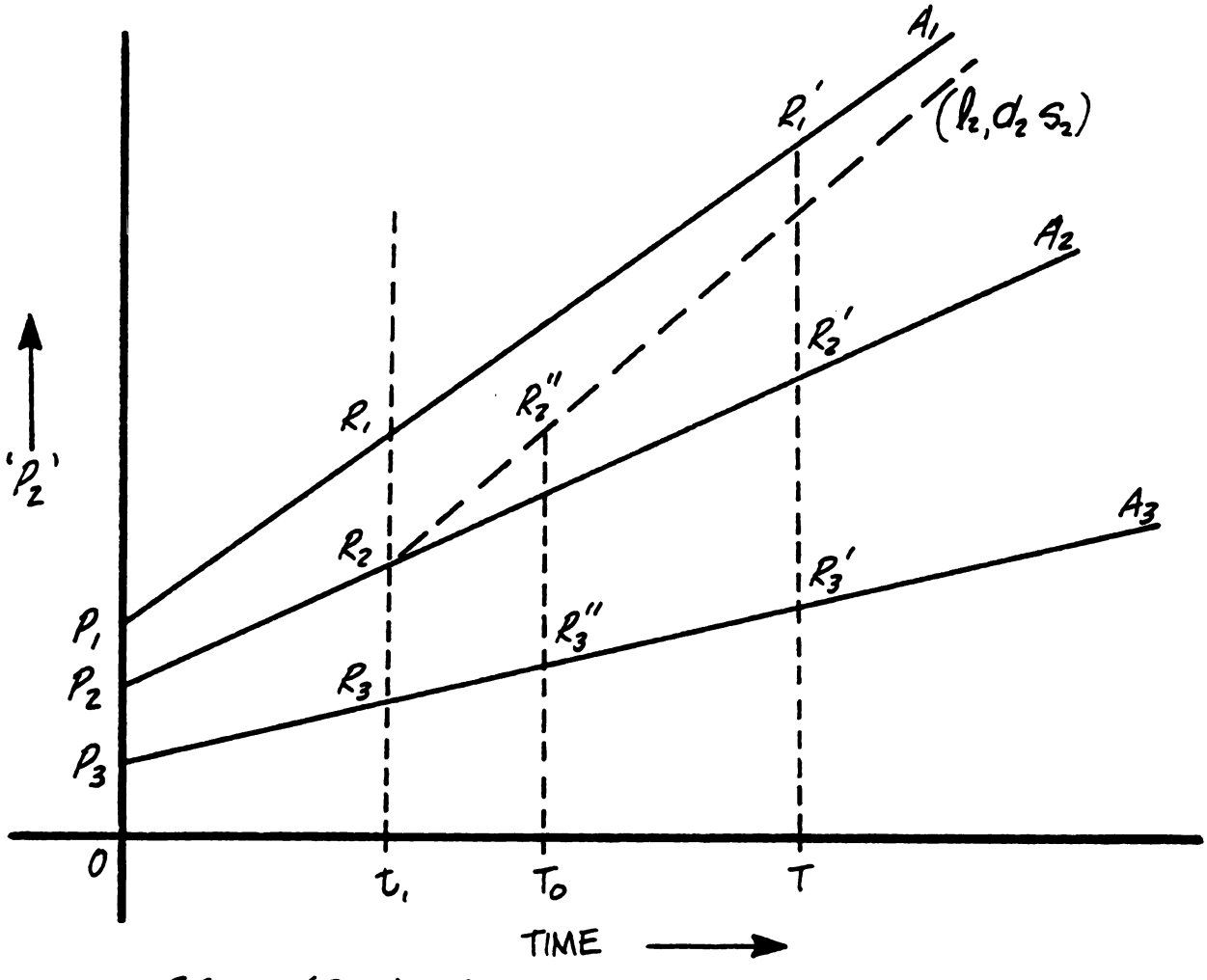


FIG. 29 (P_2,t) - GRAPH SHOWING EFFECT OF CONSIDERATION OF (ℓ,d,s)

Earlier, in Figure 3 the graph was presented to show the possible change in property values for each alignment with time. The graph shown in Figure 29 is a representation of the case in which the change in property values after a given time, t_1, is at the same percentage rate. In other words, P_2 increases from P_1 to R_1, P_2 to R_2, and P_3 to R_3 at time t_1 and thereafter continues to increase at a constant rate per unit period of time. In this case, the ℓ,d, and s factors have not played any role yet. If they were taken into consideration, the rate of change would be expected to be different for each alignment. The slop of the lines for each alignment is $R_1/4t$, $R_2/4t$ and $R_3/4t$ due to the rate of change being assumed to be 0.25 R_1, 0.25 R_2, and 0.25 R_3.

At any other time T in the dynamic case, the property values are given by R_1', R_2', and R_3' for alignments A_1, A_2, and A_3, respectively.

For alignment A_2 to be preferred over A_3 at time T, the difference in property value must be less than or equal to $R_2' - R_3'$.

Now let us consider the factor of (ℓ_2,d_2,s_2) for alignment A_2. The combination of land use, distances, and size of the parcels, it planned correctly and for the best use, would change the slope of the line representing the P_2 for alignment A_2 shown by line (ℓ_2,d_2,s_2).

The formulation derived above can be represented at

$$P_2 = \frac{CsY}{t}\, t \quad \text{or} \quad P_2 = Qt,$$

where Q is the slope of the (ℓ,d,s) line on the P_2,t graph. The (ℓ_2,d_2,s_2) line has essentially shifted the time T (when the difference in property value is reached for A_2 to be preferred over A_3) to an earlier time T_0. At T_0, $(R_2'' - R_3'')$ is now equal to the desired intercept $(R_2' - R_3')$

For a required difference in the property value, we can determine the required slope of the (ℓ,d,s) line at a given time. Also, for a given slope and desired change in property value, we can determine the time when the change in property value will take place.

Discussion of Results

1) In the analysis conducted in the preceding pages, it has been assumed consistently that the degree of accessibility provided by each alignment being evaluated is the same. For example, alignment C_4, C_5, C_6 all have the four-lane cross section with a sixty feet wide median. The cost of construction of each alignment has been computed on this basis. However, it is entirely possible to compare the two given alignments with different degrees of accessibility by providing different levels of design and improvements. The estimate of change in value of properties due to the different degree of accessibility will add another complexity in the process which requires further research.

However, it should be pointed out that in a developed economy like that of the United States, the property values are impacted by the accessibility to the market more than the accessibility to a particular road. This is borne by the conclusions in a study conducted by Vargha.[45]

> If a road system is well developed, the entire system serves this purpose. Thus the more highly refined and developed the system, the less important is direct access to any particular road.

The accessibility to a road would have relatively more significant impact in a developing or an underdeveloped economy.

2) There is a need for further research in estimating the increase in land values due to the factors (ℓ,d,s) discussed in this chapter.

Vargha[45] has concluded that the impact of distance on the agricultural land values was not significant. Again his reasoning is that "the time when one hard surfaced road more or less made a difference in farm land values is past in this area (the area of study in that report)". However, in our case, the issue is the change in property values caused by the potential for development of land created by the transportation facility alignment.

3) The case of a decline in values of certain properties instead of an increase, can be considered in the model presented in the dissertation simply by changing the algebraic sign to a negative instead of positive. There may however be a situation where the impact of the alignment may be identified outside the corridor, somewhere else. This impact may be a lost opportunity for a close by suburb or the central city. This situation has not been examined in the case study but would require further research.

CHAPTER VII

SUMMARY AND CONCLUSIONS

A. Summary

Financing transportation facilities; construction or improvement projects, under limited resources and skyrocketing inflation is becoming extremely difficult. Alternate resources and innovative approaches are needed more than ever before. With special reference to the highway alignment selection process, techniques have been described that can be considered for use in transportation project financing.

One of the two main ideas examined in the thesis are: first, the public at large has a right to share the increase in value created solely by the use of its own moneys, and second, consideration of a factor of capturing the unearned increment in value of properties due to an alignment of a transportation facility, may, under certain circumstances impact the decision to select the alignment itself.

The philosophy of capturing a portion of unearned profits created by a governmental action and the techniques available to apply the Value Capture policy have been discussed. The techniques differ when private ownership of land is involved rather than public ownership.

Application of the principles developed in the thesis for analysis of the effects of Value Capture policy on the selection of alignments has been shown with reference to a case study. The potential of impacting the facility alignment selection by the introduction of a factor of Value Capture has been demonstrated. Although the case study is for a highway alignment, during the development of the approach care has been exercised to make it as general in application as possible to alignments of other modes as well.

B. Conclusion

The following conclusions can be drawn from the application of the model developed in the thesis. The diversity in the area selected for a case study requires that the conclusions be divided into three distinct environmental categories: a fully developed urban area; a partially developed fringe area; and, an undeveloped rural area on the outskirts of a major population center.

1. Land Development

1.1 Fully developed urban area

1.11 The existence of a market demand for redevelopment of land is a necessary, but not a sufficient, condition for capturing the values created by a facility alignment. The cost of redevelopment far exceeds the created values. For areas like the one in the case study, desperately trying to attract growth there are no profits, let alone windfall profits -- even after huge amounts of public money from federal or state grants are used to acquire, relocate and clear the existing development.

1.12 The number of alignments feasible for construction of major improvement, due to the fully developed areas, were extremely small. In the case study while there were several alternate treatments, there was only one feasible alignment. The relative impact on the different alignments due to redevelopment, the main subject of the thesis, in such cases becomes a trivial point.

1.13 The case of increased tax revenues over an extended period of time is due more to redevelopment than to the facility alignment. Such increase would take place even if the new transportation facility were not built and, hence, falls outside the purview of the thesis.

1.14 For an urban area with booming growth and economy, the economics of the situation would be different. This may occur due to the extremely high returns expected from the sale or lease of the assembled and/or cleared properties. The facility alignment would be expected to play a significant role in such cases due to the flexibility it would bestow upon the potential development concepts.

1.2 A partially developed fringe area

1.21 Such an area would be a relatively better setting than the central city area in two respects: feasibility of relatively greater number of alignments and potential for redevelopment; and the factor for testing the potential value that can be captured due to different alignments can play a more significant role in such areas.

1.3 An undeveloped rural area

1.31 At the other end of the development scale, is the undeveloped rural area, which has the maximum potential for change

and possibilities of highway or facility alignments. The costs of redevelopment are lower and the created values are at a maximum. It is estimated that the land in the segment C, as a result of the highway alignment, would increase in property value from 10 to 100 times.[30] The impact of Value Capture on the selection of a highway alignment is maximum in such areas.

2. Significance of Impact

The models presented in the study would enable an administrative entity to determine the significance of impact of the Value Capture Policy, in a particular situation. If the impact determined is insignificant or if it is unrealistic to expect a significant impact on the property values due to an alignment, the effort to implement the Policy in that case can be saved.

3. Legislation

There is need to enact legislation to empower the state and local highway, street, and transportation authorities to condemn land or airspace necessary, through the exercise of the power of eminent domain in excess of that necessary for the right-of-way to effectuate a Value Capture Policy. The Model Airspace Act is the development in such a direction. Land banking policy needs to be examined more carefully after it is tailored to suit the American situation.

4. Translation of Experience

Experience in one country or society cannot be transferred to another setting without side effects and legislative and political support.

5. Further Research

5.1 The effect of permissible land use, lot size and distance of the parcel from the alignment, on the increase in property value needs further research to refine the process.

5.2 The compensation of "wipeouts" or losses inflicted on the property owners due to governmental action, such as selection of a facility alignment need to be studied to provide a balanced and equitable mechanism in pursuing the Value Capture Policy. If society has a right to capture the benefits created by public moneys, does it have the responsibility to compensate the losses inflicted by the use of public actions?

5.3 Appraisal techniques to estimate the property values due to anticipated actions, need to be refined to withstand legal challenges.

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APPENDIX

ENACTED AND PROPOSED SCREWTS IN CANZEUS: A SUMMARY

SCREWT TITLE	COUNTRY OF ORIGIN; STATUS; PERTINENT DATES	MOTIVATION BEHIND TAX	TAXABLE INCREMENT	DEFINITION OF TAXABLE PROPERTY VALUE	METHOD OF DETERMINATION OF BASE VALUE	TAXABLE EVENTS	ALLOWED DEDUCTIONS FROM TAXABLE INCREMENT	ALLOWED EXEMPTIONS FROM TAX	TAX RATE	ADMINISTRATIVE COSTS	ADMINISTRATIVE PROBLEMS	AGENCY TYPE RESPONSIBLE FOR ADMINISTRATION	METHOD OF IMPLEMENTATION AND TRANSITION	COLLECTIONS TO DATE	DESIGNATED USE OF REVENUES	REASONS FOR REPEAL
Finance (1909-10) Act 1910 (1) (See reverse side for all sources)	Great Britain. Statute. 1910-21 (repealed by Finance Act 1920)	To recapture the increases in value "due to the energy and enterprise of the community."	a. Increment tax on difference between current site value of land, as defined by consideration upon transfer, periodic assessment, or value upon death, and the original site value; b. Reversion duty on the difference between market value at the time of termination of lease and market value at execution of lease	Assessable site value = market value minus a. building value b. improvement value c. value of land appropriated or donated for public use d. demolition costs e. value attributable to personal goodwill of owner f. cost of freeing land from liens, restrictions, etc.	On coming into effect, a valuation of all land in England was required. That valuation constituted base value.	a. Sale or mortgage b. Lease of 14+ years c. Death d. Periodic for corporations and nonincorporated associations.	a. 10% of increase is disregarded for tax purposes; b. Deduction allowed for betterment charges paid under Housing, Town Planning Act, or any special assessments; c. Previously paid duties a credit owed on subsequent taxable event.	a. Increases in agricultural value of agricultural land; b. Small owner-occupied units; c. Rented residential units; d. Lands held by nonprofit organizations for game or recreational purposes; e. Land held by the national government; f. Land held by local authorities; g. Land held for charitable purposes is free of periodic duty; h. Land held by statutory authority is free of periodic duty	20%	£5,000,000	a. Very high assessment and valuation costs; b. Difficulties in determining the individual components of assessable site value	Inland Revenue (national taxation administration)	The tax came into effect as of April 30, 1909 (announcement of tax). Base valuation made as of that date; no taxation of increments prior to that date.	£1,180,290 for all duties under act; £460,481 for increment tax on land only	Undesignated (general revenues)	The opposition came to power
Alberta Unearned Increment Tax (2)	Canada. Province of Alberta; Statute; 1913-1936. Repealed.	Most likely, a need for revenue and a desire to reduce land speculation during a "boom" period (no stated motivation in the statute).	Increase in the value of real estate between the last transfer of property and present transfer of property.	Land and improvements (real estate)	a. For first base value after passing of Act, $15.00 per acre for land outside incorporated town or city or the value on last assessment roll for the year 1913 for land inside incorporated areas. b. For all transactions following, the value of consideration at the prior transfer of property, plus value of improvements made subsequent to previous sale.	Sale		a. Exempted transfer upon death; b. Grants from the Crown (made taxable in 1945); c. Unsubdivided land, 10% or more used for cultivation for 12 months or more, up to 640 acres in size or a valuation of $50.00/acre or less without improvements; d. Sale to or by municipality for tax enforcement purposes.	*1919-1938* 5% *1938-1936* 10%	Unknown	Problems resulted from use of consideration in transactions other than cash in order to avoid tax; specific limits on registrar to assess real value of property for purposes of the tax.	Land Registrar (county level).	Specific start date with a definition of value as of that date.	*1921-1936:* $8,498,520.00 for private lands $880,402.76 under a similar tax enacted for Crown lands 1945-1956. (Canadian dollars).	Undesignated (general revenues).	Ease of tax avoidance through consideration other than cash made administration difficult. A desire to lower overall taxes, remove "nuisance" taxes.
Land Commission Act 1967 (3)	Great Britain. Statute; Repealed; 1967-1971	a. To recapture for the community, increases in land value which are community created through a betterment levy; b. To ensure that in cases of public acquisition that the public does not have to pay for the value it creates; c. To ensure through public acquisition and sale of development land that landowners will be prevented from holding land off the market waiting for the levy to be repealed, and thereby increasing land prices and preventing implementation of positive planning.	Increase in the net development value of land.	Net development value is the difference between market value and base value. The levy was only on increases in net development value, as opposed to increases in current use value.	At the option of the owner, base value could be either: a. Current use value, including actual use value and any value present for a use that could be made of the property that was not considered material development,[1] plus 10% thereof, and the value of any severance damages to remaining lands if part is sold or developed, or b. Consideration paid for the property at last sale, plus, in either case, expenditures on improvements or ancillary rights.	*Case A*—Sale of all or part interest in a property; *Case B*—Grant of tenancy; *Case C*—Start of material development (development for which government permission is required); *Case D*—Upon compensation of revocation of right to develop[2] (compensation reduced by betterment levy); *Case E*—Grant of easement or release of a restrictive easement or right; *Case F*—Other events as specified by the Minister by regulation, including renewal, extension, and variation of tenancies.	Increase in current use value was to be excluded from taxable value; however, a capital gains tax was paid on this amount. Any capital gains on the betterment portion of the increase were to be deducted from the levy. Any estate duties paid on the betterment portion of the increase were also deductible.	a. Lands held by local government or other public bodies; b. Lands held by nonprofit housing societies; c. Lands held by charities for charitable purposes; d. Lands held and used by public utilities and the National Coal Board for their operations; e. Cases where land was purchased, the levy paid, and development occurred within two years of acquisition were exempted from paying levy upon development; f. Builders who owned residential property as of September 22, 1965 (white paper publication date), and had planning permission, did not have to pay the levy on development.	Begin at 40%, then go to 45%, then go to 50%, then be further considered.	Costs attributable to assessment and collection of betterment levy. *1967-68:* £2,383,354 (over 5 times that year's collections) *1968-69:* £2,013,015 (25% of that year's collections) *1969-70:* £2,645,170 (12.5% of that year's collections)	a. Separating out increases in current use value from increases in development value was difficult; assessment costs high; collection costs high; b. Over 2/3 of levies were on transactions of £5,000 or less.	The Land Commission (special agency for administration of the act).	Specific start date; staged increase of tax rate	*1967-1968:* £461,600 *1968-1969:* £8,103,058 *1969-1970:* £21,172,000 *Assessments for 1970-1971:* £30,922,200	All levy payments to the Land Commission were to be paid into the Exchequer.	Conservatives came to power and repealed the act, giving as reasons: a. That the Commission had failed to make land available for development in areas of acute land shortage and subsequently the betterment levy had aggravated this problem and increased land prices; b. That the levy had been a hardship on those who could not be considered land speculators, such as owner-occupiers; c. That the act was not designed to prevent retroactive taxation; d. That the 40% tax rate was arbitrary and not a representation of the portion of wealth increase that was community caused.
Finance Act 1974 (1) Tax on Development Gains from Land and (2) Tax on First Letting or Occupation of Building After Material Development (4)	Great Britain. Statute. 1973-	To tax gains in land value as capital gains but at a higher rate because of the fact that gains on land, as opposed to other assets subject to a capital gains tax, can benefit simply as a result of public decisions made to benefit the community as a whole.	The difference in development value between the present taxable disposition and the last taxable disposition. Gains in current use value to be taxed at capital gains tax rates; gains in development value to be taxed at ordinary income rates.	Development value of land and improvements (real estate)	Base value is the highest of: a. The cost of acquiring the parcel plus interest, plus expenditure to enhance its value, plus 20%. b. The current use value (as defined for the Land Commission Act of 1967 above in this column) at time of disposal, plus 10%. c. Cost of acquisition, plus the increase in current use value since April 6, 1965 (date of effect of capital gains tax), or the date of ownership.	a. Sale of all or part of property; b. The first leasing after material development after December 17, 1973	Development losses are offsettable against development gains	a. Small transactions where total disposals didn't exceed £10,000 in any year by individuals of £1,000 per year by any company; b. Where owner occupies for 5 years+ before first leasing; c. When total gain in existing use as well as development value was less than 20% over base value; d. Principal private residences; e. First leasing after development of a residential building; f. First leasing where rents are less than £2,500.	Gains in development value taxed through the capital gains tax at ordinary income tax rates (graduated by income), ranging from 33-83% for individuals and a rate of 52% for corporations.	Not available	Not available, but the complexity of the act was said to be potential problem in administration.	Inland Revenue	Full implementation as of date of announcement December 17, 1973.	Not available.	Undesignated (general revenue).	Still in effect as of March 1976. Will most likely be repealed by Labor Party, to be replaced by the Development Land Tax, proposed only 42 days after enactment of 1974 Finance Act.
Development Land Tax (DLT) and The Community Land Act (CLA) (5)	Great Britain. DLT-proposal. CLA-statute, enacted on November 13, 1975. DLT still pending as of March 1976.	To recapture development value increases which occur in private transactions through the DLT; to prevent the public from having to pay for the development value created by the community by pricing public purchases of development land at a level *net* of DLT. When the DLT reaches 100% tax rate public purchases of development land will be at current use value.	DLT taxable increment will be the difference between either (1) disposal price or (2) the market value of a deemed disposal of interest and a base value.	Realized development value of land and improvements (real estate)	Base value is the highest of: a. Cost of acquisition of property interest, *plus* cost of improvements, *plus* cost of any increase in current use value over the period of ownership, *plus* (1) 15% of the acquisition cost for each year of ownership up to a maximum of 60% for land acquired on or before September 12, 1974, *or* (2) 10% of acquisition cost per year for land acquired between September 12, 1974, and May 1, 1977, up to a maximum of 40%. b. Aggregate 110% of current use value at date of disposal plus expenditures on improvements. c. 110% of the aggregate cost of acquisition and expenditure on improvements.	Disposal of an interest in land: sale, lease, material development; or otherwise disposed of. Not chargeable upon gift or upon death (these events taxable under another proposed capital transfer tax).	Amount on which other taxes will be charged on a disposal of interest in land will be reduced by the amount on which the DLT is charged (i.e., capital gains tax excludes development value).	a. Owner-occupied residences; b. First £5,000 of development value realized by individual or company to be exempt; c. Land held as stock in trade with planning permission on September 12, 1974.	DLT begins at a rate of 80% and will be increased over time to 100%.	Not available.	Not available.	Inland Revenue will administer DLT; Department of Environment will administer Community Land Act.	Staged implementation with gradually increasing rate; Community Land Act is also staged starting with authorizing local authorities to purchase and resell certain kinds of development land; the final stage of the CLA will require that all land pass through public ownership prior to development.	Not available.	Undesignated (general revenues).	The Conservative opposition has already promised repeal of the CLA when it comes to power
New South Wales Land Development Contribution Act No. 22 (6)	Australia. Statute as of April 8, 1970. Repealed December 20, 1973.	a. Those lands deriving a considerable benefit from rezoning and requiring a massive public investment for services should contribute some of the gain in value to provision of services necessary for development; b. To make serviced land available for development in adequate quantities to slow spiralling land prices.	Applied only to land near Sydney publicly "declared" for future urban development. Tax is based on the difference between base value as of August 1, 1969, and the disposal price or the value of the land at the time that interim development approval (roughly analogous to a rezoning) is announced, whichever comes first. If disposal is first, tax continues to accrue until interim development approval is announced, but credit is given for prior tax paid.	Market value of land and improvements (real estate)	Base value determined by the Valuer-General, the government appraiser. Base value is the market value of land and improvements as of August 1, 1969. Base value is increased by 2% each year, to offset effects of inflation.	Private sale, transfer of fee, sale in eminent domain, or grant of final development consent, or development, if consent is not necessary.	a. Development Contribution deductible from net value of the land for the purpose of death duties; b. The cost of owner improvements such as reclamation, excavation, grading, easements benefiting the land, roads, water supply, sewerage, and buildings, may be deducted from taxable increment.	a. The principal residence of the owner is exempt; b. Dispositions from the Commonwealth; c. Disposition of state public lands to a governmental entity for a public purpose; d. Development by a public agency for a public purpose; e. Development for a charitable purpose; f. Other dispositions as provided by regulation.	30%	*1971-1972:* $392,037 (11% of collections) *1972-1973:* $504,639 (7% of collections) (Australian dollars)	Nothing prominent.	State Planning Authority.	Tax implemented at full rate as of date of enactment. However, the taxable increment was initially minute and increased over time for most parcels.	*April 1970-June 1971, net receipts after expenditures:* $673,976 *1971-1972 gross receipts:* $3,532,044 *1972-1973:* $7,052,375 (Australian dollars).	Revenues went into a special fund intended to provide urban infrastructure within the area around Sydney to which the act applied.	The tax was unpopular. The opposition promised repeal, claiming that the development contribution was being passed on to consumers of housing. Under pressure, the Liberal County Party (which originally sponsored the tax) also promised repeal, noting that house lot prices had continued to rise and supposing that the betterment levy was contributing to, not solving, the problems.
Property Speculation Tax Act (7)	New Zealand. Statute. August 22, 1973-	To dampen land speculation activity which was accelerating increases in land prices without contributing any improvement to the land.	Increment tax on the difference between sale price and prior purchase price, plus or minus any receipts or expenditures not taken into account by the income tax.	Land and improvements (real estate)	Prior purchase price value.	Disposition of land, including sale of interest in land; sale of an option; sale of shares in a land-owning company.	a. Expenses associated with acquisition and disposition; b. Gift duties; c. Any other expenditures not taken into account by the income tax; d. Losses from property sales can be used as tax credit against future profit subject to the tax.	a. Local and other public authorities including Maori Authorities (roughly equivalent to Indian Tribal Authorities in the U.S.); b. Dispositions which occur over 2 years later than the last disposition; c. Purchase of owner occupied residences, or purchase of a lot intended for an owner occupied residence; d. Purchase of an owner-occupied business, except where business consists of land sale or development related function; e. Purchase by someone in the business of renovating/building where one-half of purchase price consists of the value of improvements at time of purchase *and* the cost of renovations, including labor, are at least 25% of the total purchase and renovation cost; f. Subdivided land sales if the subdivider also provides improvements that are at least 40% of the total land and improvement cost (Contributions from local authorities are counted as costs); g. Sales resulting from compulsory purchase generally not taxed; h. Sales under the terms of a will or inheritance.	Tax rate varies according to the amount of time since the last transaction, from 90% for transactions within 6 months of last transaction to 60% for transactions within 2 years of last transaction.	Not available	Very few administrative problems since the speculation tax system is under the same agency responsible for handling the transfer tax and the income tax. Inland Revenue can preclude recordation of a property transfer if the speculation tax isn't paid. This is a ready-made reporting and compliance system.	Inland Revenue	All transactions subject to this tax as of enactment.	*Year ending March 31, 1974:* $205,000 *Year ending March 31, 1975:* $346,000 *Period April 1, 1975, to November 30, 1975:* $180,000 (New Zealand dollars)	Undesignated	

1. Material development does not include that kind of development covered by a General Development Order (GDO). The GDO covers matters which constitute development but are not large or novel enough to require an ad hoc planning permission. Change of use within the concept of existing use is also not material development. The existing use concept permits a change from one type of use to another similar type of use.

2. Land Commission Act 1967.

(Continued on the other side)

SOURCE:
Donald Hagman, Windfalls for Wipeouts, American Society of Planning Officials, Chicago, 1978.

(Continued from the other side)

SCREWT TITLE	COUNTRY OF ORIGIN: STATUS: PERTINENT DUTIES	MOTIVATION BEHIND TAX	TAXABLE INCREMENT	DEFINITION OF TAXABLE PROPERTY VALUE	METHOD OF DETERMINATION OF BASE VALUE	TAXABLE EVENTS	ALLOWED DEDUCTIONS FROM TAXABLE INCREMENT	ALLOWEDEXEMPTIONS FROM TAX	TAX RATE	ADMINISTRATIVE COSTS	ADMINISTRATIVE PROBLEMS	AGENCY TYPE RESPONSIBLE FOR ADMINISTRATION	METHOD OF IMPLEMENTATION AND TRANSITION	COLLECTIONS TO DATE	DESIGNATED USE OF REVENUES	REASONS FOR REPEAL
Land and Income Tax Amendment No. 2 (8)	New Zealand; Statute; July 1973.	To recapture increases in land value where a purpose or intention to sell was present at time of purchase. To recapture profits or gains in land value due to zoning or subdivision, change of zoning, likelihood of a change of zoning; any consent granted pursuant to the Town & County Planning Act after acquisition, the likelihood of such a consent being given; the removal of any condition, restriction, obligation, prohibition, or covenant imposed under the act in relation to the land; any change or occurrence of a similar nature to those above.	The difference between the current sales price and the base value.	Land and improvements (real estate).	In an arm's length transaction, purchase price, *plus* acquisition costs such as stamp duty, holding costs such as property taxes, costs of improvements and repairs made during holding period, sales costs such as commission. In transactions not at arm's length, appraised market value at time of sale must be reported for assessing income tax liability.	Sale transactions where the property is not liable for Property Speculation Tax but the owner: a. Acquires the property for the purpose or intention of resale; b. Deals in property; c. Is a builder; d. Owned for less than 10 years *and* at least 20% of net profit realized is due to a rezoning or a likely rezoning. Sales to the crown or local authority are treated as other sales.	a. Liability for property speculation tax takes precedence over income tax; b. Losses on properties acquired by dealer or builders as a part of their business; c. If liable for tax under rezoning provision, owner can deduct from net profit the greater of $1,000 or 10% of the profit for each year that land was held.	a. Sale of vendor's private residence; b. Sale of a rezoned or subdivided farm, if sold as farmland (farm value reflected in price) or if sold 10 years or more after initial purchase; c. Sale of residential subdivided property where area of land was less than 4,500 square meters, *unless* purpose or intention to sell at time of purchase can be established.	Ordinary income tax rates.	Not available.	Not available.	Inland Revenue.	Taxes all pertinent transactions made after effective date of tax.	Not available. Taxes have not yet been reported.	Undesignated (general revenues).	
Ontario Land Speculation Tax Act (9)	Canada, (Ontario); Statute; June 6, 1974.	To stabilize land and housing prices through reduction of speculative transactions which add no real value to land; to recover for the public purse a major share of windfall gains from the speculative land transactions which are not deterred by the tax.	The difference between the value at the time of the taxable disposition and the "adjusted base value." Adjusted base value includes the purchase price or value on April 9, 1974 (if owned by the present taxpayer on that date), plus: a. Cost of improvements made during the ownership period; b. 10% of base value or *net* maintenance costs, whichever is less; c. Costs of acquisition or disposition; d. For taxable farm land, 10% compounded annually upon the base value after April 9, 1974, is added to adjusted value.	Land and improvements (real estate).	For land acquired by the transferor *on or before* April 9, 1974, base value is the fair market value on that day. For lands acquired by the transferor *after* April 9, 1974, base value is either: a. The cost to the transferor of acquisition in an arm's length transaction, or; b. An appraisal estimate of fair market value at the time of acquisition by the transferor.	a. Sale or transfer of a beneficial interest in land; b. Sale, transfer, or assignment of an option or transfer of land to comply with an option; c. Leases which, including renewals/extensions, exceed 50 years; d. Transfers due to death of any person; e. Changes in the composition of any organization without share capital that has 50% + of its assets in designated land, if such change alters control over a proceed from a subsequent disposition or use of land; f. The allotment/issue of shares of a corporation to which 50% + of voting rights are attached when 50% + of the assets of a corporation consist of designated land; g. The amalgamation, merger, or consolidation of any two or more corporations when 50% or more of the assets of any one consist of designated land and when that action has the effect of changing control over the use of the land or proceeds of subsequent disposition of land.	a. Cost of improvements made during taxed period; b. The lesser of 10% of base cost or net maintenance cost; c. Acquisition and disposition costs; d. For farmland, 10% of base value compounded annually.	a. Sale of mortgages; b. Intrafamily transfers of farm property which will remain in farm use; c. Disposition to a charitable organization; d. Disposition to a municipality or other governmental body; e. Where designated land is used as a tourist resort, for a commercial or industrial purpose other than renting residential units; as a principal residence of transferor, less than 11 acres; as a principal vacation property of transferor, less than 20 acres; f. Where the designated property includes a building or structure constructed by the transferor with a value not less than 40% of the total proceeds at the time of disposition; g. Where the designated property includes a building that the transferor renovated at a cost of not less than 20% of base value; where the building has a value at disposition not less than 40% of proceeds; h. Where designated land is included in a registered plan of subdivision, and the transferor has serviced the land so that building can commence and a building permit can be granted, and the buyer agrees to build on half the lots within 9 months and the remainder within 18 months; i. Where designated land is in a territory not incorporated into a municipality nor designated as a restricted area by §17 of the Public Lands Act; j. The sale of a former residence of a person over 65 years of age; k. Distribution of shares to shareholders upon winding up of or dissolution of a corporation; l. Residential investment property held for more than 10 years; if held for less time, the exemption is prorated.	20%	Not available.	According to the agency administering the tax, it has been operating very smoothly.	Ministry of the Treasury, Economics, and Intergovernmental Affairs.	The tax came into effect as of April 9, 1974, date of announcement.	*April 9, 1974, to April 1975:* $333,234.93 *April 9, 1975, to December 1975:* $2,580,000 *# taxable transactions April 1974, to April 1975:* 886 *April 1975, to December 1975:* $3,700	Undesignated (general revenues).	
Vermont Land Gains Tax (10)	United States; Statute; May 1, 1973.	Motives are not clearly stated; there are some indications that several motives may have been involved: to discourage rapid turnover of land which increased land prices and encouraged development; to provide revenues for financing a circuit breaker tax system; to discourage out-of-state investors from speculating in land.	The difference in land value between present transfer and prior acquisition, minus the cost of improvements and deductable taxes.	Land only, excluding buildings or other structures and improvements.	Follows federal tax rules for definition of basis.	Any transfer of title for consideration; transfers by a grant assignment, conveyance, will, trust, decree of court, or any other means. Title includes interests in property having no fixed or ascertained term, such as fee simple, life estate, perpetual leaseholds, or easements. Leases exceeding 99 years, options for sale, exchange of shares in a corporation, that effectively entitles the purchaser to use of land, are all taxable events.	As per federal tax rules.	a. Property which is the principal residence of the transferor or purchaser, not to exceed 5 acres in size; b. Land owned by a nonprofit development corporation or a local public development corporation; c. Land held in excess of 6 years; d. Transfers not subject are those which occur as gifts, through death from estates, transfers to correct deeds, and straw transfers with no consideration; e. Sale of minerals, timber, or rights thereof; f. Sales by the United States; g. Cases where common owners partition and allocate portions of land without consideration.	Tax rate is variable depending on the percentage of gain as compared to base value and the length of the holding period; ranges from a minimum of 5% to a maximum of 60%.	Estimated at between 5%-10% of revenues.	Problems separating out increase in land value from increase in the value of improvements; tax has been an aid in enforcing other taxes. Since gain is always measured from last transaction, not date of tax enactment, some retroactive taxation potential exists; however, expensive appraisals as of the date of enactment are avoided.	Vermont Department of Taxation.	No staged implementation; tax is effective as of enactment.	*FY 72-73, 4th quarter:* $26,253.37 *FY 73-74:* $1,293,648.00 *FY 74-75:* $756,216.00 *FY 75-76 (To December 1975):* $503,653.00	First $500,000 is to go to the Commissioner of Taxes to prepare property maps required by §3409 of Title 32 Vermont Statutes; Remaining revenues go into Property Tax Relief Trust Fund.	
District of Columbia Real Estate Transaction Tax Act of 1975 (11)	United States; Proposal; 1975.	To stop rapid turnover, speculative sales that are driving up rowhouse prices in the central city, displacing low-income renters, and reaping windfalls for speculators.	The difference between the consideration in the present sale and the consideration in the prior sale.	Land and improvements (real estate).	Prior consideration or the price that the transferor paid for the property.	All sales of residential property after the first sale of each year.	As per federal tax rules.	a. Land held by transferor over 3 years; b. All development other than rowhouses.	Tax rate varies by percentage gain over basis and holding period. Proposed rates range from 70%-10%.	Not applicable.	Not applicable.	District of Columbia Municipal Government.	No staged implementation; to be effective as of a date following enactment.	Not applicable.	Undesignated (general revenues).	
Montana House Bill No. 374 "An Act Imposing an Additional Tax on the Capital Gain Realized in the Speculative Sale of Land." (12)	United States; Proposal; 1975.	To control speculative land sales leading to conversion of farm and ranch lands to large recreational home subdivisions.	The difference between the amount realized upon transfer and the basis value.	Only land value is taxable, consideration is to be allocated between land and improvements on the basis of fair market value.	As specified under federal tax laws, cost of acquisition, plus cost of improvements, plus deductible taxes.	a. Any transfer of title for consideration including an option to sell where consideration is given; b. Sale or exchange of shares in a corporation or other entity that effectively entitles the purchaser to the use or occupancy of land.	As per federal tax rules.	a. Purchaser's or transferor's principal residence, not to exceed 5 acres; b. Involuntary conversions of land; c. Land held more than 6 years.	Same tax rate schedule as the Vermont Land Gains Tax.	Not applicable.	Not applicable.	Montana Department of Revenue.	No staged implementation; to be effective as of a date following enactment.	Not applicable.	Revenues to go to General Fund.	
Oregon House Bill No. 2885 Bill to Impose a Tax on the Gains from the Sale or Exchange of Land in Oregon (13)	United States; Proposal; 1975.	No specific purpose included, however, the bill is based on the Vermont and Ontario Statutes which are largely motivated by the desire to control speculation.	The difference between the amount realized from the sale and the basis value.	Land only.	As specified under federal tax laws, cost of acquisition, plus cost of improvements, plus deductible taxes.	a. Any transfer of title for consideration including an option to sell where consideration is given; b. Sale or exchange of or other entity that effectively entitles the purchaser to the use or occupancy of land.	As per federal tax rules.	a. Gift or inheritance of taxable land; b. Transfer to a governmental unit; c. Land held more than 6 years.	Same tax rate schedule as the Vermont Land Gains Tax.	Not applicable.	Not applicable.	Oregon Department of Revenue.	No staged implementation; to be effective following the date of enactment.	Not applicable.	Undesignated.	
Virginia Land Gains Tax (14)	United States; Proposal; 1976.	To divert the tax on gain from land sale from the federal to the local government which must bear the brunt of services resulting from local growth. The tax is to be made a part of the state income tax rather than stand separately.	Net profit as defined by Virginia Code §58-151.01.	Land only.	As per Virginia Code §58-151.01.	Sale or exchange; options to sell; sale or exchange of interests in an entity that entitles purchaser to use of land; a lease for 99 years +; any other lease with option to purchase.	As per federal tax rules.	Owner-occupied principal residence not to exceed 2 acres.	Tax rate varies depending on per cent gain over basis and length of holding period, from 20% to 2.875% for individuals, from 21% to 5% for corporations.	Not applicable.	Not applicable.	Department of Taxation.	No staged implementation; to be effective following the date of enactment.	Not applicable.	Revenues designated 1/3 to go into the General Fund of the state with the remaining 2/3 reverting to localities to be used for purposes they deem necessary.	
Washington Land Sales Excise Tax (15)	United States; Proposal; February 1975.	Motivation not clear.	The difference between the present and prior sale price.	Land only.	Inflation adjusted acquisition cost. (Increase acquisition cost by an assumed inflation factor of 1% per month of ownership.)	Sale of land, sale or exchange of shares in a corporation or other entity that effectively entitles purchaser to the use or occupancy of land; sale to the government, including those by condemnation.	Selling expenses up to 12 1/2% of sale price.	a. Land held more than 6 years; b. Principal residence; c. Agricultural lands.	Tax rate varies according to length of holding period from 50% to 12%.	Not applicable.	Not applicable.	Taxes to be collected by the County Treasurer and transmitted to the State Department of Revenues.	No staged implementation; to be effective following the date of enactment.	Not applicable.	5% of revenues to cover cost of administering and collecting tax to the county treasurer; remainder of revenues to be credited to a fund designed to supplement state aid to schools.	
California Assembly Bill No. 1563: Establishing the California Recreation Fund and the Unearned Land Value Tax, and California Assembly Bill No. 3698: Establishing the Loss of Property Use Indemnification Fund and Unearned Land Value Tax (16)	AB 1563: United States; Proposal; May 1972. AB 3698: United States; Proposal; April 1974.	To use tax revenues from a land gains tax to fund: a. In AB 1563 grants to local agencies for recreational purposes; b. In AB 3698 to fund payment of compensation when regulation restricts property from being used as it is zoned.	The difference between the present value and base value estimated by an appraisal supplied by transferor.	Land and improvements (real estate).	Prior value is multiplied by the consumer price index to exclude inflation to determine basis for purposes of the tax.	Any transfer of title to land.	$20,000 deducted from value at transfer where a dwelling is located on the property.	a. Transfer by gift or devise to an organization exempt from property tax; b. Transfers by a governmental agency; c. Transfer of community property to a surviving spouse; d. The granting of an easement.	Tax rate is initially set at 5% in AB 3698; rate is then revised on an annual basis so that revenues for the following year will be equivalent to 150% of the total claims for compensation during the prior year.	Not applicable.	Not applicable.	State Board of Equalization.	No staged implementation; to be effective following the date of enactment.	Not applicable.	See column 3.	

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(2) The Alberta Unearned Increment Tax: Letter to Donald Hagman from W.I. Yurko, P. Eng., Office of the Minister of the Environment, Edmonton, Alberta, Sept. 25, 1974; 3 Geo. V, Alberta, 2nd Session 1913, ch. 10; 5 Elizabeth II, Alberta Statutes, ch. 37 1956; E.W. Hinman, Treasurer of Alberta 1956 Budget Speech 20 (1956); Letter to Donald Hagman from H.W. Thiessen, Assistant Deputy Minister Environmental Coordination Services, Province of Alberta, September 2, 1975; R.S.A. 1955, Vol. 4, ch. 349; Public Accounts Alberta, 1922-1956, Unearned Increment Tax Revenues in Alberta.

(3) The Land Commission Act of 1967: Cmnd. 2771 (1965); 16 Elizabeth II ch. 1; Material Development Regulations 1967 S.I. 1967, 494; Case F Regulations 1967, S.I. 1967/496 Land Commission, Report and Accounts for the year ended March 31, 1968 (1968); Land Commission, Report and Accounts for the Year Ended March 31, 1969 (1969); Land Commission, Reports and Accounts for the year ended March 31, 1970 (1970), Parliamentary Debates, Commons 2nd reading of act, Vol. 728, col. 606, May 12, 1966, other debates as follows: Lords Vol. 277, col. 1071, 1090; Vol. 278, cols. 478, 497, 564, 900, 1038, 1157, Vol. 279, cols. 9, 26, 263, 762, 787; Commons, Vol. 728, cols. 606, 733; Vol. 734, cols. 1025, 1167, 1371, 1431; Vol. 735, col. 48, Vol. 739, cols. 1505, 1637; Parliamentary Debates, Repeal of the Act, Lords, Vol. 316, col. 572, 586, 1447 (1971) Commons, Vol. 804, col. 548; Vol. 808, col. 1383, Vol. 813, col. 327; Land Commission (Dissolution) Act 1971, ch. 18.

(4) The 1974 Finance Act: Parliament, Dec. 17, 1973, the Times, Dec. 18, 1973, 5, cols. 1, 3, 5, 6, Parliamentary Debates, House of Commons Vol. 866, col. 952; 228 The Estates Gazette 2204 (1973), J. of Planning and Environment Law, Feb. 1974, 78, Inland Revenue Press Release, Dec. 17, 1973; Finance Act 1974, Chapter 30, Part III, c. 1 Development Gains from Land, c. 2 First Letting or Occupation of Building After Material Development; Inland Revenue, Capital Gains Tax, Development Gains from Land and First Letting Charge, CGT 10 (April 1975); Inland Revenue Capital Gains from Land, Press Release, May 2, 1974, V. Moore, The Taxation of Development Gains, J. Planning and Environment Law, Nov. 1974 at 634.

(5) Development Land Tax and Community Land Act: Land, Cmnd. 5370 (1974); Inland Revenue, Development Land Tax, Press Release, Feb. 4, 1975 reproduced in 110 Solicitors Journal 117 (1975), White Paper, Development Land Tax, Cmnd. 6195 (August 1975); Orbick, The Development Land Tax White Paper, 139 Local Government Review at 567 (August 1975); *Land Tax Defined*, Local Government Chronicle at 1054 (Nov. 1975); Cross, The Community Land Act Local Government Chronicle at 1084 (Nov. 1975); Community Land Act 1975, ch. 77.

(6) New South Wales Land Development Contribution Act: New South Wales, Parliamentary Debates, March 11, 1970, 4152-4153 continuing at 4225, 4238, 4312, 4359, 4395, 4401, 4442; Land Development Contribution Act, 1970, Act No 22; L. Hort, An Introduction to Land Development Contribution Law and Practice in New South Wales (1972); State Planning Authority of New South Wales, Annual Report 1972-73 (1973), 54-55, Land Development Contribution Management (Amendment) Act 1973 Act No. 75.

(7) Property Speculation Tax Act: New Zealand Parliamentary Debates, Vol. 385 at 1803-4, June 29, 1973, Inland Revenue Department Pamphlet, Tax on Property Sales, Property Speculation Tax, Income Tax, 1975; Letter to M. Glickfeld from J. Smcock, Director of Revenue, Inland Revenue, February 2, 1976, 1973 New Zealand Statutes, No. 18; Berg, The Property Speculation Tax Act 6, Accountants J., 64 (Sept. 1973); Letter to Donald Hagman from R.T. Phillips, June 5, 1975.

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(12) Montana Land Gains Tax: H.B. No. 374, 1975; Letter to Madelyn Glickfeld from Roger Tippy, Staff Attorney, Montana Legislative Council, Jan. 21, 1976.

(13) Oregon Land Gains Tax: H.B. No. 2885.

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(15) Washington Land Sales Excise Tax: H.B. No. 502, Feb. 6, 1975.

(16) California Unearned Increment Tax: H.B. No. 1563, May 16, 1972, H.B. No. 3698, April 15, 1974.

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